

ASSESSING THE IMPLEMENTATION OF ESG FACTORS BY NAMIBIAN CONTRACTORS

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Abstract

This paper aims to assess the extent to which Environmental, Social, and Governance (ESG) factors are implemented by registered construction contractors in Namibia. It evaluates the practical translation of ESG principles from policy and regulatory expectations into operational practices within the construction sector, highlighting implementation gaps and areas of inconsistency across environmental, social, and governance dimensions. A quantitative research approach was adopted under a positivist philosophy. Data were collected through a structured online questionnaire distributed to contractors registered with the Construction Industries Federation of Namibia (CIF). Systematic sampling was used to gather data. The assessment of ESG implementation was conducted using descriptive statistics, including mean scores and standard deviations, supported by Chi-square tests and Cramer's V to examine variations in implementation levels across contractors. The findings reveal that ESG implementation among Namibian contractors is generally moderate but uneven across all three dimensions. Environmental practices such as recycling and waste management show relatively higher and more consistent implementation, while technology-intensive practices, including renewable energy use and land disturbance minimisation, remain limited. Social ESG practices are primarily concentrated on regulated areas such as wages and occupational health and safety, although significant variability exists in enforcement and practical application. Governance implementation exhibits the greatest disparity, with formal governance policies moderately adopted, but critical mechanisms such as risk management, transparent ESG reporting, and leadership diversity remaining weak and fragmented. Overall, ESG implementation is largely reactive and compliance-driven rather than strategically embedded. The findings are limited to registered construction contractors operating within Namibia and cannot be generalised to informal contractors or other national contexts with differing regulatory and institutional environments. The study's quantitative focus restricts deeper exploration of the underlying causes of ESG implementation gaps. The results provide empirical evidence of ESG implementation gaps that can inform policymakers, regulators, and industry bodies in strengthening ESG enforcement, developing sector specific guidelines, and supporting capacity building initiatives. The findings also have regulatory relevance by informing mandatory ESG reporting requirements and the incorporation of ESG performance criteria into public procurement policies. Contractors may use the findings to benchmark their ESG implementation maturity and identify priority areas for improvement. The study's most important consequence is that it recognises the necessity of shifting Namibia's construction sector from a mostly compliance-driven strategy to the strategic integration of ESG principles, hence promoting more resilient and sustainable company procedures. This study contributes original, context-specific insights into the actual implementation of ESG practices by contractors in a developing construction market. By moving beyond perceived importance to empirical assessment of implementation, the research advances understanding of ESG operationalisation in Namibia and supports the development of more effective, integrated, and sustainable construction practices.

Keywords: Contractors, Construction Industry, ESG Factors, ESG Implementation, Namibia

1 Introduction

Contractors' implementation of Environmental, Social, and Governance (ESG) factors illustrates how sustainability principles are translated into real-world construction operations (Sosu et al., 2026). Although ESG has gained increasing prominence in corporate reporting and policy frameworks, its implementation within contracting organisations remains inconsistent and context-dependent (Prakash, 2020; Shaikh, 2021). Contractors play a crucial role in achieving sustainable construction outcomes because their activities directly

influence labour conditions, environmental performance, and governance practices throughout project execution (YII, 2025). Environmental and social aspects of ESG implementation include resource efficiency, waste management, pollution control, occupational health and safety, and community engagement (Bamgbade et al., 2016; Xie et al., 2017). Governance implementation, in turn, requires the establishment of internal control systems, ethical standards, risk management procedures, and regulatory compliance mechanisms (Prakash, 2020).

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Despite the availability of such measures, previous studies indicate that ESG adoption by contractors is often viewed as a compliance requirement rather than an integrated strategic framework embedded in organisational decision-making processes (Dufvelin, 2018). Empirical evidence further suggests that contractors, particularly in developing countries, encounter several barriers to consistent and comprehensive ESG implementation, including limited technical capacity, financial constraints, inadequate regulatory enforcement, and insufficient ESG awareness (Shilongo, 2023). Although Namibia has made progress in sustainability alignment and ESG reporting at national and corporate levels, gaps remain in the structured implementation of ESG practices within the construction sector (Namibian Stock Exchange, 2022; Shilongo, 2023). Consequently, there is limited empirical evidence regarding the extent to which Namibian contractors have translated ESG principles into operational practices.

