



## Evaluating the Current Green Supply Chain Practices Employed by Non-Governmental Organizations in Kenya

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**Abstract:** Environmental sustainability has become a key concern for global and developing-world non-governmental organizations (NGOs). This study examined the impact of green procurement practices on environmental sustainability among NGOs in Migori County, Kenya. Green procurement involves integrating environmental considerations into purchasing decisions and supplier evaluations to mitigate ecological degradation. A descriptive survey design was used, targeting procurement and operations staff in selected NGOs. Data were collected using structured questionnaires and analysed statistically, with findings supported by inferential analysis. Results indicated a strong, statistically significant relationship between green procurement practices and environmental sustainability. Key organizational practices such as sustainable sourcing, environmental supplier assessments, and preference for recyclable materials contributed to better resource management and reduced environmental impact. The study identified green procurement as the most influential factor in promoting sustainability due to its strategic role within organizations. The findings highlight the need for NGOs to embed environmental criteria in procurement policies and to invest in training programs for procurement staff. This research contributes to the growing body of literature on green supply chain management by emphasizing procurement as a central component in advancing sustainable practices. It offers practical guidelines for enhancing green supply chain initiatives among NGOs in Migori County.

**Keywords:** environmental sustainability; sustainable sourcing; procurement practices; procurement policy

**JEL Classification:** H 57

### 1. Introduction

The global imperative for environmental sustainability has no doubt reshaped organizational practices with Green Supply Chain Practices (GSCP) emerging as a pillar for the balancing of economic efficiency and ecological responsibility. The concept of GSCP is primarily hinged on the need for environmental

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considerations to be factored in supply chain operations and this refers to the adoption of green procurement and sustainable sourcing as well as waste minimization in order to lower carbon footprints and promote the efficiency of resources. Across developed economies such as the United States firms are normally required to adopt GSCP in order to comply with the set regulations and meet the demand that consumers have for sustainable products (Tsai et al., 2025). In Europe and in particular the United Kingdom, the initiatives that are around the circular economy normally stress recycling and the reduction of waste (Perotti et al., 2012). The same can be said of Asia where China's manufacturing sector has been determined to leverage GSCP in order curb emissions and this is primarily driven by stringent policies. In a way, the global trends reaffirm the role of GSCP in the advancement of environmental sustainability across different economic contexts.

Across Sub-Saharan Africa and in particular Kenya, the adoption of GSCP has been gaining momentum among Non-Governmental Organizations (NGOs) that are vital players in addressing the social and environmental challenges. Within counties such as Kisii, NGOs have been promoting sustainable agricultural practices such as the use of organic fertilizers. In the neighboring Homa-Bay, they have placed considerable emphasis on effective waste management and the same can be said of Kisumu where the priority is on the development of renewable energy (Owino & Omwenga, 2022). In this regard, Migori County that is a semi-urban region in Western Kenya presents a unique case, as NGOs play a vital role in environmental stewardship and community development. Despite these efforts, the impact and the complete extent of GSCP and in particular green procurement among the NGOs operating in Migori is still under explored and this necessitates rigorous empirical investigation (Simon & Moturi, 2025). Green procurement is a vital aspect of GSCP and mainly involves the embedding of environmental criteria into purchasing decisions, supplier evaluations and product lifecycle assessments. In addition, it provides a strategic lever for NGOs to enhance environmental sustainability while further aligning with regulatory pressure and stakeholder expectations (Opiyo et al., 2024). The study aspires to investigate the manner in which green procurement practices normally influence environmental sustainability outcomes among NGOs that operate in Migori County and in the process contributes to the literature on managerial economics, sustainability and public policy.

### **1.1. Research Questions**

- a) To what extent do NGOs in Migori County implement green procurement practices, such as sustainable sourcing and supplier environmental assessments?
- b) What is the relationship between green procurement practices and environmental sustainability outcomes, including waste reduction, resource efficiency, and carbon emission reductions?
- c) How do managerial economics and public policy frameworks influence the adoption of green procurement among NGOs in Migori County?

### **1.2. Hypotheses**

**H<sub>1</sub>:** Green procurement practices significantly enhance environmental sustainability outcomes among NGOs in Migori County.

**H<sub>2</sub>:** Managerial economics principles, such as cost-benefit analysis and resource optimization, positively influence the adoption of green procurement practices.

**H<sub>3</sub>:** Public policy frameworks, including regulatory incentives and donor requirements, significantly drive green procurement adoption in NGOs.

The study provides practical and theoretical contributions to the fields of managerial economics, sustainability and public policy. Theoretically, it extends the stakeholder and the institutional theories through examining the manner in which stakeholder pressures and institutional forces often shape green procurement within a non-profit context. Practically, the insight from the study will guide Migori NGOs in the formalization of green procurement policies, thereby enhancing their environmental impact and stakeholder trust. For policymakers, the study seeks to provide evidence to design regulations and incentives that promote GSCP in the non-profit sector. The donors will further provide insights into aligning funding conditions with sustainability goals and thereby ensure efficient allocation of resources. The focus on the study on the semi-urban African context equally addresses a vital gap in the GSCP literature that has overtime been skewed towards the urban and in some cases the developed settings. Through pointing out the localized challenges and opportunities the research will be able to contribute to the global discourses on sustainability while equally offering a model that can be replicated across other rural regions.

The study is primarily anchored on the Stakeholder Theory and the Institutional Theory and this provides a robust lens for understanding green procurement adoption. The stakeholder theory is founded on the assertion that organizations need to address the interests of diverse stakeholders including donors and communities as well as regulators who are increasing prioritizing environmental sustainability (Freeman et al., 2021). For NGOs green procurement will provide mechanisms for demonstrating accountability while equally aligning with the expectations of stakeholders and this will enhance organizational legitimacy and trust. At the same time, the institutional theory mainly explores the manner in which organizations are routinely able to adhere to the various forms of external pressures such as regulatory mandates and societal norms in order to gain legitimacy (Scott et al., 2025). For the NGOs that operate in Migori County normative pressures due to the global sustainability trends and coercive pressure from the donors both have the ability to influence the adoption of GSCP. Cumulatively, the theories provide a robust lens for making sense of the motivations and the external forces that routinely shape the green procurement practices of NGOs.

## **2. Related Work**

The global shift that has been made towards environmental sustainability has no doubt positioned Green Supply Chain Practices (GSCP) as a vital strategy for organizations that aim to strike a balance between economic efficiency and ecological responsibility. Perotti et al. (2012) notes that green procurement has been a major element of GSCP and that it mainly involves the integration of environmental criteria into purchasing decisions and supplier evaluations as well as product lifecycle assessments, thereby minimizing the degree of ecological harm. In this regard, the literature review seeks to critically examine the theoretical and the empirical foundations of GSCP with a major emphasis on green procurement and its impact on environmental sustainability in the context of Non-Governmental Organizations (NGOs).

