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Stakeholder Participation and Sustainability of Wind Power Projects in Kajiado County, Kenya

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Abstract: **The sustainability of development projects is critical for delivering long-term social, economic, and environmental benefits to communities. However, many initiatives fail to achieve this due to inadequate stakeholder participation, leading to delays, conflicts, and cost overruns. This study investigates the role of stakeholder engagement in enhancing the sustainability of wind power projects in Kajiado County, Kenya, focusing on the Kipeto and Ngong Hills wind energy projects. Drawing on Stakeholder Theory and Resource-Based Value Theory, the research examines how the involvement of diverse actors across project phases—identification, planning, implementation, and monitoring—affects long-term project outcomes. Data were collected from 135 stakeholders, with a stratified random sample of 100 respondents, using structured questionnaires. Descriptive and inferential analyses, including Pearson correlation and multiple regression using SPSS 27, assessed the relationship between stakeholder participation and project sustainability. Findings demonstrate that continuous and structured stakeholder engagement significantly enhances project viability, highlighting the need for project managers and policymakers to integrate participatory strategies in renewable energy initiatives to ensure sustainable outcomes.**

Keywords: **Wind energy projects, Stakeholder participation, Project sustainability, Renewable energy development.**

1. INTRODUCTION

Renewable energy, including wind, solar, biomass, and geothermal sources, contributes to energy reliability, environmental protection, and public health by mitigating greenhouse gas emissions (A Healthy Wind, 2022; Guchhait & Sarkar, 2023). The adoption of renewable energy aligns with Sustainable Development Goal 7, emphasizing affordable and clean energy (Owusu & Asumadu-Sarkodie, 2016). Despite global recognition of sustainability principles (Brundtland, 1987; Satalo & Simon, 2015), their implementation in energy projects remains slow, particularly in Sub-Saharan Africa, where infrastructure development is critical for economic growth and improved quality of life (Uyoyo, 2011; Saghir, 2017).

Many renewable energy projects in the region face challenges such as weak stakeholder collaboration, inadequate planning, insufficient follow-up, and low public participation, which undermine sustainability (Ikejemba et al., 2017; Renkens, 2024). Effective stakeholder engagement ensures project alignment with community needs, fosters commitment, and reduces conflicts (Freeman et al., 2017; Eskerod et al., 2015). Project sustainability is dependent on economic, environmental, and social dimensions and requires ongoing stewardship, resource management, and stakeholder engagement (Dyllick & Hockerts, 2002a; Khang & Moe, 2008; Sang, 2015; International Fund for Agricultural Development, 2016).

Wind energy projects face specific sustainability challenges, including land use conflicts, economic barriers, limited public acceptance, and lack of training (Leung & Yang, 2012; Samoita et al., 2020). Community acceptance and participation have been identified as critical to project success, with political, cultural, and gender considerations shaping outcomes (Antwi & Ley, 2021; Karuga, Mutuku &Sang, 2024). In Kenya, wind energy development, such as at the Ngong Hills and Kipeto projects, demonstrates the potential for renewable energy to contribute to national power supply, reduce carbon emissions,

and generate employment while highlighting the importance of stakeholder engagement (Ndi, 2024; Boniface, 2020; Otundo Richard, 2020).

Stakeholder participation is essential across all project phases, including planning, implementation, and monitoring, and significantly influences project sustainability (Freeman & McVea, 2001; Bourne, 2016; Di Maddaloni et al., 2018; Theyel et al., 2018; Gichimu & Mutuku, 2022). Effective engagement enhances ownership, reduces risks, ensures equitable resource distribution, and addresses conflicting interests (Calderon & Chelleri, 2013; Klaus-Rosianska & Iwko, 2021; Aapaoja et al., 2013a). Current development strategies emphasize community-driven approaches, prioritizing local knowledge and social inclusivity for long-term sustainability (Handayani et al., 2023; Ayuso et al., 2011; Kipkoech & Gachengo, 2022; Project Management Institute, 2024).

Despite Kenya's significant wind energy potential and growing renewable energy capacity, sustainability remains challenged by stakeholder conflicts, social resistance, and delayed project execution (Wu, 2022; Nasr et al., 2020; LaPatin et al., 2023; Lomax et al., 2023). Contextual studies, such as in Tana River and Uganda, highlight the role of stakeholder engagement in enhancing project sustainability, underscoring the need for tailored strategies in wind energy projects in Kajiado County (Juster, 2021; Onziru & Kimutai, 2022).

