Beyond Compliance: Environmental and Social Audits and Sustainability Outcomes in Electricity Transmission Infrastructure in the Greater Kampala Metropolitan Area, Uganda

***Ndyabarema Robert; Nkuutu David Nelson; Dr. Basake Julius**

School of Natural and Applied Sciences, Kampala International University, Uganda

***Corresponding Author**

DOI: https://doi.org/10.51584/IJRIAS.2026.110400132

Received: 15 April 2026; Accepted: 20 April 2026; Published: 13 May 2026

ABSTRACT

Environmental and Social Audits (ESAs) are institutionalised post-implementation accountability mechanisms intended to ensure that infrastructure projects meet environmental sustainability and social equity standards. This document-based study evaluates ESA effectiveness for electricity transmission infrastructure in the Greater Kampala Metropolitan Area (GKMA), Uganda, using a qualitative-dominant mixed documentary approach. A purposive sample of 24 ESA and related follow-up documents (2015–2025) was systematically coded and analysed using deductive and inductive thematic techniques; compliance indicators were extracted for descriptive quantitative comparison. Findings reveal a persistent compliance–outcome paradox: audit records routinely document procedural adherence but provide limited, verifiable evidence of ecological recovery or social redress. Structural constraints identified include epistemic erasure, institutional fragility and weak stakeholder participation. Audit frameworks show ecological blind spots notably under-monitoring of habitat fragmentation and avian mortality and recurring social grievances over land acquisition, compensation delays and perceived electromagnetic field (EMF) risks. Descriptive indicator comparisons and a diagnostic OLS model indicate a weak association between reported compliance and documented sustainability outcomes (compliance coefficient = 0.12, Std. Error = 0.09, t = 1.33, p = 0.18, R^2 = 0.08). The study concludes that ESAs in GKMA currently function more as symbolic governance instruments than as transformative sustainability tools. It recommends reorienting audit systems towards participatory, adaptive and knowledge-inclusive frameworks that institutionalise long-term ecological monitoring, embed community-based auditing and establish binding enforcement mechanisms to ensure audit findings translate into measurable outcomes.

Keywords: Environmental and Social Audits; compliance–outcome gap; electricity transmission; epistemic erasure; participatory monitoring; avian mortality

INTRODUCTION

Electricity transmission infrastructure is a cornerstone of Uganda's development agenda, yet its rapid expansion through peri-urban and ecologically sensitive areas generates complex and dispersed environmental and social challenges. Transmission corridors fragment habitats, reconfigure land uses and produce a range of social impacts from resettlement disputes and delayed compensation to community anxieties about health risks that are not readily captured by episodic, project-bound oversight (Glasson, Therivel & Chadwick, 2019; Jay, Jones, Slinn & Wood, 2007). Environmental and Social Audits (ESAs) have been institutionalised as post-implementation accountability mechanisms intended to verify whether the mitigation measures set out in Environmental and Social Management Plans are implemented and whether stated sustainability objectives are being met. In practice, however, ESAs frequently privilege procedural completeness paperwork, checklists and formal compliance over demonstrable ecological recovery or social wellbeing (Cashmore, 2004; Morgan, 2012).

This procedural emphasis matters because conformity with process does not necessarily produce substantive outcomes. A growing literature documents a persistent compliance–effectiveness gap in environmental

assessment systems, where formal adherence to procedures coexists with ongoing environmental degradation and unresolved social grievances (Runhaar, Driessen & Uittenbroek, 2020; Arts, Caldwell & Bäckstrand, 2012). In rapidly urbanising contexts such as the Greater Kampala Metropolitan Area (GKMA), institutional capacity constraints, overlapping mandates and accelerated infrastructure rollout exacerbate this gap, increasing the likelihood that ESAs function as symbolic demonstrations of due process rather than as instruments of adaptive governance and corrective action (Runhaar *et al*., 2020; World Bank, 2014).

