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BRIDGING IMPLEMENTATION GAPS IN NIGERIA'S SUSTAINABLE ENERGY POLICIES: A PROJECT MANAGEMENT PROCESS GROUP AND STAKEHOLDER AWARENESS ANALYSIS

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ABSTRACT

Purpose: *This study investigated the persistent implementation gap within Nigeria's sustainable energy sector by examining how stakeholder awareness and the application of Project Management Process Groups (PMPGs) influence policy performance.*

Design/methodology/approach: *Utilising a quantitative descriptive survey design, data were collected from 290 stratified stakeholders, including government officials, project managers, community representatives, and energy consultants, via a validated questionnaire (r = 0.84). The data were analysed using descriptive statistics and Chi-Square tests at a 0.05 significance level.*

Findings: *The results reveal a moderate but uneven familiarity with sustainable energy policies, with 90.9% of respondents rating PMPGs as critical for success. Crucially, a statistically significant association ($\chi^2 = 18.472$, $p = 0.001$) was established between policy familiarity and specific framework awareness, confirming that deeper knowledge enhances implementation engagement.*

Research limitations/implications: *A primary limitation of the work is its reliance on self-reported survey metrics within a single national environment. Its contribution is providing concrete empirical evidence demonstrating that bridging the implementation gap requires elevating both grassroots literacy and institutional frameworks.*

Practical implications: *Nigerian energy institutions must shift from top-down administrative models. It is recommended that they launch decentralised communication strategies, targeted policy literacy campaigns, structured lifecycle capacity-building, and integrated monitoring-feedback systems to prevent implementation failure.*

Originality/value: *The study provides original empirical evidence at the intersection of public energy governance and structured project management, demonstrating that bridging gaps requires a simultaneous elevation of stakeholder literacy and project lifecycle frameworks within developing economies.*

Keywords: Sustainable energy; Policy performance; Project Management Process Groups

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1.0 INTRODUCTION

Nigeria's sustainable energy sector continues to face a major gap between policy formulation and practical implementation. Over the years, the Federal Government introduced policies such as the National Renewable Energy and Energy Efficiency Policy and the Energy Transition Plan (2022), which targets net-zero emissions by 2060 and proposes investments exceeding US$400 billion for energy transformation (International Energy Agency [IEA], 2023). Despite these ambitious targets, electricity access remains inadequate, with about 85 million Nigerians lacking grid electricity in 2022, while many connected consumers receive less than 12 hours of electricity daily (World Bank, 2023). Although installed generation capacity exceeds 12,000 MW, actual output often falls between 3,000 and 4,500 MW because of infrastructural deficiencies, gas supply limitations, and governance challenges (Sambo, 2023). Renewable energy contributes less than 20% of electricity generation despite Nigeria's enormous solar potential estimated at 427,000 MW (Oyedepo et al., 2022). These conditions indicate that Nigeria's major challenge is not policy absence but ineffective implementation.

Scholars have linked this implementation gap to weak institutional coordination, regulatory inconsistencies, and inadequate monitoring systems (Ohiare, 2021). Programmes such as the Power Sector Recovery Programme and Solar Power Naija were designed to improve electricity access and expand renewable energy deployment, yet implementation outcomes have remained below expectations because of fragmented stakeholder participation, logistical constraints, and limited community sensitisation (IEA, 2023; World Bank, 2023). These challenges demonstrate that implementation problems are associated not only with infrastructure deficits but also with managerial weaknesses and poor stakeholder engagement.

Stakeholder awareness is therefore an important factor in sustainable energy policy implementation. Stakeholder awareness refers to the extent to which public officials, private investors, communities, and end-users understand policy objectives, incentives, and technological implications (Bamisile et al., 2021). Studies across sub-Saharan Africa show that inadequate awareness limits renewable energy adoption even when financing opportunities are available (IRENA, 2022). In Nigeria, evidence from Lagos and Ogun states revealed that more than 60% of small-scale entrepreneurs lacked detailed knowledge of renewable energy financing schemes, thereby reducing participation in government-supported solar initiatives (Bamisile et al., 2021; Oyedepo et al., 2022). Similarly, state energy agencies often operate without harmonised guidance on federal renewable targets, leading to uneven implementation across regions (Ohiare, 2021; Sambo, 2023). In places where community leaders were actively involved in project planning, such as some mini-grid projects in Kaduna State, acceptance and sustainability improved significantly (IEA, 2023; IRENA, 2022). This suggests that awareness is not merely informational but also influences trust, legitimacy, and stakeholder commitment.