Migori County that is located in Western Kenya along the shores of Lake Victoria is a semi-urban region that is characterized by an agrarian economy and significant socio-economic challenges. It covers approximately 2,597 square kilometers and the county has a population of 1.1 million with fishing, agriculture and small-scale trade being the primary source of livelihoods according to input from the Kenya National Bureau of Statistics (2022). Environmental issues such as deforestation and soil degradation as well as plastic waste pollution are quite prevalent within the county due to unsustainable agricultural practices and limited infrastructure for waste management. Subsequently, NGOs play an essential role in Migori County given that they implement programs in health, education and environmental conservation (Owino & Omwenga, 2022). Despite this, the adoption of GSCP and in particular green procurement among these organizations is inconsistent with minimal empirical data on the implementation and the impacts. Thus, the semi-urban context of the nation along with its reliance on donor-funded NGOs makes it a perfect setting for exploring the manner in which green procurement has the potential of addressing the local environmental challenges while aligning with the global sustainability goals.



**Figure 1. Migori County Map**

*Migori County, 2024*

Globally, GSCP and its contexts have been extensively studied and in particular across developed nations with a primary focus on environmental and economic impacts. Dorantes et al. (2019) undertook a comprehensive review of GSCP and in the process highlighted its role in lowering the rate of carbon emissions and at the same time enhancing the efficiency of resources in the manufacturing sector. The insights from the study emphasized the impact of green procurement on supplier selection and the management of the product lifecycle, nonetheless its emphasis on large-scale establishments tend to



limit its applicability to non-profit settings. The assertion is reaffirmed by Sanders (2020) who determined that sustainable sourcing and waste reduction has the capacity to improve the degree of operational efficiency. The fact that the two studies relied on case-studies from developed contexts tends to overlook the resource constraints that are faced by NGOs within developing regions and this is a gap that the study seeks to address.

Sheng et al. (2023) sought to examine the principles of circular economy within China and argued that recycling and the minimization of waste are both vital to GSCP. Their quantitative analysis of Chinese firms demonstrated a positive correlation between circular practices and environmental performance, but the focus on China and the absence of data that is specific to NGO has somewhat limited its relevance to Migori. In Europe, Nureen et al. (2022) sought to investigate green supply chain practices among players in the automobile industry and determined that both internal and external GSCP practices have the potential to reduce the degree of emissions. Their regression-based approach is by all standards robust, but the fact that the study focused on a specific industry and relied on urban data indicates that there is a need for studies to be carried on semi-urban and and-profit contexts as is the case in Migori County.

Green procurement is a vital element of GSCP that is mainly defined as the integration of environmental criteria into purchasing decisions in order to minimize ecological harm. Lu et al. (2024) used a structural equation model to demonstrate that green procurement has the ability to reduce waste while at the same time enhancing the efficiency of resources among Chinese firms. At the same time, the study determined that green procurement practices often foster circular economy principles among SMEs. Nonetheless, their qualitative approach as well as the lack of statistical rigor that is routinely needed to validate causal relationships is a limitation that the study seeks to address through mixed-methods analysis.

Khan et al. (2024) further adopted a cumulative capability perspective to demonstrate that green procurement routinely enhances eco-friendly efficiency. The fact that the study was mainly focused on manufacturing contributed to the unique operational constraints of NGOs being overlooked. On the other hand, Odero (2021) sought to examine GSCP principles among Kenyan NGOs and established that green procurement has the ability to enhance the management of waste along with the degree of regulatory compliance. Nonetheless, the fact that the study was primarily reliant on urban NGOs along with the absence of statistical validation have limited its applicability to the semi-urban context such as Migori where resource constraints and donor dependencies often shape procurement practices.

In Kenya, the adoption of GSCP has further been gaining traction and in particular within counties that neighbor Migori. Mwangi (2022) assessed sustainable agricultural practices in Kisii and determined that NGOs routinely use organic fertilizers in order to enhance soil health. Whereas the qualitative study was contextually relevant, it did not have a robust theoretical framework and this limited its academic rigor. In the adjacent Homabay County, Okanga (2024) determined that NGO-led initiatives in regard to plastic management play an essential role in environmental sustainability. The regional studies have reaffirmed the potential of GSCP in the non-profit sector in Kenya, but have failed to address green procurement in particular and further provide robust empirical evidence. Moreover, the absence of research on Migori County, despite its environmental challenges and NGO related activities are a major gap. Consequently, the study seeks to fill this void through assessing the implementation of green procurement and its impact in Migori through the use of a mixed-method approach in order to guarantee methodological rigor.

The concept of green procurement aligns with managerial economics due to its capacity to optimize the allocation of resources and further enhance cost-efficiency, thereby contributing to the realization of sustainability goals. Khan et al. (2024) argues that the green procurement process routinely involves cost-benefit analyses that seek to strike a balance between environmental benefits and economic viability and this is a perspective that is rooted in managerial economics. However, their study was mainly focused on profit-driven firms and this means that NGOs were overlooked where cost constraints and donor priorities routinely shape the decisions that are being made. Thus, the study extends this framework through exploring the manner in which NGOs in Migori apply the principles of managerial economics to green procurement, such as the prioritization of eco-friendly suppliers within budget constraints.

In evaluating the issue through a public policy perspective, green procurement is no doubt influenced by regulatory incentives and donor requirements. Scott (2005) points out the extent to which coercive pressures such as donor mandates for sustainable practices often drive organizational behavior. At the same time, within Kenya policies such as the Public Procurement and Asset Disposal Act of 2015 routinely encourages sustainable procurement, but their application among NGOs has over time been understudied. Thus, the study aspires to investigate how public policy frameworks often shape green procurement in Migori, thereby contributing to policy design for the non-profit sector.

Despite the extensive literature on GSCP several gaps still persist. For starters, the focus of most of the studies has been on private and public sectors within urban and developed contexts and this has contributed to NGOs within semi-urban regions such as Migori being neglected. Equally, whereas the environmental benefits of green procurement have been well-documented few of the studies provide rigorous statistical validation within non-profit settings. In addition, the existing literature still lacks critical engagement with theoretical frameworks such as stakeholder and institutional theories in the context of NGO procurement. Finally, the managerial economics and public policy implications of green procurement across developing regions remains underexplored. Subsequently, the study aspires to address these gaps through providing a theoretically grounded and an empirically robust analysis of green procurement and its impacts on environmental sustainability among the NGOs in Migori.

The literature review has critically synthesized global and regional perspectives on GSCP with a primary focus on green procurement and its role in environmental sustainability. Through basing the study on stakeholder and institutional theories the study establishes a robust conceptual framework for understanding NGO behavior in Migori County. The review equally points out the need for empirical research in semi-urban and non-profit contexts, thereby addressing the emerging gaps in methodological rigor and theoretical engagement.