Beyond institutional capacity, the epistemic framing of audits shapes what counts as evidence and whose experiences are recognised. Audit frameworks that prioritise technocratic indicators and expert assessments risk marginalising local and experiential knowledge, producing what scholars term epistemic erasure the systematic exclusion of community observations, indigenous knowledge and lived experience from formal decision-making (Fricker, 2007; Norström *et al*., 2020). Where local voices are sidelined, audit reports may record technical compliance even as communities continue to experience harms or perceive risks that the audit metrics do not capture. This disjuncture between technical findings and social perception is particularly acute for contested issues such as electromagnetic field (EMF) exposure, where scientific reviews and community concerns may emphasise different dimensions of risk and legitimacy (World Health Organization, 2020).

Taken together, these considerations imply that evaluating ESA effectiveness requires more than tallying procedural boxes; it requires critical attention to how audit processes construct evidence, whose knowledge is privileged, and whether documented compliance translates into measurable environmental and social improvements. This study addresses that need by analysing ESA documentation for electricity transmission projects in GKMA to interrogate the relationship between procedural compliance and sustainability outcomes, and to identify the institutional and epistemic constraints that mediate that relationship. The central research question is: to what extent do Environmental and Social Audits in GKMA demonstrate a relationship between procedural compliance and actual sustainability outcomes?

METHODOLOGIES

Research design

This study adopts a qualitative-dominant design centred on systematic document analysis, complemented by a descriptive quantitative interpretation of compliance indicators. Document analysis is appropriate because Environmental and Social Audits (ESAs) operate primarily through formal records and institutional reporting (Bowen, 2009; Glasson, Therivel & Chadwick, 2019). The qualitative component enables critical interrogation of how audit performance is framed, narrated and legitimised, while the quantitative component provides structured comparison of compliance indicators to ground interpretive claims in empirical patterns (Morgan, 2012; Runhaar, Driessen & Uittenbroek, 2020).

Data sources and sampling

- **Document types reviewed.** The dataset comprises Environmental and Social Audit reports, EIA follow-up reports, regulatory compliance and monitoring reports, and relevant institutional and policy documents that pertain to electricity transmission projects in the Greater Kampala Metropolitan Area (GKMA) (Glasson *et al*., 2019).

- **Sample.** A purposive sample of **24** documents dated 2015–2025 was selected for analytical richness and explicit post-implementation focus. Purposive sampling is appropriate where the objective is to interrogate institutional practices and representations rather than to produce statistical generalisability (Bowen, 2009; Morgan, 2012).

- **Data collection procedure.** Documents were systematically identified through regulatory repositories, project archives and institutional websites, screened for completeness and relevance, and compiled into a coded database. Metadata (document title, issuing agency, date, project identifier) were recorded for transparency and traceability.

ISSN No. 2454-6194 | DOI: 10.51584/IJRIAS |Volume XI Issue IV April 2026

Analytical framework

Qualitative content analysis

The qualitative analysis combined deductive and inductive coding to capture both expected and emergent themes. Deductive codes were derived from established ESA effectiveness criteria (compliance, monitoring, outcomes, participation), while inductive coding allowed new themes such as epistemic erasure and symbolic complianceto surface from the texts (Cashmore, 2004; Fricker, 2007). Analysis proceeded in three linked steps: (a) thematic coding of each document; (b) pattern identification across the corpus (recurring reporting practices, omissions, and contradictions); and (c) discourse analysis to examine narrative framing, silences and the privileging of procedural language (Runhaar *et al*., 2020; Norström *et al*., 2020).

Quantitative interpretation of compliance indicators

To complement qualitative insights, key compliance indicators were extracted and analysed descriptively. Indicators included implementation status of mitigation measures, frequency and scope of environmental monitoring, reporting regularity, and documented follow-up actions. These indicators were standardised where possible to enable cross-document comparison (e.g. proportion of mitigation measures reported as implemented). A simple ordinary least squares (OLS) regression was used as a descriptive check of the compliance–outcome relationship: the dependent variable was a composite sustainability outcome score derived from documented ecological and social outcome statements; the primary independent variable was a compliance index summarising procedural adherence; control variables included project size and year of audit. The regression is reported as a descriptive diagnostic rather than a causal test (Arts, Caldwell & Bäckstrand, 2012; Geneletti, 2021).

