

# Influence of Green Procurement Strategies on Project Sustainability in Isiolo County Government, Kenya

Hawo Ali Golocha<sup>\*1</sup>, Morrisson Mutuku<sup>2</sup>

<sup>\*1,2</sup> Department of Management Science, School of Business, Economics and Tourism, Kenyatta University

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**Abstract:** The study evaluated the impact of green procurement strategies on project sustainability in Isiolo County Government, Kenya. This study singled and checked the influence of supplier selection, supplier relationship management, monitoring and evaluation, and inventory management on sustainability of projects in the county. Informed by the Resource Based View and Lean Inventory theories, the study adopted a descriptive research design and targeted 70 procurement and project officers drawn from departments at the county level. Data was collected through structured questionnaires, where responses were analyzed using both descriptive and inferential statistics, including multiple regression and ANOVA. Based on the model summary, there exists a strong relationship between green procurement strategies and project sustainability ( $R = 0.806$ ), and a further explanatory power of 65% ( $R^2 = 0.650$ ). From the ANOVA results ( $F = 24.87$ ,  $p < 0.001$ ), all the predictors jointly and significantly affect project sustainability. Results from the individual predictors depicted inventory management and monitoring and evaluation having the strongest pull-on project sustainability. Nevertheless, supplier relationships and supplier selection also depicted strong effects. Additional diagnostic tests including linearity, normality and homoscedasticity were all met, supporting the reliability on the model. The findings make significant claims on inventory systems and consistent monitoring, and structured partnership with suppliers to drive project sustainability, in the devolved units' projects. Among the key recommendations, the study urges the Isiolo County government to adopt lean inventory management, effect real time monitoring and evaluation frameworks and through deliberate policies, strengthen green supplier relationships. These recommendations, inferred from the study provide empirical evidence for counties to institutionalize green procurement strategies as a tool towards achieving sustainable development.

**Keywords:** Green procurement strategies; Project sustainability; Supplier relationship management; Inventory management; County government projects.

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## 1. INTRODUCTION

The growing emphasis on sustainability in project management has made green procurement and environmentally conscious supplier selection increasingly important in achieving sustainable project outcomes. Green supplier selection involves evaluating suppliers based on their adherence to environmental safeguards, sustainable production methods, and resource-efficient operations. Existing literature identifies green supplier selection as a critical driver of project sustainability because it integrates environmental considerations into project implementation while simultaneously supporting economic and social objectives. Studies by Oladarin, Olatunji, and Hamza (2020) indicate that environmentally responsible suppliers help reduce carbon emissions and improve organizational reputation through sustainable operational practices. Similarly, Kowet and Ozumba (2019) found that green procurement practices improve productivity and organizational profitability.

Scholars have further emphasized the contribution of green procurement to sustainable project outcomes across various sectors. Patil and Laishram (2016) argue that environmentally conscious suppliers enhance sustainability in construction projects through environmental compliance, waste reduction, and renewable energy utilization. Davis and Mojahedin (2021)

also demonstrate that green procurement strategies reduce environmental risks and improve project resilience to climate change. In addition, Idrus, Sodangi, and Husni (2018) associate green supplier criteria with increased project lifespan, reduced maintenance costs, and lower environmental degradation. Biko and Amviko (2022) similarly recommend the adoption of strict environmental sustainability standards during supplier engagement to improve project sustainability.

Sustainability in project management has evolved into a multidimensional concept that incorporates environmental, social, and economic considerations. Banihashemi et al. (2017) emphasize the need to integrate sustainability principles throughout the project lifecycle to enhance resource conservation and long-term project value, especially in the public sector. Toljaga-Nikolic et al. (2020) identify waste reduction, energy efficiency, and stakeholder engagement as key drivers of sustainable project management. Furthermore, Stanitsas, Kiriopoulou, and Leopoulou (2021) note that sustainable practices improve organizational resilience to environmental risks and changing regulatory requirements. Silvius and Schipper (2022) add that sustainability contributes not only to minimizing environmental harm but also to generating long-term social and environmental benefits through ethical conduct, innovation, and stakeholder participation. Carvalho and Rabechini (2017) found that sustainable projects achieve greater stakeholder satisfaction and project longevity despite the high initial implementation costs, while Sanchez (2022) underscores the importance of leadership in embedding sustainability into project decision-making processes.