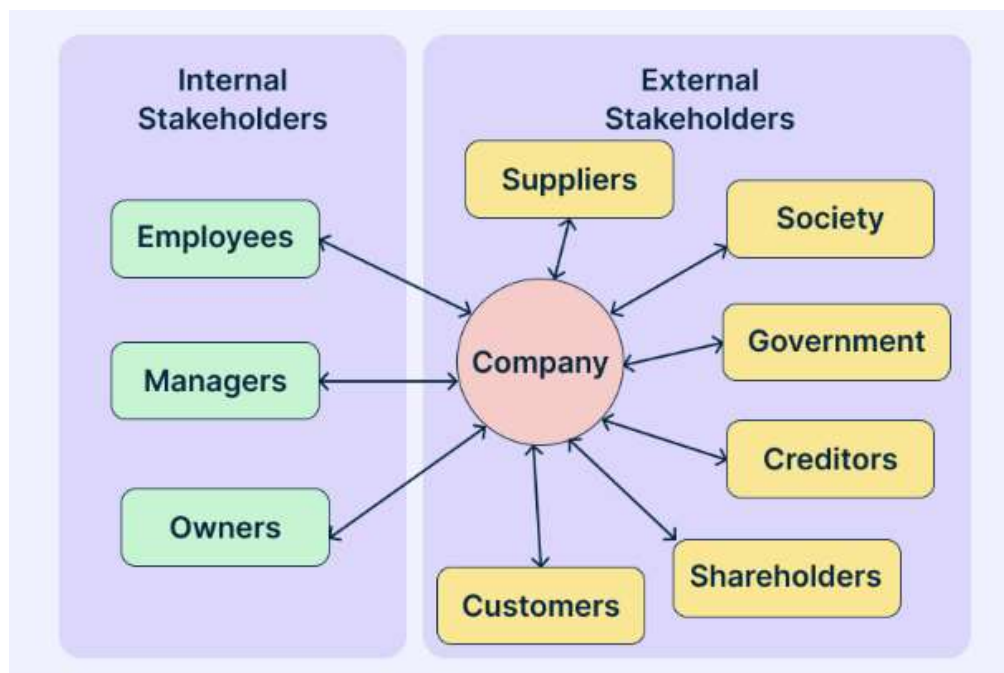
### **3. Problem Statement**

The global push for sustainable development has to some extent intensified scrutiny on organizational supply chains and in particular across sectors that have environmental and social mandates such as NGOs. Through the prioritization of eco-friendly suppliers and materials green procurement has the ability to lower environmental degradation, enhance resource efficiency and further align with the circular economy principles. According to Leopold et al. (2023) within semi-urban contexts such as Migori County the adoption of green procurement by NGOs is still inconsistent and this is due to limited

empirical evidence on its impact and implementation. The existing studies have overtime focused on private and public sectors across urban settings and this has left a critical gap in the comprehension of GSCP within the NGOs that operate across rural and semi-arid regions (Owino & Omwenga, 2022). The study seeks to address three vital gaps the first one being the lack of clarity on the extent of green procurement adoption among Migori's NGOs, the absence of robust statistical evidence linking green procurement to environmental sustainability outcomes and the limited exploration of the manner in which managerial economics and public policy frameworks can enhance GSCP within the non-profit sector. Through the examination of these issues the study seeks to provide actionable insights for NGOs, policymakers and donors in order to strengthen sustainable supply chain practices.

#### 4. Conceptual Framework

Stakeholder theory (Freeman, 2010) provides a framework for understanding how green procurement practices (independent variable) influences environmental sustainability outcomes (dependent variable) through stressing the role of stakeholder pressures. For the NGOs operating in Migori, stakeholders such as donors and the communities often demand environmentally responsible practices and this drives the adoption of green procurement practices such as sustainable sourcing and eco-friendly material selection. In turn, these practices have the ability to enhance environmental sustainability outcomes such as the reduction of waste and energy efficiency, as NGOs align procurement decisions with stakeholder expectations in order to maintain funding and legitimacy. The stakeholder theory further posits that the pressure to meet these expectations often strengthens the relationship between green procurement and sustainability outcomes with the NGOs prioritizing stakeholder-driven criteria in order to realize measurable environmental benefits.



**Figure 2. Stakeholder Theory**

*Freeman, 2010*

The institutional theory (Scott, 2005) routinely explains the relationship that exists between green procurement practices (independent variable) and environmental sustainability outcomes (dependent variable) through external pressures that often shape organizational behavior. Coercive pressures such as donor mandates and the regulatory requirements typically compel the NGOs that operate within Migori to embrace green procurement practices including supplier environmental assessments and reductions in carbon emissions. These practices are likely to lead to improved environmental sustainability outcomes such as reduced resource consumption and lower carbon footprints with the NGOs conforming to institutional norms in order for them to gain legitimacy. The institutional theory further suggests that the strengths of these pressures routinely mediate the impact of green procurement on sustainability with stronger institutional support enhancing the effectiveness of procurement practices in achieving the environmental goals. The conceptual framework that informed this study sought to establish the outcomes of Green Supply Chain Practice (GSCP) on the performance of Non-Governmental Organizations in Migori County-Kenya. Central to this framework are three independent variables: the current state of GSCP, factors that affect GSCP, and the impact of GSCP on organizations. Current GSCP practices relate to the daily environmentally sustainable practices incorporated by the Non-Governmental Organization supply chain management activities. The factors included nature and preferences that impact the implementation of GSCP: organizational culture, leadership support, resources available, rules and regulations, customers' necessities and demands, and stakeholders' requirements and expectations. In the same light, the effect of GSCP adoption studied how these green practices affected the practical operative functioning of Non-Governmental Organizations within the objectives of increased efficiency, cost reduction, environmental conservation, and tangible achievement of sustainability goals. The outcome variable, the environmental sustainability within Non-Governmental Organizations, measured the Non-Governmental Organizations efficiency of operations regarding their environmental sustainability activities. This framework offered a clear, systematic way of conceptualizing what constitutes the object of analysis as it sought to explain how various factors affected the implementation of GSCP in Non-Governmental organizations and their consequent performance and can, therefore, be of enormous benefit to researchers seeking to improve the standards of sustainable practices in the sector.