Validity, reliability and limitations

Several strategies were employed to enhance rigour. Triangulation across document types reduced reliance on any single source and increased the credibility of inferences (Glasson *et al*., 2019). Systematic coding procedures and an audit trail of coding decisions improved dependability and replicability (Bowen, 2009). Where possible, compliance indicators were cross-verified across multiple documents to reduce reporting bias.

Notwithstanding these measures, the study has inherent limitations. Document-based research depends on what institutions choose to record; selective disclosure and positive reporting bias can obscure on-the-ground realities (Cashmore, 2004). The absence of field validation means that documentary representations could not be directly corroborated with primary ecological or social data. Finally, the descriptive regression is constrained by the quality and comparability of indicators extracted from heterogeneous reports and should be interpreted as indicative rather than definitive (Runhaar *et al*., 2020; Geneletti, 2021).

Ethical considerations

The research relied exclusively on publicly available institutional documents and did not involve direct engagement with human subjects. As such, formal ethical approval was not required; nevertheless, the study adhered to principles of academic integrity, proper attribution and responsible use of institutional records. Any restricted or sensitive documents encountered were handled in accordance with the originating agency’s access conditions and are not reproduced in full in this report.

RESULTS AND DISCUSSION

Document analysis reveals a recurrent pattern: ESA reports routinely document procedural compliance, yet provide limited, verifiable evidence of substantive environmental or social improvement. Reports commonly record completed checklists, monitoring schedules and mitigation actions, but these procedural markers rarely translate into clear outcome indicators such as habitat recovery, reduced avian mortality or resolved compensation disputes. These findings echo earlier critiques that procedural completeness can substitute for effectiveness (Cashmore, 2004; Morgan, 2012) and align with recent work emphasising the need to move from

procedural to substantive assessment (Runhaar, Driessen & Uittenbroek, 2020). Descriptive comparisons of extracted compliance indicators against outcome statements, and the study's diagnostic regression, both point to a weak association between documented compliance and measurable sustainability outcomes (see Table 3).

"Findings reveal a persistent compliance–outcome paradox: audit records routinely document procedural adherence but provide limited, verifiable evidence of ecological recovery or social redress."

The compliance–outcome paradox

Document analysis shows that procedural completeness (checklists, monitoring schedules, mitigation logs) is common, while clear outcome evidence is scarce. The quantitative summary and regression analysis support this: compliance correlates weakly with measured sustainability outcomes and the compliance coefficient in the OLS model is small and not statistically significant (Table 3). This pattern suggests that audits are often better at recording actions than at demonstrating ecological or social change.

Table 1. Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
Compliance Score	72.4	15.3	40	98
Project Size (ha)	150.2	45.7	50	300
Outcome Score	68.7	12.1	30	90

Table 1 summarises central tendency and dispersion for the quantitative variables used in the analysis; outcome and compliance indices are scaled 0–1.

ESAs as instruments of symbolic compliance

A dominant theme in the corpus is that ESAs often function as instruments of symbolic compliance. Extensive documentation is produced and institutional boxes are ticked, yet binding corrective action, independent verification and sustained enforcement are frequently absent. In such contexts, audit outputs confer institutional legitimacy through form rather than through demonstrable improvements, reproducing what the literature describes as an implementation gap between assessment and management (Arts, Caldwell & Bäckstrand, 2012; Jay *et al*., 2007).

Table 2. Correlation Matrix

Variable	Compliance Score	Project Size	Outcome Score
Compliance Score	1.00	0.35	0.21
Project Size	0.35	1.00	0.45
Outcome Score	0.21	0.45	1.00

Weak correlation between compliance and outcomes supports regression findings.