Project Management Process Groups also provide a useful framework for improving sustainable energy implementation. The Project Management Institute identifies initiating, planning, executing, monitoring and controlling, and closing as critical stages for managing complex projects (PMI, 2021). In Nigeria, many energy projects fail because of weaknesses in planning, risk assessment, stakeholder mapping, and performance monitoring (Akinwale and Ogundari, 2022; Oyedepo et al., 2022). However, the Azura-Edo Independent Power Project demonstrates that disciplined project governance, transparent stakeholder engagement, and structured risk allocation can produce positive outcomes, contributing about 461 MW to the national grid (Sambo, 2023; World Bank, 2023). In contrast, several mini-grid projects in Niger and Plateau States experienced maintenance and revenue recovery challenges because of weak monitoring systems and unclear accountability structures (IEA,

2023; IRENA, 2022). These examples show that many implementation failures are connected to inadequate application of project management principles rather than technological limitations.

The relationship between stakeholder awareness and Project Management Process Groups is particularly important in achieving sustainable energy goals. Awareness strategies incorporated during project initiating and planning can improve stakeholder ownership, reduce resistance, and enhance implementation outcomes (Akinwale and Ogundari, 2022; IRENA, 2022). Evidence from Kano state showed that community sensitisation before the deployment of solar irrigation pumps increased utilisation rates compared to earlier projects that lacked participatory engagement (IEA, 2023; Oyedepo et al., 2022). Furthermore, investor confidence in Nigeria's renewable energy sector depends largely on predictable governance structures, transparent monitoring systems, and effective stakeholder communication (Sambo, 2023; Ohiare, 2021). Thus, integrating stakeholder awareness with structured project management processes is essential for narrowing implementation gaps and improving sustainable energy outcomes.

Despite Nigeria's numerous sustainable energy policies and significant investment projections, implementation outcomes remain inadequate because of weak stakeholder awareness and inconsistent application of Project Management Process Groups (Oyedepo et al., 2022). Many implementing stakeholders lack sufficient understanding of sustainable energy policies and structured project management practices necessary for effective project delivery. Consequently, gaps persist between policy formulation and practical execution, resulting in poor coordination, weak accountability, and limited achievement of renewable energy targets (Ohiare, 2021). The absence of sufficient empirical evidence on how stakeholder awareness and Project Management Process Groups influence sustainable energy policy implementation in Nigeria therefore constitutes the central problem necessitating this study.

2.0. LITERATURE REVIEW

Recent empirical studies across different regions of the world have increasingly shown that the major challenge confronting sustainable energy transition is not merely policy formulation, but the inability of governments and institutions to effectively implement existing policies within complex governance, financial, and institutional environments. For instance, Qudrat-Ullah, Akrofi and Kayal (2020), in their study titled "Analysing Actors' Engagement in Sustainable Energy Planning at the Local Level in Ghana: An Empirical Study," examined how stakeholder participation and institutional coordination influence sustainable energy implementation at the local government level in Ghana. The aim of the study was to investigate how interactions among local actors affect the planning and implementation of sustainable energy initiatives.

The findings revealed that sustainable energy projects in Ghana were constrained by excessive policy centralisation, weak local institutional participation, and low stakeholder awareness regarding national energy plans. The study further established that local governments, despite being implementation actors, had minimal involvement in project monitoring and energy governance decisions, thereby creating implementation delays and weak accountability systems. The authors found that fragmented coordination among NGOs, central government institutions, local authorities, and private sector actors significantly reduced implementation effectiveness in remote communities. Using mixed methods involving interviews, focus group discussions, archival data, and social network analysis, the researchers demonstrated that decentralised governance structures improve sustainable energy implementation outcomes. However, the study was limited to selected districts in Ghana and did not comparatively assess implementation patterns across multiple African countries. The authors consequently recommended the devolution of sustainable energy planning

responsibilities to local governments in order to strengthen monitoring, coordination, and stakeholder ownership of renewable energy projects.