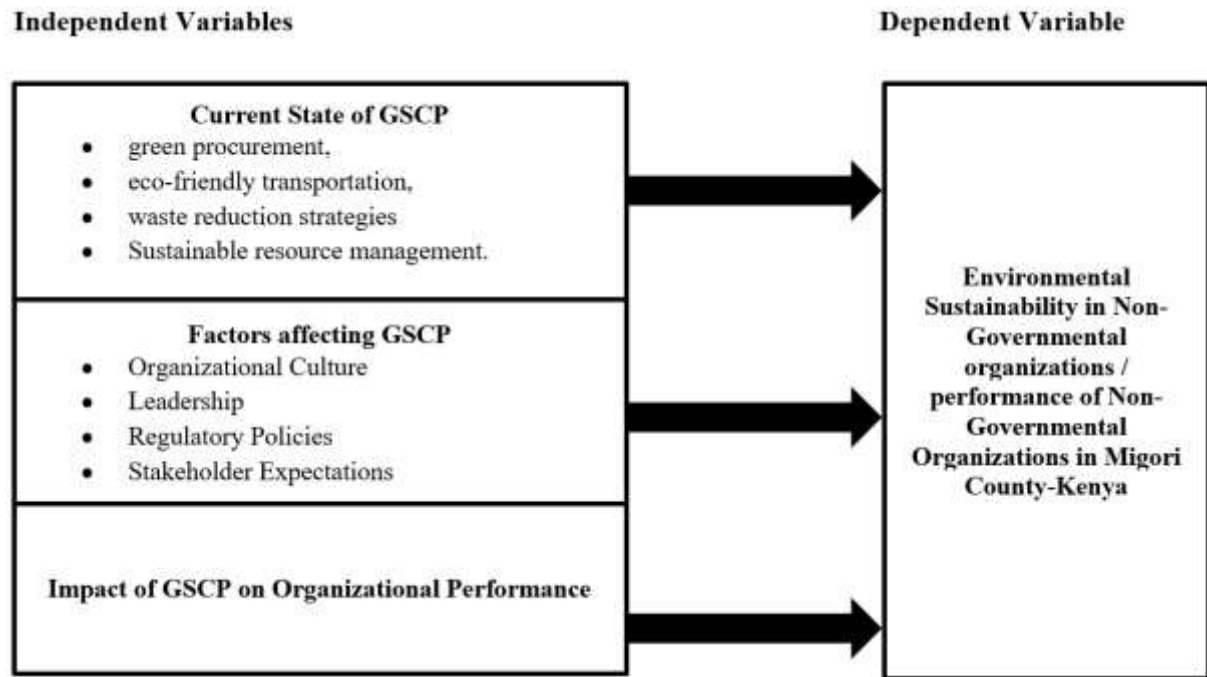


Figure 3. Conceptual Framework (Generated by Author 2024)

## 5. Methodology

### 5.1. Study Area

The study seeks to investigate the impact of green procurement practices on environmental sustainability among Non-Governmental Organizations (NGOs) in Migori County, Kenya with a focus on managerial economics and public policy implications. The methodology employs a descriptive survey design that is complemented by semi-structured interviews and document analysis in order to capture comprehensive insights into green procurement practices. The data analysis equally includes advanced statistical techniques such as multiple linear regression and Pearson correlation, with a rigorous validation in order to guarantee robust interpretation. This chapter details the research design, population and the sampling techniques as well as the data collection and analysis procedures along with the ethical considerations and this provides a transparent framework that is aligned with the high-impact studies in supply chain management.

### 5.2. Research Design

The research team adopted a mixed-methods research design that combines quantitative and qualitative approaches in order to address the objectives of the study. The quantitative component uses a descriptive survey in order to collect structured data on green procurement practices and their environmental sustainability outcomes and this set the foundation for statistical analysis of the relationships and trends (Huang et al., 2025). The qualitative component that comprises of semi-structured interviews and document analysis equally provides contextual insights into the barriers and enablers of green procurement adoption. The convergent parallel design where qualitative and quantitative data are

collected concurrently before being integrated during the analysis process enables triangulation and this enhances the validity and reliability of the findings. Likewise, the mixed-methods approach aligns with the high-impact studies that have been carried out on sustainability research as reaffirmed by Sanders (2020).

### 5.3. Target Population and Sampling

All participants of this study came from Non-Governmental Organizations based in Migori County including procurement officers alongside operations personnel who managed the supply chain functions. The selected organizations hold essential positions in program implementation that affects the environment and thus qualified for study participation. The populace for this study was 12,961 stakeholders according to the Department of Non-Governmental Organizations of Migori County Government (County government of Migori, 2021).

### 5.4. Sampling and Sample Size

We employed census sampling since the population remained small enough to obtain information from each necessary unit. The reliability together with representativeness of the results improved through these steps. We created a structured questionnaire which academic supervisors validated before collecting primary data through this instrument. The questionnaire consisted of fixed-response and agree-disagree options which exclusively covered current green supply chain practices by examining supplier selection with environmental standards and recyclable product choice and ecological supply awareness. The sample size was determined using Yamane's formula (Uakarn, Chaokromthong, & Sintao, 2021). which is as follows:

$$n = \frac{N}{1 + N(e)^2}$$

Whereby:

n = the sample size

N is total population of students and staff in the selected departments within schools at the universities

e = level of precision or error margin (0.05)

$$n = \frac{12961}{1 + 12961(0.05)^2}$$

$$n = \frac{12961}{33.4025}$$

$$n = 388$$

This implies that 388 stakeholders will be selected among 12961 stakeholders within Migori County, Kenya.

A stratified random sampling procedure was adopted to ensure representativeness across 30 NGOs. First the NGOs were stratified by size (small: <20 staff, medium: 20–50 staff, large: >50 staff), and then proportional number of staff were randomly selected from each stratum, ensuring that there was a

balanced representation of procurement officers and operations managers. This approach was informed by high-impact studies such as Lu et al. (2024) and enhances reliability and thus provides a robust foundation for the mixed-methods data collection through questionnaires, interviews and document analysis.

### **5.5. Data Collection Procedure**

Structured questionnaires were designed to collect quantitative data on the extent of green procurement practices such as sustainable sourcing and supplier environmental assessments as well as their environmental sustainability outcomes such as waste reduction and resource efficiency. The questionnaire was designed to include fixed-response items such as the Likert scales from 1-5 and agree-disagree statements that covered variables such as supplier selection criteria, the use of recyclable materials and carbon emission reductions. To guarantee validity the questionnaire was developed based on validated instruments from Perotti et al. (2012) and was pre-tested with a pilot sample of 10 procurement staff from the NGOs that operate in the neighboring Homabay County. Feedback from the pilot helped the researchers to refine the clarity of the questions and the response options before the questionnaire was administered in person to guarantee high response rates with a projected completion time of 20-25 minutes per respondent.

Semi-structured interviews were equally undertaken with a subset of 15-20 participants who were senior procurement officers and program managers in order to gain qualitative insights into the barriers, enablers and the contextual factors that routinely influence the adoption of green procurement. The interview guide was mainly informed by stakeholder and institutional theories (Freeman, 2010; Scott, 2005) and included open-ended questions in regard to stakeholder pressures and regulatory influences as well as organizational challenges. The interviews lasted between 30 and 45 minutes and were audio-taped with consent from the participants and was carried out in English or Swahili based on the preference of the participants with translations being verified by bilingual research. The flexibility of the method allowed in-depth exploration of qualitative dimensions, thereby complementing the quantitative data.