This study therefore aims to assess the implementation of ESG factors by registered construction contractors in Namibia and to test the hypothesis that Namibian contractors implement ESG factors to an insignificant degree, not exceeding minimum expectations. By addressing this objective, the study contributes to the sustainable construction discourse by providing empirical evidence on the extent of ESG implementation in a developing country context. The findings are expected to provide practical guidance to contractors, policymakers, and industry stakeholders operating within Namibia's evolving legislative and business environment. The remainder of the paper reviews the relevant literature, describes the research methodology, presents and discusses the findings, and concludes with recommendations.

2. Literature Review

The following section examines existing literature and scholarly perspectives on the implementation of Environmental, Social, and Governance (ESG) factors by contractors within the construction industry.

2.1 Implementation of ESG factors by contractors

The incorporation of sustainability into construction procedures is regarded in contractors' recognition of Environmental, Social, and Governance (ESG) principles. ESG is frequently pushed through corporate reporting and policy, but its actual implementation differs depending on the circumstances (Shaikh, 2021). A comprehensive strategy that incorporates environmental, social, and governance factors into planning, execution, and decision-making is necessary for successful implementation (Dufvelin, 2018; Prakash, 2020). Business ability, market incentives, regulatory enforcement, and project-specific

restrictions all affect how much ESG operationalisation is carried out, particularly in developing nations.

2.2.1 Environmental Implementation by Contractors

According to Bamgbade et al. (2016), considering many environmental impacts occur during construction rather than during design, environmental ESG implementation by contractors focuses on lowering the ecological impact of building through resource efficiency, pollution control, and sustainable site management. Bamgbade, Kamaruddeen, and Nawi (2016), together with Mensah, Nani and Ayarkwa (2022), observed that energy-efficient equipment, renewable energy, eco-friendly materials, waste minimization, and recycling are common practices, but adoption is frequently project-specific rather than firm-wide, especially in developing countries with inadequate infrastructure. Particularly in areas with limited water supplies, new techniques including rainwater collection, water-efficient machinery, and controlled curing are being developed. However, according to Shaikh (2021), budgetary constraints, a lack of technical expertise, and inadequate incentives hinder execution. This concurs with the findings of Dufvelin (2018) and the more recent study by Björk, Filander and Mattsson (2024), which indicate that ESG initiatives are frequently client-driven and reactive rather than proactive or adaptable.

2.2.2 Social Implementation by Contractors

According to Xie et al. (2017) and Shaikh (2021), despite the substantial social risks associated with the labor-intensive construction sector, contractors' social ESG initiatives concentrate on labor practices, occupational health and safety (OHS), community participation, and human capital development. Hasan et al. (2018) observed that health and safety is the most researched aspect, with initiatives such as safety inductions, toolbox talks, PPE provision, and regulatory compliance lowering accidents. However, Shilongo (2023) noted that effectiveness is frequently limited by enforcement gaps and financial constraints, particularly in developing nations. Beukert and Sigurdsson (2022), together with Saiful Azlin Puteh Salin et al. (2023), argued that although community participation is occasionally viewed as a secondary issue, activities such as monitoring project impacts and encouraging local employment improve project legitimacy and reduce resistance. Beyond OHS, social ESG implementation also entails diversity, inclusivity, and cultural respect; however, according to Shilongo (2023), this area remains understudied and poorly evaluated in developing countries, a finding that concurs with Xie et al. (2017) and suggests the necessity for context-specific study on contractor practices.