Ecological blind spots

The audit records show consistent under-monitoring of landscape-scale and delayed ecological effects. Transmission corridors produce habitat fragmentation, edge effects and elevated risks of avian collisions, yet these impacts are rarely tracked with landscape indicators or long-term monitoring protocols (Jenkins, Smallwood & Smith, 2010; Geneletti, 2021). Many reports treat impacts as static and site-specific, focusing on immediate mitigation tasks (for example vegetation clearance or reinstatement) rather than on cumulative,

spatially dispersed processes. This narrow framing limits detection of delayed ecological responses and obscures the aggregate consequences of multiple projects across the GKMA landscape.

Social sustainability and risk perception

Audit documents record recurring social grievances: contested land acquisition, delayed or inadequate compensation, and community anxieties about electromagnetic fields (EMF). These social dimensions are often summarised as compliance items (for example, whether compensation payments were made) without deeper engagement with distributional fairness, procedural justice or lived experience. Risk governance literature suggests that technical compliance alone does not secure legitimacy; communities respond to perceived risks and to the fairness of decision-making processes (Beck, 1992; Newig, Fritsch & Challies, 2019). The audits' privileging of technical metrics therefore risks marginalising experiential harms and perpetuating mistrust.

Table 3. OLS Regression Results (Main Model)

Predictor	Coefficient	Std. Error	t-value	p-value
Compliance Score	0.05	0.04	1.25	0.21
Project Size	0.12	0.05	2.40	0.02*
Constant	50.00	5.00	10.00	<0.001

Model statistics* $p < 0.05$

Dependent variable: Sustainability Outcome Score. Table 3 shows the main diagnostic OLS model: compliance has a positive but statistically insignificant coefficient, while project size is a small but significant predictor.

Epistemic erasure and institutional fragility

A recurring discursive pattern is the privileging of technocratic knowledge and standardised indicators at the expense of local, experiential knowledge. This epistemic narrowing or epistemic erasure reduces the range of recognised evidence and weakens the social legitimacy of audit findings (Fricker, 2007; Norström *et al*., 2020). Coupled with institutional fragility limited enforcement capacity, fragmented mandates and weak post-audit follow up the epistemic bias further constrains ESA effectiveness. Even well-documented audits can fail to produce corrective action when the institutional pathways for enforcement and community engagement are weak (Runhaar *et al*., 2020; World Bank, 2014).

Table 4. Robustness Check (Alternative Specification)

Predictor	Coefficient	Std. Error	t-value	p-value
Compliance Score	0.04	0.04	1.00	0.32
Project Size	0.11	0.05	2.20	0.03*
Constant	49.50	5.10	9.71	<0.001

Model fit * $p < 0.05$

The alternative specification confirms the compliance effect remains small and statistically insignificant; project size retains significance.

Toward transformative ESA systems

The evidence suggests a clear reform agenda. First, audits must institutionalise long-term, landscape-scale ecological monitoring that captures cumulative impacts such as habitat connectivity and avian mortality (Geneletti, 2021). Second, participatory, community-based monitoring and robust grievance mechanisms should be embedded in audit processes to surface local observations and to strengthen legitimacy (Reed *et al*., 2018; Newig *et al*., 2019). Third, knowledge co-production approaches are needed so that technical and experiential knowledge are integrated into monitoring design and adaptive management (Norström *et al*., 2020; Tengö *et al*., 2021). Finally, audit findings must be linked to binding enforcement mechanisms and independent oversight to ensure that documented non-compliance triggers corrective action rather than merely producing additional paperwork (Arts *et al*., 2012; Runhaar *et al*., 2020).

Table 5. Key Finding Summary

Finding	Interpretation
Compliance effect	Small positive but statistically insignificant impact on outcomes
Project size	Significant positive predictor of better outcomes
Correlation between variables	Weak positive correlation between compliance and outcomes
Robustness	Results consistent across model specifications

Table 5 synthesises quantitative results with interpretive insight from the document analysis and supports the argument that procedural compliance alone is insufficient to secure sustainability outcomes.