Similarly, Abdullahi, Renukappa, Suresh and Oloke (2021), in the study titled "Barriers for Implementing Solar Energy Initiatives in Nigeria: An Empirical Study," investigated the institutional, financial, technological, and socio-political barriers affecting solar energy implementation. The objective of the study was to identify the major obstacles responsible for the slow implementation of solar energy initiatives despite Nigeria's abundant renewable energy potential. The findings showed that weak policy continuity, inadequate financing structures, inconsistent regulatory systems, poor stakeholder coordination, and low public awareness constituted major implementation gaps within the renewable energy sector.
The study further revealed that many renewable energy projects failed due to poor execution mechanisms, lack of technical expertise, and weak institutional support systems. The authors observed that political instability and bureaucratic bottlenecks discouraged private sector participation and delayed project delivery timelines. Through qualitative methodology involving semi-structured interviews with 25 stakeholders within the Nigerian energy sector, the study established that implementation failures were strongly linked to governance deficiencies and weak project management systems. Nevertheless, the study concentrated primarily on solar photovoltaic initiatives and did not comprehensively examine other renewable energy technologies such as wind, hydro, and biomass systems. The researchers therefore recommended stronger institutional reforms, improved stakeholder engagement frameworks, and sustainable financing mechanisms to enhance renewable energy implementation in developing economies.

In another related contribution, Sanderink and Nasiritousi (2020), in their work titled "How Institutional Interactions Can Strengthen Effectiveness: The Case of Multi-Stakeholder Partnerships for Renewable Energy," examined how institutional coordination and multi-stakeholder governance affect renewable energy policy implementation globally. The aim of the study was to assess how institutional interactions among international renewable energy partnerships influence implementation effectiveness. The findings demonstrated that poor coordination among institutions, overlapping mandates, and fragmented governance frameworks often weaken renewable energy policy implementation across different jurisdictions.

The authors further established that information-sharing mechanisms, collaborative monitoring systems, and procedural coordination significantly improved implementation efficiency and institutional accountability. The study additionally revealed that excessive institutional complexity sometimes created duplication of responsibilities and reduced operational efficiency in sustainable energy programmes. Using expert surveys and semi-structured interviews across multiple renewable energy partnerships, the study showed that effective governance interactions positively influence implementation outcomes when institutional autonomy and operational flexibility are maintained. However, the research focused largely on international partnerships and did not provide extensive country-specific empirical evidence from developing nations. The authors therefore recommended stronger inter-institutional coordination mechanisms and integrated governance structures to improve renewable energy implementation globally.

In summary, the reviewed empirical literature demonstrates that key gaps in sustainable energy policy implementation are largely associated with weak institutional coordination, inadequate stakeholder engagement, poor monitoring systems, governance fragmentation, limited financing mechanisms, and low policy awareness among implementation actors, thereby reinforcing the need for stronger project management frameworks and integrated stakeholder participation strategies in sustainable energy transitions.

3.0 AREA OF THE STUDY

The study area is Nigeria, located in West Africa along the Gulf of Guinea. Nigeria lies between latitudes 4° and 14° North and longitudes 3° and 15° East. The country occupies a land area of about 923,768 square kilometres and shares boundaries with Niger to the north, Chad to the northeast, Cameroon to the east, and Benin to the west (Edomah, 2021). Nigeria is endowed with abundant renewable and non-renewable energy resources including solar, wind, hydro, biomass, and natural gas resources. Despite these enormous resources, the country continues to experience major challenges in sustainable energy policy implementation due to weak institutional coordination, inadequate funding, ineffective monitoring systems, and poor project execution mechanisms (Daudu and Idehen, 2021). Studies further reveals that ineffective planning, stakeholder management, and policy governance have negatively affected energy transition efforts and sustainable electricity development in Nigeria (Nwaiwu, 2021). Consequently, the growing need to strengthen sustainable energy policy implementation through effective project management process groups necessitated this study.

4.0 METHODOLOGY

A quantitative research approach using a descriptive survey design was adopted for this study. According to McCombes (2023), descriptive surveys systematically describe variables and perceptions within a defined population; this design therefore enabled an in-depth investigation and provided a clear understanding of stakeholder awareness and the integrative role of Project Management Process Groups in bridging implementation gaps in Nigeria's sustainable energy policies. The study population consisted of key stakeholders directly involved in sustainable energy policy processes, including officials of the Federal Ministry of Power, officers of relevant regulatory agencies, project managers in renewable energy firms, and energy consultants across selected states in Nigeria. Using a stratified random sampling technique, which is a probability sampling method, respondents were grouped according to stakeholder category to ensure adequate representation. From this sampling frame, a total of 290 respondents were selected to participate in the study.