2.2.3 Governance Implementation by Contractors

According to Prakash (2020), governance ESG implementation lays the groundwork for successful environmental and social practices by encouraging accountability, transparency, moral behavior, and regulatory compliance. Alreshidi, Mourshed, and Rezgui (2017) highlighted that internal standards, risk management, audits, and distinct organisational responsibilities are important tools that enable responsible decision-making and assist in avoiding wrongdoing. However, Dufvelin (2018) and Yap et al. (2024) observed that although legal and regulatory compliance is crucial, governance is frequently restricted to procedural observance rather than strategic sustainability, especially in developing nations with insufficient enforcement and disjointed frameworks. Furthermore, Shilongo (2023), Prakash (2020), and Arsecularatne and Sandanayake (2021) advocated for transparency, disclosure, inclusive leadership, and board diversity to increase stakeholder trust and ethical oversight; however, they noted that reporting is frequently selective and leadership structures continue to be largely homogeneous, limiting transformative impact.

2.2.4 Integration of ESG Implementation by Contractors

Contractors must use coordinated tactics, such as establishing quantifiable goals, incorporating ESG into project management, and regularly assessing performance, in order to effectively integrate ESG (Prakash, 2020). Key facilitators of integrated ESG implementation include cooperation throughout the construction value chain, training, capacity building, and the use of digital technology and green tools (Shilongo, 2023; Dufvelin, 2018). Many contractors find it difficult to match ESG with commercial and short-term project goals, despite the fact that integration may improve competitiveness, risk management, and long-term value (Kim & Chang, 2022). Overall, there are still large gaps between ESG goals and practice, particularly in emerging economies, underscoring the necessity of empirical study tailored to particular contexts (Shilongo, 2023). Although previous studies have explored ESG implementation in the construction industry, much of the literature focuses on developed economies or on the importance of ESG rather than actual implementation. Empirical evidence on how contractors operationalise ESG in developing countries, particularly Namibia, remains limited. As a result, there is insufficient understanding of the extent to which Namibian contractors translate ESG principles into practice across environmental, social, and governance dimensions. This study addresses this gap by assessing ESG implementation among registered construction contractors in Namibia.

3. Research Methodology

This study employed a post-positivist paradigm, which is suitable for perception-based research that acknowledges reality as likely and impacted by a variety of circumstances (Saunders et al., 2016). In line with Prakash (2020), a quantitative mono-method was used, gathering data using a survey questionnaire. To guarantee validity and reliability, participants were chosen using systematic selection from the 184 construction enterprises that were registered with CIF. A minimum of 92 replies, or 50% of the population, were targeted (Leedy & Ormrod, 2016; Thomas, 2023). Until the sample threshold was reached, every second contractor on an ordered list was chosen. Three sets of closed-ended questions made up the QuestionPro-created online survey. The primary goals were assessed using a 5-point Likert scale that ranged from "Never" (1) to "Always" (5), modified from Bhandari & Nikolopoulou (2023), while the first part collected demographic and organisational data (Bhandari, 2023). Mean score, standard deviation, and chi-squared tests were used in the data analysis. Standard deviation was used to evaluate variability, ranking variables with smaller deviation higher when means were similar (Trafimow, Wang & Wang, 2018; Beukert & Sigurdsson, 2022). Mean scores were interpreted on a scale from low (1.00–2.00) to high (4.01–5.00) (Hassan et al., 2018). Relationships between categorical variables were assessed using chi-squared tests, and significance was established at $p < 0.05$ (Camilli, 2018; Turney, 2023). With widely recognized thresholds of negligible (0–0.10), weak (0.10–0.30), moderate (0.30–0.50), and strong (>0.50), Cramer's V was used to measure the strength of association between nominal variables, ranging from 0 (no association) to 1 (strong association) (Cramér, 1946; Cohen, 2013; Field, 2018; Rea & Parker, 2014). Since it measures the strength of correlations rather than causality, Cramer's V is non-directional and enhances chi-squared findings.