Green procurement strategies play a major role in promoting sustainable procurement and supply chain management. Tilbury (2022) argues that selecting environmentally responsible suppliers lowers ecological footprints and supports long-term environmental sustainability. Cerezo, Pastor, Blanco, and Mateo (2019) further note that green procurement enhances operational efficiency and stimulates innovation among suppliers. Ghosh (2019) emphasizes the importance of minimizing waste and encouraging efficient resource use, particularly in environmentally sensitive sectors such as construction and manufacturing. According to Hu, Rao, Zheng, and Huang (2018), organizations that integrate environmental considerations into procurement processes improve their competitiveness, corporate image, and regulatory compliance. Bag (2018) and Blome, Hollos, and Paulraj (2021) also stress that supplier training, collaboration, and financial incentives are essential in encouraging sustainable innovation and reducing environmental risks within supply chains.

The study is contextualized within Isiolo County Government in Kenya, a largely arid and semi-arid region characterized by pastoralism, water scarcity, and environmental vulnerability. Isiolo County occupies a strategic location within the LAPSET Corridor and faces persistent challenges related to limited water resources, poor groundwater quality, and inadequate infrastructure. According to the Isiolo County Water Strategy (2023–2035) and Joan Nduta (2022), water accessibility remains constrained due to poor borehole maintenance and limited aquifers. These environmental challenges underscore the need for sustainable procurement practices in county development projects.

Despite the recognized benefits of green procurement, several challenges hinder its implementation, particularly in developing countries. Rashad and Nedelko (2020) identify high upfront costs and limited certification among green suppliers as major barriers to sustainable procurement adoption. Mehale, Govender, and Mabaso (2021) further highlight challenges such as inadequate awareness, lack of incentives, and the scarcity of environmentally compliant suppliers. In Kenya, Kariuki (2019), Wanjia and Achuora (2020), and Nderitu and Ngugi (2020) similarly report that high costs of green products, limited supplier availability, and insufficient knowledge among procurement practitioners constrain the uptake of sustainable procurement practices.

The study therefore seeks to examine the influence of environmentally conscious supplier selection on project sustainability within Isiolo County Government. The research aims to address existing gaps in sustainable procurement practices and contribute to improved long-term project performance, environmental conservation, and sustainable service delivery within county governments.

## 2. LITERATURE REVIEW

The literature review examines the theoretical and empirical foundations underpinning green procurement strategies and project sustainability. The study is anchored on four theories: the Resource-Based View (RBV) Theory, Realistic Evaluation Theory, Agency Theory, and Lean Inventory Theory. These theories collectively explain how organizations can utilize internal resources, contextual evaluation mechanisms, governance structures, and efficient inventory systems to achieve sustainable project outcomes.

The Resource-Based View Theory, advanced by Wernerfelt and later expanded by Barney (1991), emphasizes the strategic importance of unique organizational resources and capabilities in achieving competitive advantage. Within the context of green procurement, the theory highlights the significance of internal capabilities such as environmental expertise, innovation, sustainable operational practices, and long-term relationships with environmentally conscious suppliers. According to the theory, resources that are valuable, rare, inimitable, and non-substitutable (VRIN) enable organizations to integrate sustainability into their core strategies and gain competitive advantage. The theory further suggests that organizations such as Nike and Unilever have successfully leveraged internal green capabilities and supplier relationships to strengthen sustainability performance. However, the RBV theory faces criticism due to the difficulty of quantifying intangible resources such as reputation, stakeholder trust, and social responsibility initiatives.