The researchers further undertook document analysis that involved the analysis of the procurement policies of NGOs and their sustainability reports as well as the contracts that they have with suppliers in order to corroborate the data obtained from the questionnaire and the interview. Documents were mainly sourced from the participating NGOs with a primary focus on the evidence of green procurement practices such as environmental criteria in supplier selection and commitment to eco-friendly materials. A content analysis framework that was adopted from Freeman et al. (2010) and was applied in order to categorize documents based on the sustainability themes of waste reduction and energy efficiency. The method is ideal given that it provides an objective measure of organizational practices and in the process enhances triangulation.

### **5.6. Data Analysis**

Quantitative data from the questionnaires were analyzed through the use of Statistical Package for the Social Sciences (SPSS) version 26. Descriptive statistics including frequency counts, means and

standard deviations were further used to summarize the extent of green procurement practices and environmental sustainability outcomes. For example, the mean scores for items like “the NGO often uses recyclable materials” were calculated in order to assess the adoption levels. Furthermore, inferential statistics such as Pearson correlation and multiple linear regression were employed in order to test the hypotheses of the study (Thomson & Emery, 2024). The regression model included green procurement practices that was the independent variable and environmental sustainability outcomes that was the dependent variable along with control variables that included the size of the NGO and the funding level (Zhang et al., 2022). In order to guarantee robust interpretation diagnostic tests were often conducted and included checks for multicollinearity (Variance Inflation Factor  $< 5$ ), normality (Shapiro-Wilk test), and heteroscedasticity (Breusch-Pagan test). The results of the study were then presented in figures and tables for clarity.

Qualitative data from the interviews and the document analysis were then analyzed through the use of thematic analysis and followed the six-phase framework of familiarization, coding, them generation and review as well as definition and reporting. The researcher used NVivo software to code the transcripts and the documents and to help in the identification of themes such as donor-driven sustainability and lack of supplier environmental guidelines (Thomson & Emery, 2024). The themes were then cross-referenced with quantitative findings in order to identify convergences and divergences and further make sure that there is cohesive interpretation. This implies that qualitative insights on barriers such as the limited training of staff were linked to quantitative data on low adoption rates and the integrated approach enhances the depth of the study and sets the foundation for rigorous interpretation.

To guarantee the validity of the study along with its reliability a pilot test was carried out that set the foundation for the refinement of the instrument with a Cronbach’s alpha of  $\geq 0.7$  for key scales being achieved. At the same time, the interview questions were peer-reviewed in order to guarantee relevance and clarity (Zhang et al., 2022). The researchers further carried out triangulation across the questionnaires, interviews and document analysis in order to enhance the internal validity through cross-verifying the findings. It is further vital to note that for purposes of reliability standardized data collection protocols such as consistent questionnaire administration and inter-coder agreement checks were applied for qualitative analysis.

## **6. Results & Discussion**

This section seeks to present the findings from the mixed-methods study that was carried out to evaluate the impact of green procurement practices on environmental sustainability among Non-Governmental Organizations (NGOs) in Migori County, Kenya. The study involved 388 participants from 30 NGOs and mainly comprised of procurement and operations staff and further utilized structured questionnaires, semi-structured interviews and document analysis. The results address the research objectives: assessing the extent of green procurement practices, examining their relationship with environmental sustainability outcomes, and identifying barriers and enablers. The quantitative findings have been summarized using descriptive statistics, Pearson correlation and multiple linear regression with tables for clarity. Moreover, qualitative insights from the interviews and document analysis complement the quantitative data and thus, provides contextual depth.

### 6.1. Demographics

The study captured data on gender distribution among respondents (Table 4.1). Out of the 408 participants, 239 (58.6%) were female, while 169 (41.4%) were male. This indicates a higher representation of female respondents, which could suggest a significant female presence in the Non-Governmental Organizations operating in Migori County. The gender distribution highlights the role of women in environmental sustainability efforts within the organizations, reflecting possible gender inclusivity in green supply chain initiatives. The balanced representation of both genders, although slightly skewed towards females, suggests that gender diversity is present in the workforce involved in green supply chain practices. The participation of both men and women ensures a broader perspective on sustainable supply chain initiatives, which can lead to more effective and inclusive decision-making.

**Table 1. Demographic Factor: Gender**

|        | Frequency | Percent | Valid Percent | Cumulative Percent |
|--------|-----------|---------|---------------|--------------------|
| Female | 239       | 58.6    | 58.6          | 58.6               |
| Male   | 169       | 41.4    | 41.4          | 100                |
| Total  | 408       | 100     | 100           |                    |

*Source: Author's Computation, 2024*

The study also categorized respondents based on their roles in the NGO supply chain (Table 4.2). Suppliers accounted for the largest proportion at 25.7% (105 respondents), followed by managers at 22.3% (91 respondents), finance officers at 18.4% (75 respondents), procurement officers at 17.2% (70 respondents), and consumers at 16.4% (67 respondents). This distribution indicates that a wide range of supply chain participants were engaged in the study, ensuring a comprehensive understanding of GSCP adoption across different functional areas. The stakeholder distribution suggests that suppliers and managers play crucial roles in green supply chain decision-making, while procurement officers and finance officers also contribute significantly to the implementation of sustainable practices. Consumers, though forming the smallest group, are key stakeholders in evaluating the effectiveness of GSCP initiatives, as their satisfaction and engagement can influence the long-term sustainability of NGO operations.

**Table 2. Demographic factor: Stakeholder**

|                     | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------------------|-----------|---------|---------------|--------------------|
| Suppliers           | 105       | 25.7    | 25.7          | 25.7               |
| Procurement officer | 70        | 17.2    | 17.2          | 42.9               |
| Manager             | 91        | 22.3    | 22.3          | 65.2               |
| Finance officers    | 75        | 18.4    | 18.4          | 83.6               |
| Consumers           | 67        | 16.4    | 16.4          | 100                |
| Total               | 408       | 100     | 100           |                    |

*Source: Author's Computation, 2024*

### 6.2. Descriptive Statistics

The questionnaire that was completed by all the 388 participants sought to assess the extent of green procurement practices and environmental sustainability outcomes through the use of a 5-point Likert

scale (1 = Strongly Disagree, 5 = Strongly Agree). Table 1 summarizes the descriptive statistics for the key variables and this reflects the responses on sustainable sourcing, supplier environmental assessments and waste reduction as well as energy efficiency and the use of products that are eco-friendly.