4 Findings and Discussion

4.1 Response rate and Profile of respondents

95 participants responded to the survey, yielding sufficient data to evaluate profiles in sustainable construction (Table 1 in Appendix 1). With minor contributions from other sectors, the majority of respondents were experts in Project Management (15.79%), Architecture and Real Estate (14.74% each), Quantity Surveying (13.68%), and Civil Engineering (11.58%). This illustrates a multidisciplinary view of sustainable practices and ESG. With bachelor's (25.26%), master's (22.11%), or honors (21.05%) degrees, the majority of participants were well qualified; 8.42% had doctorates, and lesser percentages possessed diplomas, certificates, or postgraduate diplomas. Experience levels were varied, with the largest group having 6–10 years (27.37%), followed by 0–5 years (24.21%) and over 20 years (21.05%),

showing representation across career stages. Nearly half (49.47%) worked on medium-scale projects, with others involved in small-scale (31.58%) and large-scale (18.95%) developments. Respondents were also distributed across company grades, led by Grade 3 (26.32%) and Grade 1 (23.16%) firms, indicating insights from organisations of varying capacities.

4.2 Implementation of ESG factors by Namibian contractors

While governance practices range from medium-high to medium-low levels, environmental and social ESG practices among Namibian contractors lie within the medium-high level of implementation (Mean = 3.01–4.00), according to the study of mean scores and standard deviations in Tables 2 in Appendix 1. Every aspect considered; this points to a moderate degree of ESG adoption in all three dimensions. However, significant variation in reported practices is indicated by standard deviations more than 1.0 for every item (Moore, McCabe & Craig, 2017).

In Table 3 below, chi-square and Cramer's V analysis revealed particular ESG practices with statistically significant variation among contractors ($p < 0.05$). In terms of the environment, adoption of low-VOC paints ($\chi^2 = 9.474$, $p = 0.050$, $V = 0.158$), recycling and reuse ($\chi^2 = 10.000$, $p = 0.040$, $V = 0.162$), and energy-efficient technologies ($\chi^2 = 14.105$, $p = 0.007$, $V = 0.193$). While wages, training, diversity, and community involvement did not exhibit any significant variation, the enforcement of health and safety regulations and the provision of safe working environments were significant ($\chi^2 = 17.579$, $p = 0.001$, $V = 0.215$). Clear policies ($\chi^2 = 21.368$, $p < 0.001$, $V = 0.237$), ethical accountability ($\chi^2 = 13.158$, $p = 0.011$, $V = 0.186$), fair procurement ($\chi^2 = 14.421$, $p = 0.006$, $V = 0.195$), and ESG reporting ($\chi^2 = 13.474$, $p = 0.009$, $V = 0.188$) showed non-significant differences in governance maturity.

The majority of procedures fell between the medium-high range ($M = 3.01$ – 4.00), according to the environmental ESG results, which show moderate but inconsistent adoption across contractors. In line with Bamgbade et al. (2016) and Mensah et al. (2022), who relate adoption to capital and technical capacity, energy-efficient technologies shown considerable variation ($\chi^2 = 14.105$, $p = 0.007$; $V = 0.193$), indicating unequal adoption. Recycling and reuse had the greatest mean ($M = 3.40$, $SD = 1.29$), followed by low-VOC paints ($M = 3.20$, $SD = 1.28$) and waste tracking ($M = 3.27$, $SD = 1.43$). However, VOC paints also had substantial variation ($\chi^2 = 9.474$, $p = 0.050$; $V = 0.158$), indicating uneven application. Mensah et al.'s (2022) conclusion that high-investment environmental policies are less systematically anchored is supported by the non-significant results and larger dispersion of renewable energy consumption and land disturbance minimization (both $M = 3.00$). Health and safety measures were the most distinctive, while social ESG practices also showed medium-high implementation levels. Variations in compliance capability were highlighted by the statistical significance of the provision of safe working environments and the enforcement of health and safety rules ($\chi^2 = 17.579$, $p = 0.001$; $V = 0.215$). While PPE provision ($M = 3.32$, $SD = 1.54$) and training ($M = 3.31$, $SD = 1.26$) showed considerable attention with some inconsistency, fair and competitive pay recorded the highest mean ($M = 3.58$, $SD = 1.29$), confirming Shaikh (2021) and Xie et al. (2017). The lower rankings for safe working environments ($M = 3.06$, $SD = 1.51$) and community participation ($M = 3.06$) are consistent with Beukert and Sigurdsson's (2022) argument that social efforts that go beyond legal requirements are given less importance. The largest discrepancy was seen in governance implementation, which suggests unequal institutional development. Clear governance policies had the highest mean ($M = 3.43$, $SD = 1.36$) and the greatest variation ($\chi^2 = 21.368$, $p < 0.001$; $V = 0.237$). Additionally, ethical accountability was significant (χ^2