2. LITERATURE REVIEW

2.1 Theoretical Literature Review

Stakeholder Theory (Freeman, 1984) emphasizes that organizational success depends on effectively managing relationships with diverse stakeholders, including customers, employees, communities, and investors. By balancing these interests, organizations can achieve long-term sustainability and social accountability, though challenges such as conflicting priorities and reduced focus on profitability exist. This theory is particularly relevant in renewable energy, where stakeholder input is crucial for project success. Resource-Based Theory (Wernerfelt, 1984; Barney, 1991) emphasizes that sustained competitive advantage stems from managing valuable, rare, inimitable, and non-substitutable internal resources, such as technology, knowledge, and skilled personnel. In wind energy projects, effective utilization and development of these resources are essential for long-term sustainability and viability.

2.2. Empirical Literature Review

Empirical studies across Africa and beyond consistently demonstrate that stakeholder engagement is crucial at all stages of project life cycles including identification, planning, implementation, and monitoring and evaluation (M&E) to enhance sustainability. During the identification phase, early involvement of stakeholders enhances project clarity and alignment with local needs. Studies in Uganda (Onziru & Kimutai, 2022) and Rwanda (Mukamana, 2022) show that projects achieve higher performance and long-term sustainability when community members, government agencies, and program beneficiaries participate from the outset. In Kenya, Mutimba (2013) demonstrated that rural development projects were more sustainable when stakeholders, including donors and government agencies, were involved in defining local priorities and mobilizing resources. For large-scale wind projects, early engagement of diverse stakeholders including investors, regulators, environmental groups, and local communities is essential to align objectives and ensure long-term viability.

In the planning phase, inclusive stakeholder participation facilitates consensus-building and reduces conflicts. Evidence from Ghana (Awini, 2018), Tanzania (Mwanga, 2015), and Australia (Heravi et al., 2015) highlights that neglecting beneficiaries or key actors during planning can hinder project execution and sustainability. Wind energy projects, characterized by complex technical, regulatory, and environmental considerations, demand carefully structured planning processes that integrate multiple, sometimes competing, stakeholder interests.

During implementation, the literature indicates that stakeholder engagement directly affects project ownership, resource efficiency, and resilience. While Onditi and Mburu (2017) found that implementation-stage participation had a lower impact than early planning for Constituency Development Fund projects in Kenya, studies by Kobusingye and Mung'atu (2017) in Rwanda and Babar (2017) in Pakistan highlight that coordinated efforts across stakeholders enhance extended sustainability. Applying Arnstein's Ladder in these contexts enables a nuanced assessment of participation levels, from tokenism to genuine empowerment, which can guide effective engagement in complex infrastructure projects.

Further, in monitoring and evaluation, stakeholder involvement ensures accountability, transparency, and sustainability of project benefits. Studies in Ghana (Sulemana et al., 2018), Kisii, Kenya (Wm, 2016), and Tana River County (Juster, 2021) demonstrate that structured engagement in M&E improves long-term outcomes, although the institutional and resource

frameworks often constrain effectiveness. Wind energy projects, with multi-stakeholder dynamics and capital-intensive infrastructure, require advanced M&E processes capable of balancing environmental, economic, and social priorities to ensure sustained benefits. The literature converges on the critical role of comprehensive stakeholder engagement throughout the project life cycle. However, existing studies largely focus on small-scale, social, or urban projects, leaving a gap in understanding multi-stakeholder dynamics in large-scale renewable energy projects in Kenya. The present study addresses this gap by examining how stakeholder participation across identification, planning, implementation, and M&E phases influences the sustainability of wind energy projects in Kajiado County.