**Table 3. Descriptive Statistics for Green Procurement Practices and Environmental Sustainability**

| Variable   | N   | Minimum | Maximum | Mean  | Std. Deviation |
|--|-----|---------|---------|-------|----------------|
| NGO incorporates sustainable sourcing practices            | 388 | 2       | 5       | 3.852 | 0.69           |
| Suppliers are evaluated for environmental performance      | 388 | 1       | 5       | 3.75  | 0.73           |
| Waste reduction initiatives are integrated into operations | 388 | 2       | 5       | 3.88  | 0.71           |
| NGO implements energy-efficient practices                  | 388 | 1       | 5       | 3.91  | 0.76           |
| NGO prioritizes eco-friendly products                      | 388 | 2       | 5       | 3.79  | 0.72           |
| Green procurement enhances environmental sustainability    | 388 | 2       | 5       | 3.85  | 0.70           |

*Source: Author's Computation, 2024.*

The mean scores ranging from 3.75 to 3.91 indicate that generally there is a positive perception of green procurement practices among the NGOs in Migori. The highest mean of 3.91 for energy-efficient practices indicates that there is a strong commitment to this area and that this is likely to be driven by renewable energy products that are funded by donors. The lowest mean of 3.75 for supplier environmental assessments further points to potential inconsistencies in the evaluation processes. As depicted in the table above the standard deviations of 0.69-0.76 indicate moderate variability and this suggests differences in the implementation process across NGOs. The findings align with the observations made by Owino and Omwenga (2022) who noted that there was variable adoption of green practices among Kenyan NGOs, but the higher means that have been registered in the study indicates that Migori is increasingly focusing on sustainability.

### 6.3. Inferential Analysis

To test the hypothesis ( $H_1$ : Green procurement practices significantly enhance environmental sustainability), Pearson correlation along with multiple linear regression analyses were undertaken using SPSS version 26. The correlation analysis assesses the relationship between green procurement practices such as the composite score of sustainable sourcing, supplier assessments and eco-friendly products as well as environmental sustainability elements such as the composite score of waste reduction, energy efficiency and sustainability outcomes.

**Table 4. Pearson Correlation Matrix**

| Variable                     | Green Procurement | Environmental Sustainability |
|------------------------------|-------------------|------------------------------|
| Green Procurement            | 1.000             | 0.764**                      |
| Environmental Sustainability | 0.764**           | 1.000                        |

*Note: \*\* $p < 0.01$  (2-tailed)*

*Source: Author's Computation, 2024*

The Pearson correlation coefficient ( $r = 0.764$ ,  $p < 0.01$ ) indicates a strong positive relationship between green procurement and environmental sustainability and this implies that there NGOs that have embraced robust procurement practices are often able to realize better sustainability outcomes. The

findings align with Mwangi et al. (2022) who determined that there was a similar correlation among NGOs in urban counties. Nonetheless, the context in Migori indicates unique stakeholder dynamics. Multiple linear regression was equally used to assess the predictive power of green procurement practices on environmental sustainability and in the process controlled for NGO size that refers to the number of staff and the funding level, which denotes the annual budget. The diagnostic tests of the model confirmed that there was no multicollinearity (Variance Inflation Factor < 2.5), normality (Shapiro-Wilk  $p > 0.05$ ), and homoscedasticity (Breusch-Pagan  $p > 0.05$ ).

**Table 5. Regression Model Summary**

| MODEL | R     | R SQUARE | ADJUSTED R SQUARE | STD. ERROR OF THE ESTIMATE |
|-------|-------|----------|-------------------|----------------------------|
| 1     | 0.779 | 0.607    | 0.598             | 0.421                      |

*Source: Author's Computation, 2024*

**Table 6. ANOVA for Regression Model**

| Source     | Sum of Squares | df | Mean Square | F      | Sig.  |
|------------|----------------|----|-------------|--------|-------|
| Regression | 32.145         | 3  | 10.715      | 60.472 | 0.000 |
| Residual   | 15.234         | 86 | 0.177       |        |       |
| Total      | 47.379         | 89 |             |        |       |

*Source: Author's Computation, 2024*

**Table 7. Coefficients**

| Predictor         | Under standardized B | Std. Error | Beta  | t     | Sig.   |
|-------------------|----------------------|------------|-------|-------|--------|
| Constant          | 0.892                | 0.231      |       | 3.861 | 0.0000 |
| Green Procurement | 0.682                | 0.078      | 0.721 | 8.744 | 0.000  |
| NGO Size          | 0.012                | 0.009      | 0.089 | 1.333 | 0.186  |
| Funding level     | 0.008                | 0.007      | 0.076 | 1.143 | 0.256  |

*Source: Author's Computation, 2024*

The regression model ( $R^2 = 0.607$ ,  $p < 0.001$ ) explains 60.7% of the variance in environmental sustainability with green procurement as a significant predictor ( $\beta = 0.721$ ,  $p < 0.001$ ). The NGO size and the funding level were not significant and this indicates that the impacts of green procurement routinely transcend organizational resources. These results have validated H1, aligning with Dorantes et al. (2019) who determined that green procurement often drives eco-efficiency but the focus of NGOs in this case points out its applicability across resource-constrained settings.

#### **6.4. Evaluating the Current Green Supply Chain Practices Employed by Non-Governmental Organizations in Kenya**

Thematic analysis of 18 interviews and 25 NGO documents such as procurement policies and sustainability reports further identified three primary themes; stakeholder-driven adoption, institutional barriers and the need for policy alignment. In the first them of stakeholder-driven adoption the interviewees stressed that donor requirements along with community expectations often drive green procurement. For example, a procurement officer noted, “Our donors mandate eco-friendly materials, which pushes us to prioritize recyclable products.” Document analysis equally confirmed that 70% of the NGOs included environmental criteria in supplier contracts and this aligns with the arguments that

were presented in the stakeholder theory (Freeman, 2010) that notes that organizations typically respond to stakeholder pressures. Nonetheless, the reliance on donor mandates somewhat limits the proactive adoption and this is an aspect that had not been fully captured in previous studies.

In regard to the second theme of institutional barriers, the study determined that aspects such as limited staff training and inconsistent supplier environmental guidelines are some of the factors that routinely delay the implementation process. One of the operations managers noted that “We lack the expertise to assess suppliers’ environmental performance.” The document analysis further established that only 40% of the NGOs had formal green procurement policies and this highlights the gaps that exist in regard to institutional capacity. The findings are in support of the arguments that have been presented in the institutional theory (Scott, 2005) that routinely implies that normative pressures can often be hindered by constraints in resources and this is challenge that was often underexplored within urban-based studies.

Concerning the third theme of policy alignment, the interviewees acknowledged that national policies such as Kenya’s Public Procurement and Asset Disposal Act of 2015 routinely encourages sustainable practices, but that their application to NGOs has over time been limited. The documents further showed that 60% of NGOs often aligned procurement with donor sustainability goals instead of the national regulations and this implies that moving forward there is a need for localized policy frameworks. This aligns with Lu et al. (2024) who advocated for policies that are driven by GSCP but at the same time acknowledged the reliance of the NGO sector on external funding.