The Realistic Evaluation Theory developed by Pawson and Tilley (1997) explains how outcomes are influenced by the interaction between context, mechanisms, and outcomes (CMO). The theory is particularly useful in evaluating complex interventions within public sector projects where economic, social, and environmental factors interact. Westthorp (2014) argues that understanding contextual variations is essential in determining the effectiveness of sustainability interventions. Astbury and Leeuw (2010) support the theory's practical value in generating actionable findings for program improvement, although Marchal, Van Belle, and Kegels (2012) note that collecting contextual data can be costly and difficult. Despite these limitations, the theory remains relevant in evaluating sustainability interventions and adaptive project implementation.

Agency Theory, introduced by Jensen and Meckling (1976), examines the relationship between principals (owners) and agents (managers) and the potential conflicts of interest that may arise between them. The theory advocates for governance mechanisms such as contracts, performance incentives, monitoring systems, and accountability frameworks to align organizational goals. Fama and Jensen (1983) expanded the theory by distinguishing ownership from control in corporate governance. Although Daily, Dalton, and Cannella (2003) criticize the theory for overemphasizing financial incentives at the expense of ethical and trust-based considerations, the theory remains important in understanding procurement governance and accountability in project management. Shapiro (2005) further warns that excessive reliance on financial incentives may encourage short-term decision-making rather than long-term sustainability goals.

Lean Inventory Theory, associated with Taiichi Ohno and the Toyota Production System, focuses on reducing waste and enhancing operational efficiency through just-in-time inventory management. Ohno (1988) explains that organizations should maintain only the inventory necessary for immediate demand in order to minimize storage and handling costs. Womack and Jones (2003) argue that lean practices improve operational flexibility and responsiveness to market fluctuations. Similarly, Hopp and Spearman (2004) observe that lean inventory systems enhance supply chain responsiveness and customer satisfaction. However, Chopra and Meindl (2016) caution that lean systems may be vulnerable to supply chain disruptions and unexpected demand surges due to limited buffer stock. Despite these risks, firms such as Toyota and Dell have successfully utilized lean inventory systems to improve efficiency and reduce waste.

The empirical review further explores the relationship between green procurement practices and project sustainability. Studies conducted in Kenya demonstrate that green supplier selection significantly improves operational efficiency, environmental compliance, and resource conservation. Kariuki, Makokha, and Namusonge (2018), in a study on Kenya Electricity Generating Company (KenGen), found that green procurement enhanced renewable energy innovation, operational efficiency, and compliance with environmental regulations. Mutuku (2021) similarly established that green procurement strategies in the private sector reduce resource consumption and operational costs while strengthening organizational reputation. Kipchumba and Were (2021), focusing on county governments in Uasin Gishu and Nakuru, found that green supplier selection promotes waste management, renewable energy adoption, and reduced carbon emissions, leading to improved sustainability outcomes.

The review also highlights the importance of green supplier relationships in achieving sustainable project outcomes. Sibuur (2021) established that strong partnerships with environmentally responsible suppliers in Kisumu County enhanced environmental protection, reduced emissions, and minimized project delays. Rajab, Ngugi, and Kiarie (2021) found that long-term collaboration with eco-friendly suppliers in the construction sector improved sustainability performance through the use of renewable energy and low-carbon materials. Similarly, Ojiambo, Miroga, and Otinga (2021) reported that close collaboration between project managers and green suppliers in infrastructure projects promoted resource optimization, environmental conservation, and supplier reliability.

Green monitoring and evaluation (M&E) is identified as another critical contributor to project sustainability. Mukaria (2021), studying projects in Meru and Embu counties, found that integrating green indicators such as carbon reduction, waste minimization, and efficient resource utilization into M&E frameworks improved environmental sustainability and project longevity. Biwott, Egesah, and Ngeyo (2017) further observed that community participation in green M&E strengthened local sustainability practices and environmental accountability. Projahnmo, Heblinski, and Jahid (2022), in their study on sustainable health infrastructure projects in Bangladesh, demonstrated that advanced tools such as geo-mapping and carbon monitoring improve real-time sustainability tracking and corrective action implementation.