3. RESEARCH METHODOLOGY

This study employed a descriptive research design to examine stakeholder participation across the phases of wind energy projects in Kajiado County, focusing on the Kipeto and Ngong Hills initiatives (Norbert, 2020; Creswell, 2018; Saunders, 2019). The approach allowed systematic documentation of stakeholder roles, interactions, and influence on project sustainability in real-world settings. The target population comprised 135 stakeholders, including community leaders, project developers, government agencies, environmental specialists, foreign investors, and community members. A sample of 100 respondents was selected using stratified random sampling, ensuring proportional representation across stakeholder groups and capturing diverse perspectives on project outcomes (Czaja & Blair, 2005). Data were collected primarily via structured questionnaires with predominantly closed-ended items aligned to the study objectives (Mugenda & Mugenda, 2019). A pre-test with 10 stakeholders validated clarity, relevance, and reliability of the instruments. Content validity was ensured through expert review and alignment with theoretical frameworks, while construct validity was achieved through operationalization of stakeholder participation constructs (Rasoolimanesh & Ali, 2018; Golafshani, 2015). Reliability was confirmed with Cronbach's alpha > 0.7, indicating acceptable internal consistency.

Collected data were analyzed using SPSS v24.0. Descriptive statistics summarized stakeholder participation (frequencies, percentages, means, and standard deviations), while inferential statistics, Pearson correlation and multiple regression examined the impact of stakeholder engagement on project sustainability. Ethical compliance included approvals from NACOSTI and Kenyatta University Graduate School. Participants provided informed consent, and anonymity was strictly maintained, fostering candid responses and enhancing data reliability.

4. RESEARCH FINDINGS AND DISCUSSIONS

4.1. Descriptive Analysis

4.1.1. Stakeholder Participation in Project Identification

Table 4.1: Stakeholder Participation in Project Identification

Dimensions of Project Identification	Mean	Standard Deviation
There was involvement of stakeholders in the initial project conceptualization meetings	**3.874**	**0.5496**
Stakeholders were involved in preparing the project appraisal reports	**3.889**	**0.4535**
Stakeholders were involved in conducting feasibility studies for the project	**3.829**	**0.4934**
Stakeholders were involved in the stakeholder analysis during project identification	**4.035**	**0.4105**
Stakeholders' suggestions or ideas were considered during the project identification process	**4.065**	**0.4779**
Stakeholders were engaged during the project identification phase	**3.812**	**0.5531**
Stakeholders' level of involvement in project identification impacted the overall sustainability of the project	**3.932**	**0.5613**
Needs of the local community were integrated into the project identification process	**3.922**	**0.5323**
Stakeholders were involved in prioritizing project objectives during the identification phase	**4.017**	**0.4739**
Stakeholders participated in discussions related to the potential challenges of the project during the identification phase	**3.667**	**0.4471**
Average	**3.9047**	**0.4953**

Source: Survey Data (2025)

In this area of research involving the stakeholders during the first identification stage (related to the wind power project) in Kajiado County was documented, in this case confirmed the level of the first stage as well as the quality of the first stage.

Information rated focusing on the level of the stakeholders quality showed the level of ngagement with the average of around 3.87 (standard deviation of 0.55), showed the stakeholders were engaged and the contributed in the formation of the project from the beginning. Further, the input of the stakeholders showed the even value, with the documented data and the valued was integrated and around 4.07 (standard deviation of 0.48) showed combined data was received. In additional to con rev, the average of 3.67 with a standard deviation of 0.45 stated the respondents were incorporated in project challenges, and to eliminate possible challenges. This sufficiently supported overall average of around 3.90 stated with a standard deviation of 0.50.

Meaningful stakeholder engagement during the identification stage constitutes a prerequisite for sustainability (Mutimba, 2013). The rationale for such a linkage is that the stakeholders in question are representatives of the communities and organizations that bear the most immediate impact of a project. Engagement at this stage of a project builds trust and a sense of ownership, which are critical for success in the procedural sense and for success in the future. In my view, this is the most important stage of a project, as it sets the direction for the rest of the entire life cycle. Genuine stakeholder involvement at this stage is a key marker for the project in terms longevity and success.