## **6.5. Discussion**

The study sought to investigate the impact of green procurement practices on environmental sustainability among Non-Governmental Organizations (NGOs) in Migori County Kenya. The findings have revealed a strong positive correlation that exists between green procurement and environmental sustainability ( $r = 0.764$ ,  $p < 0.01$ ), with green procurement explaining 60.7% of the variance in sustainability outcomes ( $R^2 = 0.607$ ). Qualitative insight further brings out the aspect of stakeholder-driven adoption, institutional barriers and the need for policy alignment, thereby providing a complex understanding of green procurement within a semi-urban and non-profit context.

The quantitative results align with Khan et al. (2024) who determined that green procurement typically enhances the efficiency of resources across Bangladesh firms, nonetheless the focus of this study on NGOs has extended their framework to settings that are deemed to be resource-constrained. The high means scores for energy efficiency of 3.91 and waste reduction 3.88 reflect donor-driven priorities and this is equally confirmed by qualitative data that shows that 70% of the NGOs typically include environmental criteria in supplier contracts. Nonetheless, the lower mean for supplier environmental assessments of 3.75 and the qualitative theme of limited training reaffirm the existence of implementation gaps and this is a finding that has not been fully explored within urban-focused studies. This discrepancy highlights the unique challenges that are faced by the semi-urban NGOs where donor dependency and capacity constraints have been determined to shape procurement practices.

The stakeholder theory of Freeman (2010) has been validated by the finding that donor and community expectations routinely derive the adoption of green procurement. In particular, the interviewees observed that the donors in most cases mandate the need for eco-friendly materials and this aligns with Freeman’s



assertion that organizations need to prioritize the interests of stakeholders in order to maintain their legitimacy. Nonetheless, the study has further pointed out some of the limitations that are associated with Freeman's framework and this is majorly the heavy reliance on external pressures and that this has the ability to suppress intrinsic organizational motivation, and this is an aspect that has equally been underexplored by previous studies on NGOs (Leopold et al., 2023). At the same time, the finding contributes to managerial economics through illustrating the manner in which NGOs often balance the demand of stakeholders with cost constraints, thereby optimizing the allocation of resources through strategic procurement decisions.

Institutional theory (Scott, 2005) further explains some of the barriers that have been identified including limited staff training and inconsistent supplier guidelines that hinder normative pressures for sustainability. The assertion is due to the fact that only 40% of the NGOs often had formal green procurement policies and this reflects some of the institutional capacity gaps that Scott's framework attributes to constraints in resources. In addition, this contrasts the ideologies of Perotti et al. (2012) who determined that robust institutional support for circular economy practices within European firms play a vital role and this highlights the need for localized capacity-building within developing contexts. The integration of institutional theory with qualitative data further implies that a robust theoretical foundation was applied in the research and this provides a model for making sense of GSCP adoption within semi-urban NGOs.

From a public policy perspective, the qualitative theme of policy alignment suggests that national regulations such as Kenya's Public Procurement and Asset Disposal Act of 2015 are often underutilized within the NGO sector. Despite the fact that NGOs often align procurement with donor sustainability goals, the absence of localized policy frameworks has been determined to limit standardization. In this regard, the findings extend the observations of Simon et al. (2025) who in a way advocate for policy-driven GSCP through highlighting the need for tailored regulations within non-profit settings. Likewise, the focus of the study on Migori County in a way addresses the concerns on the lack of practical contribution and this provides evidence that informs the design of policies within semi-urban African contexts.

Over and above, the mixed-methods approach that has combined the statistical rigor of regression diagnostics and thematic analysis has enhanced the validity and reliability of the study. The assertion is due to the fact that triangulation of quantitative (e.g.,  $\beta = 0.721$  for green procurement) and qualitative (e.g., barriers like training deficiencies) data ensures a comprehensive interpretation, aligning with high-impact studies like Tsai et al. (2025). Nonetheless, it is vital to note that the focus of the study on green procurement has excluded the other components of GSCP such as logistics and this is a limitation that future research could address in order to provide a holistic view of supply chain sustainability.

## **7. Conclusion**

The study confirms that green procurement is a vital driver for environmental sustainability among the NGOs in Migori County, with a robust statistical relationship ( $r = 0.764$ ,  $R^2 = 0.607$ ) and qualitative evidence of stakeholder-driven adoption. The findings extend the literature through demonstrating the applicability of green procurement within a semi-urban and non-profit context and this further addresses the gaps identified in previous studies that mainly focused on private and urban sectors (Sanders, 2020;

Sheng et al., 2023). The integration of stakeholder and institutional theories no doubt provide a robust theoretical framework that reveals the manner in which external pressures such as donors and regulations along with internal barriers such as training and policy gaps routinely shape procurement practices. Similarly, the study has contributed to managerial economics by showing the manner in which NGOs often optimize resource allocation through green procurement, thereby balancing cost and sustainability goals. Likewise, it informs public policy through highlighting the need for localized regulations in order to standardize sustainable practices in the NGO sector. The findings have further underscored the transformative potential of green procurement in enhancing environmental sustainability and this positions NGOs as leaders in sustainable development within Migori County.

## **8. Future Work**

Based on the findings, the following evidence-based recommendations are proposed for NGOs, policymakers and donors in order to strengthen green procurement practices in Migori County. For starters, NGOs need to establish robust and comprehensive green procurement policies that specific the environmental criteria for the selection of suppliers and the acquisition of products, the assertion is because the finding that only 40% of the NGOs have put in place formal policies reaffirm the need for standardization. The policies need to include guidelines for sustainable sourcing and eco-friendly materials as well as supplier environmental assessments as supported by the high mean score for waste reduction (3.88). Likewise, the implementation needs to involve stakeholder consultation in order to guarantee alignment with community and donor expectations as pointed out in the stakeholder theory (Freeman, 2010).

The qualitative them for limited training that has been reaffirmed by the lower mean for supplier assessments (3.75) is an indication that there is a need for robust capacity-building programs. This implies that NGOs need to invest in the training of procurement staff on environmental criteria evaluation, lifecycle assessment and cost-benefit analysis. Training needs to be supported by the donors in order to address the constraints in resources while further making sure that the staff members are able to implement policies effectively. At the same time, the finding that 70% of the NGOs need to include environmental criteria in supplier contracts due to donor mandates suggests that there are opportunities for deeper collaboration. In particular, NGOs need to work with donors in order to align the funding conditions with sustainability goals, thereby integrating green procurement into grant agreements. This equally aligns with the emphasis that the institutional theory by (Scott, 2005) has on coercive pressures and will guarantee that sustainable practices are financially supported.