Table 3: Chi-Square and Cramer's V Results for implementation of ESG practices

Question	χ^2 Value	p-value	Cramer's V	Effect Size Interpretation	Significance
Environmental practices					
Employing energy-efficient technologies	14.105	0.007	0.193	Moderate association	Significant
Implementing recycling and reuse strategies	10.000	0.040	0.162	Moderate association	Significant
Use of low-volatile organic compound (VOC) paints	9.474	0.050	0.158	Moderate association	Significant
Social practices					
Health & safety enforcement	17.579	0.001	0.215	Moderate association	Significant
Safe working environment	17.579	0.001	0.215	Moderate association	Significant
Governance practices					
Clear governance policies					
Ethical accountability	13.158	0.011	0.186	Moderate association	Significant
Fair procurement practices	14.421	0.006	0.195	Moderate association	Significant
Transparency and ESG reporting	13.474	0.009	0.188	Moderate association	Significant

= 13.158, $p = 0.011$; $V = 0.186$; $M = 3.39$, $SD = 1.86$), confirming Prakash's (2020) assertion that leadership commitment is necessary for enforcement. According to Shilongo (2023), internal audits showed moderate adoption ($M = 3.37$, $SD = 1.33$), but transparent ESG reporting, leadership diversity, and risk management scored below 3.00, with risk management scoring the lowest ($M = 2.91$), and 18 out of 27 ESG factors did not reach statistical significance overall. Thus, the hypothesis that "Namibian contractors implement ESG factors to an insignificant degree, not exceeding minimum expectations" is validated. ESG practices are still scarce and not yet strategically integrated throughout the industry, as seen by the preponderance of non-significant Chi-square results and uneven, compliance-driven implementation concentrated in regulated areas like health and safety and fundamental governance regulations.

5 Conclusion and Further Research

The purpose of this study was to examine the extent to which Environmental, Social, and Governance (ESG) factors are implemented by Namibian contractors and to test the hypothesis that ESG implementation falls short of minimal criteria. The study evaluated the degree and consistency of ESG adoption across organisations using a quantitative survey methodology supported by mean score analysis, Chi-square, and Cramer's V tests. The results show that all three aspects have moderate but unequal implementation. While technology-intensive efforts exhibited poorer and uneven uptake, environmental practices were stronger in well-known operational areas like recycling and waste management. Health and safety received the

most emphasis in social practices, which were mostly compliance-driven, whereas more general worker development and community involvement were less regularly integrated. The most significant distinction was found in governance, where formal policies were more prevalent than sophisticated processes like structured risk management and transparent ESG reporting, suggesting reactive rather than deliberate integration. When taken as a whole, the findings confirm the hypothesis and show that the sector's use of ESG is still unequal and restricted. Contractors, lawmakers, regulators, and industry organisations looking to improve compliance frameworks, strengthen ESG capacity, and encourage more organised integration of sustainable practices in construction may find these findings very pertinent. Building on these findings, future studies should improve and evaluate ESG measuring methods unique to the construction sector, especially in developing nations. Longitudinal and mixed-methods research would monitor ESG progress over time and offer a greater understanding of organisational behaviour. Additional investigation into the financial and operational implications of ESG adoption could strengthen the business case for integration, while stakeholder-focused research would offer a broader evaluation of ESG performance and accountability.