4.1.2. Stakeholder Participation in Project Planning

Table 4.2: Stakeholder Participation in Project Planning

Dimensions of Project Planning	Mean	Standard Deviation
There was involvement of stakeholders in the initial project conceptualization meetings	**3.6513**	**0.4778**
Stakeholders were involved in preparing the project appraisal reports	**3.7644**	**0.4179**
Stakeholders were involved in conducting feasibility studies for the project	**3.7007**	**0.460**
Stakeholders were involved in the stakeholder analysis during project identification	**3.9924**	**0.4590**
Stakeholders' suggestions or ideas were considered during the project identification process	**3.6315**	**0.5210**
Stakeholders were engaged during the project identification phase	**3.7430**	**0.2222**
Stakeholders' level of involvement in project identification impacted the overall sustainability of the project	**3.5380**	**0.4654**
Needs of the local community were integrated into the project identification process	**3.7656**	**0.5260**
Stakeholders were involved in prioritizing project objectives during the identification phase	**3.7231**	**0.4179**
Stakeholders participated in discussions related to the potential challenges of the project during the identification phase	**4.4675**	**0.3835**
Average	**3.9047**	**0.4953**

Source: Survey Data (2025)

The study also looked at stakeholders' involvement in the planning phase of wind energy initiatives in Kajiado County. Survey responses were assessed to determine the level of involvement for each of the stakeholders. Stakeholders were mostly involved in the planning phase within the context of defining the aims and objectives of the project, which is illustrated in the score of 3.65 (Sd = 0.48).

For instance, in relation to stakeholder mapping and pivotal planning constituents, stakeholders were involved in the operational level of decision-making, which is illustrated in the score of 3.99 (Sd = 0.46). In addition, stakeholders had average involvement in discussions about the possible risks and challenges which are a precursor to the project. A mean score of 3.90 (Sd = 0.5) shows that the planning phase had considerable and defined involvement from stakeholders.

These findings are consistent with existing literature. Murimba (2013) argued that enduring success and the sustainability of a project are contingent on the involvement of stakeholders during the planning stages. Likewise, Onziru and Kimutai (2022) found that, in comparison to poorly planned stakeholder engagement, projects that scored sustainably during evaluations had higher results and stakeholder satisfaction when robust engagement took place during the planning phase. I regard this stage as the most important, as it determines the fundamentals of the entire project. The more stakeholders there are in the planning phase, the more likely the project will focus on community needs and create positive change.

4.1.3. Stakeholder Participation in Project Implementation

Table 4.3: Stakeholder Participation in Project Implementation

Dimensions of Project Implementation	Mean	Standard Deviation
There was the presence of stakeholders in the day to day activities of the project implementation.	**3.8035**	**0.4093**
Stakeholders were frequently engaged in decision-making during the project implementation phase	**3.8147**	**0.4092**
Stakeholders were involved in overseeing the project's adherence to timelines and milestones	**3.8715**	**0.5311**
Stakeholders were involved in managing resources during the implementation of the project	**3.7578**	**0.3450**
Stakeholders participated in monitoring the quality of work during the project implementation	**3.9381**	**0.3980**
Stakeholders were involved in training and capacity-building efforts during the implementation phase which equipped them with the skills and knowledge to contribute effectively	**3.8756**	**0.4003**
Stakeholders' involvement in project implementation impacted the sustainability of the project	**3.7661**	**0.4791**
Stakeholders were involved in addressing and resolving issues that arose during the project implementation	**3.7858**	**0.4849**
Stakeholders' participation influenced the adjustment of project plans during implementation	**3.8115**	**0.4578**
Stakeholders were consulted for input or feedback during the implementation of the project	**3.2400**	**0.5629**
Average	**3.7665**	**0.4478**

Source: Survey Data (2025)

Section D of the questionnaire was used to assess the extent to which stakeholders were integrated into the decision-making of the wind power projects. Stakeholders were asked to rate their level of involvement in various activities of the projects from 1 to 5, where 5 meant a high level of involvement. Stakeholders who were involved in the completion of the project had a mean of 3.8 and a standard deviation of 0.41. This shows that they were reasonably involved in the activities of the project.

The level of involvement was not limited to oversight. In the area of resource management during the execution of the projects, where the average was 3.76 (SD=0.35) and was the most highly rated area, stakeholders were most likely to be involved in the decision-making. Stakeholders also rated their involvement in management of resources during execution of the projects in the area of quality control to be 3.94 (SD=0.40) which is even higher than in the area of resource management. This in combination with the average of 3.77 (SD=0.45) of the implementation phase show that stakeholders involvement was constant and very significant.