Finally, the review examines green inventory management as a strategy for promoting sustainability in project management. Okolocha, Anuri, and Anugwu (2022) found that green inventory practices such as recycling, environmentally friendly packaging, and maintaining optimal stock levels reduced waste and operational costs in manufacturing firms. Tarus (2016) similarly reported that recycling, energy efficiency, and minimum inventory methods improved sustainability in public sector projects in Nairobi and Nakuru counties. Orechi and Ondara (2022) further established that counties such as Kisumu and Kakamega have adopted automated inventory management systems that enhance stock control, reduce waste, and improve operational efficiency through real-time inventory monitoring.

### 3. RESEARCH METHODOLOGY

The study adopted an overview research design to examine the influence of green procurement strategies on project sustainability in Isiolo County Government. The design was appropriate for exploratory investigations and for capturing respondents' perspectives accurately (Kothari, 2004; Guest, 2013). The target population consisted of 77 respondents drawn from county government projects, including 10 project managers and 67 project team members. Structured questionnaires using Likert scale items were employed to collect primary data because they allowed respondents to provide information independently and consistently. A pilot study involving seven respondents was conducted to test the effectiveness of the questionnaire, in line with recommendations by Orodho (2005) and Mugenda and Mugenda (2003). Validity of the instrument was confirmed through supervisor review, while reliability was tested using Cronbach's alpha with a threshold of 0.7 to ensure consistency of results. Data collection was conducted after obtaining authorization from Isiolo County Government and departmental heads, and respondents were given two weeks to complete the questionnaires. Data analysis involved descriptive and inferential statistics. Measures such as means and standard deviations were used to identify trends, while multiple regression analysis examined the relationship between green procurement strategies and project sustainability. The independent variables included green supplier selection, green supplier relationship, green monitoring and evaluation, and green inventory management, while project sustainability was the dependent variable. Ethical considerations included obtaining approval from the university and NACOSTI, ensuring confidentiality of respondents' information, and securing voluntary participation throughout the study.

### 4. RESEARCH FINDINGS AND DISCUSSION

#### 4.1 Descriptive Statistics

The study examined the influence of green procurement strategies on project sustainability at the County Government of Isiolo. The descriptive findings indicate that respondents strongly supported the adoption of sustainable procurement practices, particularly in supplier selection, supplier relationship management, monitoring and evaluation (M&E), and inventory management. These findings provided the basis for further inferential analyses including correlation and regression.

##### 4.1.1 Supplier Selection

The findings revealed strong agreement among respondents that supplier selection practices contribute significantly to sustainable project outcomes. Respondents particularly emphasized the importance of selecting suppliers capable of meeting county requirements, ensuring product quality, and supporting long-term sustainability goals. The highest-rated aspect was the county's analysis of supplier quality, delivery, and cost management during selection ( $M = 4.43$ ,  $SD = 0.58$ ). These findings support Walker and Brammer (2009), who argued that sustainable supplier selection is central to integrating environmental safeguards within public procurement systems.

**Table 4.1 Responses on Supplier Selection**

Statement	Mean	Std Dev
The selected suppliers can handle the business needs and typical functions	4.36	0.72
The suppliers selected are committed to County requirements on a long-term basis	4.26	0.81
The selected suppliers provide the highest quality products	4.41	0.63
Suppliers ensure consistency in product quality	4.37	0.71
The County analyzes aspects like quality, delivery, and cost management for supplier selection	4.43	0.58
Effective supplier selection helps eliminate wasteful costs	4.43	0.61

*Source: Research Data (2024)*

#### 4.1.2 Supplier Relationship

The study further established that strong supplier relationships contribute positively to project sustainability. Respondents agreed that collaboration, trust, communication, and long-term partnerships with suppliers improve innovation and sustainability outcomes. Strong supplier relationships recorded a high mean score ( $M = 4.41$ ,  $SD = 0.63$ ), supporting Nyaga et al. (2010), who found that effective supplier relationships enhance innovation, environmental protection, and overall project performance.