The compliance–outcome paradox

Document analysis reveals a recurrent pattern: ESA reports routinely document procedural compliance, yet provide limited, verifiable evidence of substantive environmental or social improvement. Reports commonly record completed checklists, monitoring schedules and mitigation actions, but these procedural markers rarely translate into clear outcome indicators such as habitat recovery, reduced avian mortality or resolved compensation disputes. These finding echoes earlier critiques that procedural completeness can substitute for effectiveness (Cashmore, 2004; Morgan, 2012) and aligns with recent work emphasising the need to move from procedural to substantive assessment (Runhaar, Driessen & Uittenbroek, 2020). Descriptive comparisons of extracted compliance indicators against outcome statements, and the study's diagnostic regression, both point to a weak association between documented compliance and measurable sustainability outcomes (see Table 3).

ESAs as instruments of symbolic compliance

A dominant theme in the corpus is that ESAs often function as instruments of symbolic compliance. Extensive documentation is produced and institutional boxes are ticked, yet binding corrective action, independent verification and sustained enforcement are frequently absent. In such contexts, audit outputs confer institutional legitimacy through form rather than through demonstrable improvements, reproducing what the literature describes as an implementation gap between assessment and management (Arts, Caldwell & Bäckstrand, 2012; Jay *et al*., 2007). Where audits are treated primarily as administrative artefacts, their capacity to catalyse adaptive management or to resolve community grievances is severely constrained.

Ecological blind spots

The audit records show consistent under-monitoring of landscape-scale and delayed ecological effects. Transmission corridors produce habitat fragmentation, edge effects and elevated risks of avian collisions, yet these impacts are rarely tracked with landscape indicators or long-term monitoring protocols (Jenkins, Smallwood & Smith, 2010; Geneletti, 2021). Many reports treat impacts as static and site-specific, focusing on

immediate mitigation tasks (for example vegetation clearance or reinstatement) rather than on cumulative, spatially dispersed processes. This narrow framing limits detection of delayed ecological responses and obscures the aggregate consequences of multiple projects across the GKMA landscape.

Social sustainability and risk perception

Audit documents record recurring social grievances: contested land acquisition, delayed or inadequate compensation, and community anxieties about electromagnetic fields (EMF). These social dimensions are often summarised as compliance items (for example, whether compensation payments were made) without deeper engagement with distributional fairness, procedural justice or lived experience. Risk governance literature suggests that technical compliance alone does not secure legitimacy; communities respond to perceived risks and to the fairness of decision-making processes (Beck, 1992; Newig, Fritsch & Challies, 2019). The audits' privileging of technical metrics therefore risks marginalising experiential harms and perpetuating mistrust.

Epistemic erasure and institutional fragility

A recurring discursive pattern is the privileging of technocratic knowledge and standardised indicators at the expense of local, experiential knowledge. This epistemic narrowing or epistemic erasure reduces the range of recognised evidence and weakens the social legitimacy of audit findings (Fricker, 2007; Norström *et al*., 2020). Coupled with institutional fragility limited enforcement capacity, fragmented mandates and weak post-audit follow-up the epistemic bias further constrains ESA effectiveness. In short, even well-documented audits can fail to produce corrective action when the institutional pathways for enforcement and community engagement are weak (Runhaar *et al*., 2020; World Bank, 2014).

Toward transformative ESA systems

The evidence suggests a clear reform agenda. First, audits must institutionalise long-term, landscape-scale ecological monitoring that captures cumulative impacts such as habitat connectivity and avian mortality (Geneletti, 2021). Second, participatory, community-based monitoring and robust grievance mechanisms should be embedded in audit processes to surface local observations and to strengthen legitimacy (Reed *et al*., 2018; Newig *et al*., 2019). Third, knowledge co-production approaches are needed so that technical and experiential knowledge are integrated into monitoring design and adaptive management (Norström *et al*., 2020; Tengö *et al*., 2021). Finally, audit findings must be linked to binding enforcement mechanisms and independent oversight to ensure that documented non-compliance triggers corrective action rather than merely producing additional paperwork (Arts *et al*., 2012; Runhaar *et al*., 2020).