This kind of engagement level is consequential in practice. One basic element of good implementation is participation of all stakeholders which is described by Project Management Institute (2013). Onditi and Mburu (2017) also argue that active involvement during execution stage leads to the sense of commitment and ownership among stakeholders that facilitate them to advocate for the sustainability of the project in the long run. I resonate with this view. I have seen authentic stakeholder engagement is not a kind of form, one does abide by, for a project. It is an essential part of keeping the momentum of a project as well as, most importantly, its legacy.

4.1.4 Stakeholder Participation in Project Monitoring and Evaluation

Table 4.4: Stakeholder Participation in Project Monitoring and Evaluation

Dimensions of Monitoring and Evaluation	Mean	Standard Deviation
Stakeholders were involved in the monitoring and evaluation planning meetings	**3.7156**	**0.4539**
Stakeholders were involved in setting the key performance indicators (KPIs) for the project	**3.6067**	**0.4308**
Stakeholders were frequently updated on the project's progress during the monitoring phase	**3.6324**	**0.5113**
Stakeholders contributed to the evaluation reports	**3.6664**	**0.4626**

Stakeholders' suggestions or feedback were implemented during the monitoring phase	**3.6638**	**0.3790**
Stakeholders participated in the final evaluation of the project's outcomes	**3.7246**	**0.4081**
Stakeholders were involved in revising project strategies based on evaluation findings	**3.8349**	**0.4912**
Stakeholders were consulted in the decision-making process after monitoring results were reviewed.	**3.5668**	**0.4623**
Stakeholders influenced the adjustment of project plans during implementation	**3.6009**	**0.4468**
Stakeholders were frequently consulted for input or feedback during the implementation of the project	**3.5173**	**0.3645**
Average	**3.6529**	**0.4411**

Source: Survey Data (2025)

The paper analyzed the different stakeholder roles that were involved in the monitoring and assessment functions relative to the wind energy projects. The results showed an average of 3.83 with a standard deviation of 0.49, which shows that the participants were active in the process of making strategic changes based on the outcomes of the assessment. The study with the aggregate mean of 3.65 and the standard deviation of 0.44 showed that the engagement of the relevant parties in the supervisory and evaluation processes were beneficial as they promoted continuous improvement in the project and facilitated the emergence of new problems that required intervention at an early stage (Tony, 2023). These points of observation are consistent with my findings; it is highly likely that actual involvement of concerned parties is much more than compliance to procedures.

4.1.5. Sustainability of the project

Table 4.5: Sustainability of the project

Dimensions of Project Sustainability	**Mean**	**Standard Deviation**
The project has been operating efficiently since the completion of the implementation phase.	**3.6835**	**0.5415**
The local community is actively involved in the ongoing operation of the project.	**3.7614**	**0.3755**
The project operations are well-integrated with environmental standards and are widely accepted by all environmental stakeholders.	**3.8221**	**0.4511**
The project remains financially viable, generating enough revenue to sustain its operations.	**3.8626**	**0.4983**
Community members are regularly involved in the maintenance and operational decision-making processes.	**3.7662**	**0.5918**
The project has successfully minimized its environmental impact while maintaining operational efficiency.	**3.9656**	**0.4714**
The financial stability of the project ensures that it can continue operating without external funding.	**3.6093**	**0.4929**
The project continues to deliver social benefits, including job creation and community development	**3.7442**	**0.4862**
Additional investments or funding have been secured to support the ongoing operations and expansion of the project.	**3.5574**	**0.3934**
Regular monitoring and evaluation processes are in place to ensure the project's long-term sustainability and operational success.	**3.2433**	**0.5776**
Average	**3.7016**	**0.4880**

Source: Survey Data (2025)

The sustainability indicators show that the project performance is positive after the completion of the implementation process, and the average score is 3.6835 (SD = 0.5415). There were also strong results in environmental outcomes, with the mean score of 3.9656 and the standard deviation of 0.4714, which proved the success of the initiative in reducing the ecological damage. Social benefits such as job opportunities and population growth also were high with a mean of 3.7442 (SD = 0.4862). On the general sustainability, the mean was 3.7016 (SD = 0.4880). Good sustainability results are important

since they enable the stakeholders, including the local communities and the institutional partners, to own the results and guarantee sustainability (Australian Agency for International Development, 2015).