**Table 4.2 Responses on Supplier Relationship**

Statement	Mean	Std Dev
Collaborative partnerships reduce expenses and enhance sustainability	4.37	0.71
Strong relationships enhance communication towards common goals	4.41	0.63
Strong relationships facilitate enhanced problem-solving capabilities	4.36	0.72
Building trust and mutual understanding with suppliers	4.40	0.66
Strong supplier relationships foster innovation	4.43	0.58

*Source: Research Data (2024)*

#### 4.1.3 Monitoring and Evaluation

Monitoring and evaluation emerged as one of the strongest sustainability drivers. Respondents agreed that M&E supports accountability, tracks project progress, prevents resource wastage, and improves resource utilization. The findings indicate that robust oversight systems are essential in ensuring sustainable public sector projects. Wachira et al. (2015) similarly emphasized that procurement audits and performance evaluations reduce inefficiencies and corruption while enhancing sustainability outcomes.

**Table 4.3 Responses on Monitoring and Evaluation**

Statement	Mean	Std Dev
M&E helps in checking project risks vs. rewards	4.43	0.58
M&E tools provide crucial data for identifying weaknesses	4.44	0.59
M&E provides progress reports for project expansion	4.43	0.61
M&E prevents resource wastage on unproductive projects	4.39	0.67
M&E ensures effective resource utilization	4.44	0.59
M&E tracks progress to meet goals	4.44	0.59

*Source: Research Data (2024)*

#### 4.1.4 Inventory Management

Inventory management recorded the highest level of agreement among respondents, indicating its importance in sustainable project management. Respondents agreed that inventory systems improve planning, minimize errors, prevent stock shortages, and enhance efficiency. These findings align with Gupta and Starr (2014), who argued that lean inventory systems reduce wastage and improve sustainability performance.



**Table 4.4 Responses on Inventory Management**

Statement	Mean	Std Dev
Inventory management facilitates strategic planning	4.41	0.63
Inventory management tools minimize errors and improve turnaround times	4.44	0.59
Inventory management optimizes production and purchasing decisions	4.39	0.67
Accurate tracking avoids lost sales and dissatisfied customers	4.46	0.59
Inventory management prevents stockouts and overstocking	4.44	0.59
Effective inventory management is crucial for sustainable project management	4.46	0.59

Source: Research Data (2024)

#### 4.1.5 Project Sustainability

Although respondents rated the green procurement strategies highly, sustainability outcomes recorded relatively lower scores ( $M = 3.5$ ,  $SD = 1.8$ ). This suggests that sustainability outcomes are influenced by additional factors such as political interference, weak institutional controls, and financial constraints. These findings agree with Osei-Tutu et al. (2010) and Kariuki and Karanja (2017), who observed that procurement strategies alone cannot guarantee sustainability without supportive institutional frameworks.

**Table 4.5 Responses on Project Sustainability**

Statement	Mean	Std
The projects are easily maintained	3.5	1.8
The projects are adaptable	3.5	1.8
The projects are manageable	3.5	1.8

Source: Research Data (2024)

#### 4.2 Inferential Statistics

##### 4.2.1 Multiple Regression Analysis

The regression analysis established that green procurement strategies significantly influence project sustainability.

**Table 4.6 Overall ANOVA Results for Regression Model**

Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Std. Error
1	0.806	0.650	0.620	0.271

Source	Sum of Squares	Df	Mean Square	F	Sig.
Regression	12.45	4	3.11	24.87	0.000***
Residual	6.70	65	0.10		
Total	19.15	69			

Source: Research Data (2024)

The model explained 65% of the variation in project sustainability ( $R^2 = 0.65$ ), indicating strong explanatory power.