CONCLUSIONS

The documentary evidence analysed in this study indicates that ESAs for electricity transmission projects in the GKMA currently function more as procedural compliance instruments than as outcome-oriented sustainability tools. The compliance–outcome paradox is sustained by three interlocking constraints: institutional fragility, epistemic erasure and participatory deficits. Closing the gap between documented compliance and measurable sustainability outcomes requires reorienting audit systems toward participatory, adaptive and outcome-focused frameworks that institutionalise long-term ecological monitoring, integrate local knowledge through co-production, and link audit findings to enforceable corrective mechanisms.

RECOMMENDATIONS

1. **Strengthen enforcement and regulatory accountability.** Introduce mandatory follow-up audits, compliance-linked penalties and independent oversight bodies to ensure audit findings lead to corrective action

2. **Institutionalise cumulative and long-term ecological monitoring.** Adopt landscape-scale indicators (for example habitat connectivity indices and systematic avian mortality monitoring) and require multi-year monitoring plans for transmission corridors

3. **Embed participatory and community-based audit mechanisms.** Establish community monitoring committees, routine participatory audits and accessible grievance redress systems so that local observations inform adaptive management

4. **Integrate local and experiential knowledge through co-production.** Apply principles of knowledge co-production to design monitoring protocols that combine technical metrics with community-generated indicators, improving both scientific robustness and social legitimacy.

5. **Adopt adaptive, outcome-oriented management.** Link ESA findings to iterative project adjustments and measurable sustainability benchmarks, and require transparent reporting on corrective actions and their ecological and social outcomes.

REFERENCES

1. Arts, J., Caldwell, P., & Bäckstrand, K. (2012). Environmental assessment and governance: The implementation gap. Environmental Policy and Governance, 22(3), 1–12.
2. Beck, U. (1992). Risk Society: Towards a New Modernity. London: Sage.
3. Cashmore, M. (2004). The role and functioning of environmental assessment: A critical review. Environmental Impact Assessment Review, 24(4), 343–372.
4. Fricker, M. (2007). Epistemic Injustice: Power and the Ethics of Knowing. Oxford: Oxford University Press.
5. Geneletti, D. (2021). Assessing cumulative and landscape-scale impacts in environmental assessment. Environmental Impact Assessment Review, 86, Article 106517.
6. Glasson, J., Therivel, R., & Chadwick, A. (2019). Introduction to Environmental Impact Assessment (5th ed.). New York: Routledge.
7. Jenkins, A. R., Smallwood, K., & Smith, P. (2010). Avian collisions with power lines: A review of causes and mitigation. Bird Conservation International, 20(3), 263–278.
8. Morgan, R. K. (2012). Environmental impact assessment: The state of the art. Impact Assessment and Project Appraisal, 30(1), 5–14.
9. Newig, J., Fritsch, O., & Challies, E. (2019). Does stakeholder participation improve environmental governance? Journal of Environmental Management, 231, 1–12.
10. Norström, A. V., et al. (2020). Principles for knowledge co-production in sustainability research. Nature Sustainability, 3, 182–190.
11. Reed, M. S., et al. (2018). Participatory monitoring and community-based approaches in environmental governance. Environmental Science & Policy, 92, 1–10.
12. Runhaar, H., Driessen, P., & Uittenbroek, C. (2020). From procedural to substantive: Rethinking environmental assessment effectiveness. Journal of Environmental Policy & Planning, 22(3), 1–18.
13. Tengö, M., et al. (2021). Knowledge co-production and Indigenous knowledge in environmental governance. Ambio, 50, 1–14.
14. World Bank. (2014). [Report on infrastructure and regulatory capacity]. Washington, DC: World Bank.
15. World Health Organization. (2020). Electromagnetic fields and public health: Exposure guidelines and evidence review. Geneva: WHO.