Studies by Komalawati (2008) and Tony (2023) note that the success of the project in the long

4.2. Inferential Statistics

The survey data was subjected to inferential analysis to determine the stakeholder participation impact on wind project sustainability. The following are the main conclusions based on this analysis.

4.2.1. Correlation Analysis

Correlation analysis was used to understand the links of the different elements of the study including project identification, planning; implementation; monitoring; evaluation and project sustainability (overall). The values shown in table 4.8 confirm the conclusions reached. All correlations of the variables are positive and statistically significant indicating that there is a relational nature of the outcomes of the project and stakeholder engagement.

Table 4.1: Multicollinearity Test

		Project Identification	Project Planning	Project Implementation	Monitoring & Evaluation	Sustainability of wind Projects in Kajiado County
Project Identification	Pearson Correlation	1	0.666	0.619	0.504	0.691
	Sig(2-tailed)	0	0	0	0	0
	N	95	95	95	95	95
Project Planning	Pearson Correlation	0.666	1	0.678	0.48	0.708
	Sig (2-tailed)	0	0	0	0	0
	N	95	95	95	95	95
Project Implementation	Pearson Correlation	0.619	0.678	1	0.552	0.695
	Sig (2-tailed)	0	0		0	0
	N	95	95	95	95	95
Project Monitoring and	Pearson Correlation	0.504	0.48	0.552	1	0.6
Evaluation	Sig(2-tailed)	0	0	0	0	0
	N	95	95	95	95	95
Sustainability of Wind	Pearson Corelation	0.691	0.708	0.695	0.6	1
Projects Kajiado County	Sig (2-tailed)	0	0	0	0	0
	N	95	95	95	95	95

Survey Data (2025)

Project planning has the highest correlation with project sustainability ($r = 0.708$, $p < 0.001$), closely followed by project implementation ($r = 0.695$, $p < 0.001$) and project identification ($r = 0.691$, $p < 0.001$). The correlation of sustainability with monitoring and evaluation was moderate ($r = 0.600$, $p < 0.001$).

All correlation values remain below the 0.8 mark (Zhang and Li, 2019), which removes any cause for concern regarding multicollinearity and confirms that variables in question are interrelated. The VIF values of the predictors are below the 10 cut-off which also indicates the predictors are independently correlated, regression analysis would provide reliable results, and the variables are indeed multicollinearity free.

4.2.2. Model Summary

Table 4.2: Results of Model Summary

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Selection Criteria: Akaike Information Criterion	Amemiya Prediction Criterion	Mallows' Prediction Criterion	Schwarz Bayesian Criterion
1	.813[a]	.662	.647	.29012	-230.257	.376	5.000	-217.487

a. Predictors: (Constant), Project Monitoring and Evaluation, Project Planning, Project Idenification, Project Implementation

b. Dependent Variable: Sustainability of Wind Projects Kajiado County

Survey Data (2025)

The regression model captures the effect of stakeholder participation on the sustainability of projects. In Table 4.9, the model shows a good fit, with the R value of 0.813, indicating a strong positive correlation with the independent variables (stakeholder participation at different levels of the project) and the dependent variable, which is the sustainability of wind projects in Kajiado County.

An R-squared value of 0.662 shows that 66% of the variation in sustainability of the projects can be explained by these variables, which is a considerable amount of variance. The adjusted R-squared (0.647) takes into account the number of predictors and provides a marginally, but still highly, valuable estimate. The standard error of the estimate (0.29012) tells us the average distance of the observed data points from the predicted regression line, which reveals the accuracy of the model in predicting the sustainability outcomes.

4.2.3. Analysis of Variance

Table 4.3: ANOVA Tests Results

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14.811	4	3.703	43.991	<.001[b]
	Residual	7.575	90	.084		
	Total	22.386	94			

a. Dependent Variable: Sustainability of Wind Projects Kajiado County

b. Predictors: (Constant), Project Monitoring and Evaluation, Project Planning, Project Idenification, Project Implementation

Survey Data (2025)

The results in Table 4.10 display ANOVA F-test results demonstrate that the model is significant ($p = 0.001$, $F = 43.991$). This shows that the stakeholder involvement in identification, planning, implementation, as well as, monitoring, and evaluation cumulatively, are likely sources of significant variation in project sustainability ($R^2 = 0.662$). In addition, the low value of the 7.575 residual sum of squares and the high value of the F-statistic are signs that the fit is strong. This, in practical terms, indicates that involved stakeholders throughout the value chain of wind projects have a large and positive impact on the projected sustainability of wind projects in Kajiado County.