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Appendix 1

Table 1: General profile of the respondents

Respondents' Particular	Frequency	Percentage (%)
<u>Field of Qualification</u>		
Construction Management	10	10.53
Quantity Surveying	13	13.68
Civil Engineering	11	11.58
Environmental Management	8	8.42
Sustainable Development	9	9.47
Project Management	15	15.79
Real Estate and Property Development	14	14.74
Architecture	14	14.74
Other (Please specify): Urban planning	1	1.05
TOTAL	95	100
<u>Respondents' Particular</u>	<u>Frequency</u>	<u>Percentage (%)</u>
<u>Highest education level</u>		
Certificate	5	5.26
Diploma	13	13.68
Post Graduate Diploma	4	4.21
Bachelors	24	25.26
Honors	20	21.05
Masters	21	22.11
Doctorate	8	8.42
TOTAL	95	100
<u>Years of experience in the construction industry</u>		
0 – 5	23	24.21
6 – 10	26	27.37
11 – 15	18	18.95
16 – 20	8	8.42
Above 20	20	21.05
TOTAL	95	100
<u>Type of projects involved in</u>		
Small-scale residential and commercial projects	30	31.58
Medium-scale public and private infrastructure projects	47	49.47
Large-scale and complex infrastructure projects	18	18.95
TOTAL	95	100
<u>Company's grade classification</u>		
Grade 1 (Highest)	22	23.16
Grade 2	18	18.95
Grade 3	25	26.32
Grade 4	20	21.05
Grade 5 (Lowest)	10	10.53
TOTAL	95	100

Table 2: Mean Score & Standard Deviation for implementation of ESG practices

Descriptive Statistics			
	Mean Score	Standard Deviation	Rank
Environmental Implementations			
Implements recycling and reuse strategies to minimise construction waste	3.4000	1.29154	1
Actively track and monitor our waste management efforts to ensure compliance with environmental standards	3.2737	1.42502	2
Use of low-volatile organic compound (VOC) paints in our projects	3.2000	1.28494	3
Incorporate renewable energy sources (e.g., solar, wind) to power construction sites	3.1684	1.41160	4
Employing energy-efficient technologies	3.1368	1.25994	5
Have waste segregation systems in place to facilitate proper disposal and recycling	3.1263	1.37022	6
Water conservation technologies, such as rainwater harvesting systems	3.1158	1.44298	7
Use water-saving devices to reduce water consumption	3.0316	1.37958	8
Employing renewable energy sources to power building sites	3.0000	1.34481	9
Ensures that construction activities are planned efficiently to minimise land disturbances	3.0000	1.44399	10
Social Implementations			
Ensures that employees receive fair and competitive wages	3.5789	1.29302	1
Employees are provided with personal protective equipment (PPE)	3.3158	1.53860	2
Invests in employee training and development programs	3.3053	1.26385	3
Actively monitors and reports occupational hazards and incidents	3.2947	1.42077	4
Enforces strict health and safety regulations to protect workers	3.1474	1.40643	5
Promote diversity and inclusivity within our workforce	3.0947	1.32948	6
Engages with local communities to address their concerns regarding our projects	3.0632	1.25317	7
Provide a safe and healthy working environment for all employees	3.0632	1.51454	8
Ensures that employees receive fair and competitive wages	3.5789	1.29302	1
Employees are provided with personal protective equipment (PPE)	3.3158	1.53860	2
Governance Implementations			
Have clear governance policies and procedures to prevent misconduct and theft	3.4255	1.36381	1
Employees and management are held accountable for ethical business practices	3.3895	1.85825	2
Internal audits are conducted regularly to ensure compliance with governance policies	3.3684	1.32931	3
Competitive bidding and fair procurement practices are followed in all transactions	3.2526	1.33662	4
Ethical business practices are encouraged and reinforced through employee training	3.1684	1.43403	5
Promotes diversity in leadership and decision-making roles. Board includes members with diverse expertise and experiences	2.9579	1.37544	6
Provide transparent and timely reports on ESG activities to stakeholders	2.9579	1.39845	7
Provide transparent and timely reports on ESG activities to stakeholders	2.9579	1.47976	8
Risk management strategies are in place to identify and mitigate governance risks	2.9053	1.48806	9