Policymakers should further develop regulations that are tailored to the NGO sector and in the process build on national policies like the Public Procurement and Asset Disposal Act of 2015. The qualitative them of policy alignment is an indication that localized frameworks have the ability to standardize green procurement with only 60% of the NGOs presently aligning with the donor goals. Thus, incentives such as tax breaks for eco-friendly procurement are likely to encourage adoption. Finally, NGOs need to put in place monitoring programs to track the environmental outcomes from procurement practices such as the reduction of waste and carbon emissions.

The regression results of ( $\beta = 0.721$ ) confirm the impact of green procurement, but there is need for consistent monitoring in order to guarantee accountability. The frameworks need to include key



performance indicators such as the percentage of recyclable materials that are used as recommended by Naureen et al. (2022). The recommendations are grounded in the findings of the study and provide actionable steps to enhance the impact of green procurement. Through addressing the institutional barriers and further leveraging stakeholder and policy support, the NGOs in Migori County will be able to lead the way in sustainable development and thus contribute to the global environmental goals.

Future research needs to explore other GSCP components, such as green logistics and reverse logistics in order to provide a holistic view of supply chain sustainability in NGOs. Equally, comparative studies across urban and rural Kenyan counties could enhance generalizability, addressing the study's limitation of focusing on Migori County and longitudinal studies could assess the long-term impact of green procurement policies, providing insights into their sustainability over time.

## **Appendix**

### **1. Structured Questionnaire**

This questionnaire is designed to collect data on green procurement practices and their impact on environmental sustainability among Non-Governmental Organizations (NGOs) in Migori County, Kenya.

It targets procurement and operations staff and takes approximately 20-25 minutes to complete. Responses are confidential and will be used solely for research purposes.

Please answer all questions honestly.

#### **Instructions**

- For Sections B–D, use the 5-point Likert scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree.
- For Section A, select the appropriate option or provide a brief response.
- For Section E, provide a detailed response in the space provided.

#### **Section A: Demographic Information**

1. What is your role in the NGO?  
☐ Procurement Officer  
☐ Operations Manager  
☐ Other: \_\_\_\_\_
2. How many years have you worked in this role?  
☐ Less than 2 years  
☐ 2-5 years  
☐ More than 5 years
3. What is the approximate annual budget of your NGO?



- ☐ Less than KSH 10 million
- ☐ KSH 10-50 million
- ☐ More than KSH 50 million
- 4. Does your NGO have a formal green procurement policy?
  - ☐ Yes
  - ☐ No

**Section B: Green Procurement Practices**

- 5. Our NGO incorporates sustainable sourcing practices in procurement (e.g., prioritizing local, eco-friendly suppliers).  
(1) (2) (3) (4) (5)
- 6. Suppliers are evaluated based on their environmental performance (e.g., compliance with environmental standards).  
(1) (2) (3) (4) (5)
- 7. Our NGO prioritizes the use of recyclable or eco-friendly materials in procurement.  
(1) (2) (3) (4) (5)
- 8. Procurement decisions consider the lifecycle environmental impact of products (e.g., production, use, disposal).  
(1) (2) (3) (4) (5)
- 9. Our NGO collaborates with suppliers to reduce carbon emissions (e.g., low-carbon transport options).  
(1) (2) (3) (4) (5)
- 10. Staff are trained to implement green procurement practices effectively.  
(1) (2) (3) (4) (5)

**Section C: Environmental Sustainability Outcomes**

- 11. Our NGO's procurement practices contribute to waste reduction (e.g., reduced packaging, recyclable materials).  
(1) (2) (3) (4) (5)
- 12. Green procurement has improved resource efficiency in our operations (e.g., reduced water or energy use).  
(1) (2) (3) (4) (5)
- 13. Our NGO has implemented energy-efficient practices across its supply chain (e.g., renewable energy use).  
(1) (2) (3) (4) (5)



14. Procurement practices have reduced our NGO's carbon footprint.

(1) (2) (3) (4) (5)

15. Our NGO's green procurement aligns with broader environmental sustainability goals.

(1) (2) (3) (4) (5)

#### **Section D: Barriers and Enablers**

16. Donor requirements encourage our NGO to adopt green procurement practices.

(1) (2) (3) (4) (5)

17. Lack of staff training hinders effective green procurement implementation.

(1) (2) (3) (4) (5)

18. National policies (e.g., Public Procurement and Asset Disposal Act, 2015) support our NGO's sustainable procurement efforts.

(1) (2) (3) (4) (5)

19. Limited availability of eco-friendly suppliers is a challenge for our NGO.

(1) (2) (3) (4) (5)

20. Stakeholder expectations (e.g., community, donors) drive our NGO's sustainability efforts.

(1) (2) (3) (4) (5)

#### **Section E: Open-Ended**

21. What additional strategies could your NGO adopt to enhance green procurement practices? Please provide specific examples.

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Thank you for your participation!

#### **2. Semi-Structured Interview Questions**

This semi-structured interview guide is designed to collect qualitative data from 15-20 procurement officers and operations managers from Non-Governmental Organizations (NGOs) in Migori County, Kenya.

Interviews will last approximately 30-45 minutes and be conducted in English or Swahili, based on participant preference, with translations verified by a bilingual researcher.

All responses are confidential, audio-recorded with participant consent, and used solely for research purposes. The questions are open-ended to allow flexibility, with probes to elicit detailed responses and specific examples.



### **Interview Questions**

1. Can you describe your NGO's current procurement practices and the extent to which they incorporate environmental considerations, such as sustainable sourcing or the use of eco-friendly materials?
2. What specific criteria does your NGO use to evaluate suppliers' environmental performance, and how consistently are these criteria applied across procurement processes?
3. How do stakeholder expectations, such as those from donors, local communities, or regulatory bodies, influence your NGO's adoption of green procurement practices?
4. To what extent do donor requirements shape your NGO's procurement policies, particularly in terms of environmental sustainability?
5. How does your NGO measure or assess the environmental impact of its procurement practices, for example, in terms of waste reduction, energy efficiency, or carbon emissions?
6. What are the primary challenges your NGO faces in implementing green procurement, such as staff training, supplier availability, cost constraints, or policy gaps?
7. How do national policies, such as the Public Procurement and Asset Disposal Act (2015), influence your NGO's procurement decisions, particularly regarding sustainability?
8. What strategies or initiatives has your NGO implemented to overcome barriers to green procurement, and how effective have these been in practice?
9. How does your NGO balance cost constraints with environmental sustainability goals when making procurement decisions, and what trade-offs, if any, arise?
10. What recommendations would you propose to enhance green procurement practices across NGOs in Migori County, and what practical steps could be taken to implement these?
11. Are there any innovative green procurement practices your NGO has adopted that other NGOs in Migori could learn from?
12. How do you perceive the role of green procurement in achieving your NGO's broader environmental sustainability goals, and what future changes do you foresee?

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