4.2.4. Regression Coefficient

Table 4.4: Regression Coefficient Tests Results

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	-.231	.302		-.768	.445	-.830	.368		
	Project Idenification	.251	.087	.255	2.893	.005	.079	.423	.485	2.061
	Project Planning	.305	.100	.282	3.045	.003	.106	.504	.440	2.275
	Project Implementation	.252	.100	.231	2.525	.013	.054	.450	.449	2.226
	Project Monitoring and Evaluation	.232	.084	.209	2.753	.007	.064	.399	.649	1.540

a. Dependent Variable: Sustainability of Wind Projects Kajiado County

Survey Data (2025)

Table 4.11, which consolidates the primary results of the investigation, shows how stakeholder involvement in all phases of a project cycle enhances overall sustainability. The results show, without any doubt, that the driving factor behind this is active and productive engagement.

The trajectory starts from the identification phase when an auspicious and statistically significant relationship begins to appear ($\beta = 0.255$, $p = 0.005$). Nevertheless, this explanation signifies that stakeholder involvement at an early stage helps in providing a much stronger basis at the start for the sustainability of the program. This was especially insightful for me, as it confirms Mukamana (2022) in that early participation provides strong sense of ownership and acceptance for long-term. It is however interesting that this was in stark contrast to the claim of Komalawati (2008) who said that participation during identification was virtually insignificant. This touches on the criticality of context to a series of outcomes.

However, this relationship is quite different during the planning stage where a significantly larger effect is noted (v = 0.282 p = 0.003). The importance of this stage remains, in line with Heravi et al. (2015), who says that collaborative planning leads to increased allocation of resources, calculated risk-taking and, most importantly, alignment of expectations, to create more sustainable results.

The results indicated that the impact of stakeholder impact was somewhat lower in the implementation phase (v = 0.231, p = 0.013).

This impact, though less, showed significance. Kobusingye and Mung'atu (2017) provides support for this impact. This further suggests that stakeholders are engaged actively in the implementation phase, the likelihood of the project deviating from anticipated objectives is minimized. Of the findings by Walter, Onditi, and Mburu (2017) on CDF initiatives, the covering of contextual issues in the study was particularly notable. This is because the study brought to the fore the highly sensitive nature of the context in relation to the extent of participation in any given initiative, an issue central to this study.

The participation in M&E showed significant value (β = 0.209, p = 0.007). This value describes the impact that stakeholders have on the recognition of gaps and the adjustments needed and suggests possible iterative refinements to ensure the viability of the initiative. The difference from Juster (2021) in the findings further illustrates that the impact of the M&E involvement is contextual.

5. CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The study confirms that stakeholder engagement is pivotal for the sustainability of wind power projects in Kenya. Different forms of participation—while distinct—interact synergistically across all project life cycle stages. During project identification, early stakeholder contact establishes a consensus on community needs, aligns project objectives, and fosters ownership. In the planning stage, engagement strengthens partnerships, enhances risk assessment, and improves resource allocation. Implementation involvement promotes transparency and accountability, optimizing operational performance. Finally, active monitoring and evaluation facilitates adaptive management, allowing projects to adjust proactively and ensuring long-term viability. Conversely, lack of stakeholder engagement increases risks, leading to community resistance, inefficiency, and potential project failure. These findings underscore that participatory approaches are not optional but essential for sustainable renewable energy development.

5.2 Recommendations

Stakeholder participation should be continuous and embedded across all project phases, rather than episodic. The study highlights the differential and additive value of engagement at each stage: legitimacy during identification, strategic guidance in planning, accountability in implementation, and adaptive assessment in monitoring and evaluation. Engagement must be strategically framed within stakeholder theory, treated as a success strategy rather than a procedural formality. Implementing these recommendations will strengthen project sustainability, align local practices with global sustainability agendas such as the SDGs, and provide a replicable model for renewable energy projects in Kenya and beyond.

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