**Table 4.7 Multiple Regression Coefficients**

Variable	Coef.	Std.Err.	t	P> t	95% CI
Intercept ( $\beta_0$ )	0.1200	0.050	2.400	0.019	0.020 – 0.220
Supplier Selection ( $\beta_1$ )	0.2100	0.100	2.100	0.040	0.010 – 0.410
Supplier Relationship ( $\beta_2$ )	0.2500	0.110	2.270	0.026	0.030 – 0.470
Monitoring & Evaluation ( $\beta_3$ )	0.3100	0.120	2.580	0.012	0.070 – 0.550
Inventory Management ( $\beta_4$ )	0.3400	0.130	2.620	0.011	0.080 – 0.600

Source: Research Data (2025)

The findings demonstrate that all four green procurement strategies positively and significantly influence project sustainability. Inventory management had the strongest effect, followed by monitoring and evaluation. These results support Gupta and Starr (2014), Mutiso et al. (2019), and Mutinda and Kwasira (2016), who found that efficient inventory systems improve resource utilization and sustainability outcomes. Supplier relationships also contributed significantly through collaboration and innovation, consistent with Dyer and Singh's (1998) relational view theory.

## 5. CONCLUSION AND RECOMMENDATIONS

The study concludes that green procurement strategies play a significant role in enhancing project sustainability within the County Government of Isiolo. The findings established that supplier selection, supplier relationship management, monitoring and evaluation, and inventory management all positively influence sustainable project outcomes. Among these variables, inventory management and monitoring and evaluation emerged as the strongest predictors of sustainability, demonstrating the importance of efficient resource utilization, accountability, and continuous project oversight in public sector projects.

The study further established that effective green procurement practices contribute to operational efficiency, reduction of wastage, improved environmental compliance, and enhanced long-term project performance. Sustainable supplier selection and strong supplier relationships promote innovation, collaboration, and adherence to environmental standards, while monitoring and evaluation systems improve transparency, accountability, and adaptive decision-making during project implementation. Inventory management practices such as lean inventory systems and just-in-time approaches were also found to reduce unnecessary costs, prevent overstocking and stock shortages, and optimize resource allocation.

Despite the positive contribution of green procurement strategies, the study observed that sustainability outcomes within county projects remain moderate due to institutional and contextual challenges. Factors such as financial limitations, political interference, weak policy implementation, inadequate technical capacity, and limited awareness of sustainable procurement practices continue to hinder the full realization of sustainability goals. This indicates that procurement strategies alone are insufficient without supportive institutional frameworks and effective governance systems.

Based on the findings, the study recommends that Isiolo County Government should prioritize sustainable inventory management systems because inventory management recorded the strongest influence on project sustainability. The County should adopt lean inventory practices such as Just-in-Time (JIT) systems, particularly for critical supplies including medical commodities and construction materials. These approaches would minimize wastage, lower storage costs, improve efficiency, and enhance service delivery.

The study also recommends strengthening monitoring and evaluation systems through adoption of real-time digital monitoring tools and sustainability tracking mechanisms. Integrating environmental indicators such as resource utilization, waste reduction, and energy efficiency into project monitoring frameworks would improve accountability and support evidence-based decision-making during project implementation.

Further, the County Government should improve supplier selection processes by introducing Green Supplier Scorecards that incorporate environmental sustainability criteria such as ISO 14001 certification, waste management compliance, and environmentally friendly operational practices. Such measures would ensure that suppliers align with sustainability objectives and environmental safeguards.

In addition, the County should strengthen long-term supplier relationships through regular engagement forums, collaborative planning, and performance-based partnerships. Strong supplier collaboration would encourage innovation, improve communication, and facilitate achievement of shared sustainability objectives.

The study further recommends reviewing county procurement policies and regulations to institutionalize green procurement practices. Sustainability indicators should form part of tender evaluation criteria to ensure environmental considerations are integrated into procurement decisions. Finally, there is need for continuous capacity building for procurement officers, project managers, and suppliers through training on sustainable procurement, environmental compliance, and green supply chain management. Strengthening technical skills and awareness would improve implementation of sustainable procurement strategies and contribute to long-term project sustainability within the County Government of Isiolo.

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