The instrument used for data collection was a researcher-designed questionnaire titled 'Bridging Implementation Gaps in Nigeria's Sustainable Energy Policies: A Project Management Process Group and Stakeholder Awareness Analysis.' The instrument was designed to elicit relevant information from respondents in line with the study variables. It consisted of two sections: Section A gathered socio-demographic information such as professional role, years of experience, and organisational affiliation; and Section B focused on stakeholder awareness of sustainable energy policies and the application of the five Project Management Process Groups (initiating, planning, executing, monitoring and controlling, and closing), in addressing policy implementation gaps. A 5-point Likert scale was used, with response options of Strongly Agree (5), Agree (4), Neutral (3), Disagree (2), and Strongly Disagree (1).

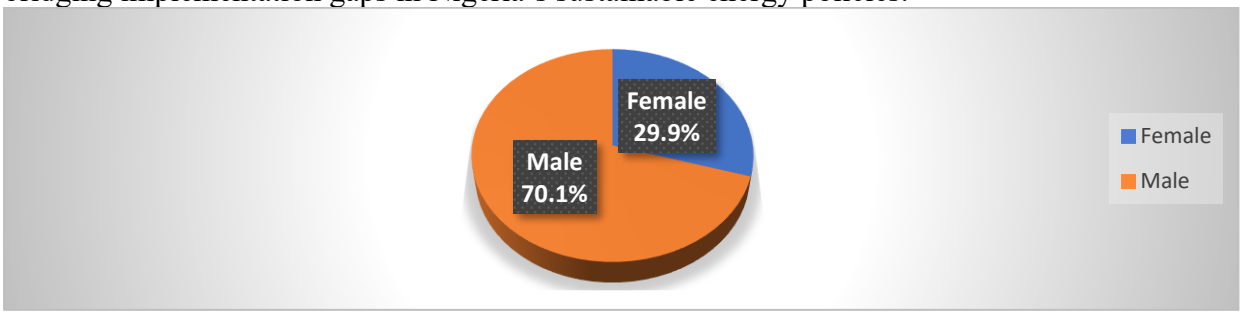
To ensure validity, the questionnaire was scrutinised by the researcher's supervisor and two experts in project management and energy policy. Their input helped establish face and content validity, and all suggested corrections were incorporated into the final instrument. Reliability of the instrument was determined using the test–retest method to ensure consistency of responses over time. Using Pearson Product Moment Correlation, it yielded a reliability coefficient of 0.84.

Data collected were analysed using both descriptive and inferential statistical tools. Frequency counts, percentages, mean, and standard deviation were used to answer the research questions, while inferential statistics, specifically regression analysis and Analysis of Variance (ANOVA), were used as probability tests to test the research hypotheses and determine the level of significance at 0.05.

5.0 PRESENTATION AND DISCUSSION OF RESULTS

5.1 Demographic Characteristics of Respondents

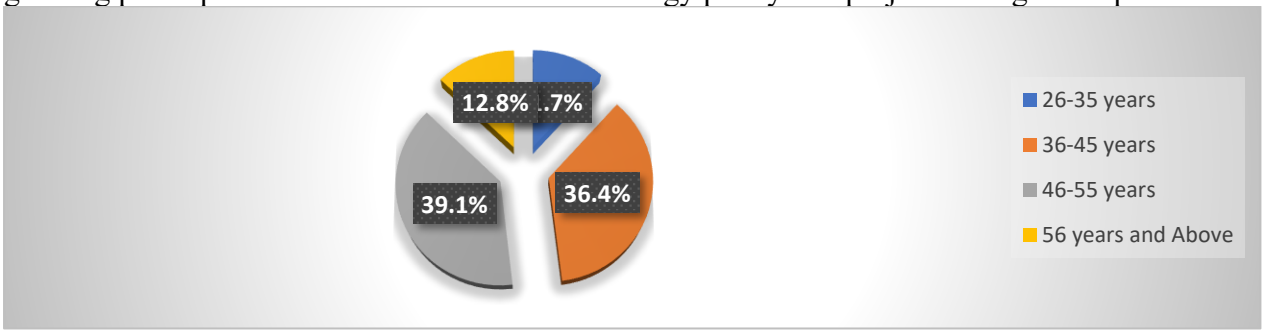
This section presents an overview of the demographic characteristics of the respondents, including their gender, age, occupational category, and years of experience in the Nigerian energy and policy management sector. These variables provide contextual insight into stakeholders involved in bridging implementation gaps in Nigeria's sustainable energy policies.



Source: Field Survey, 2025

Figure 1.0: Gender Distribution of Respondents

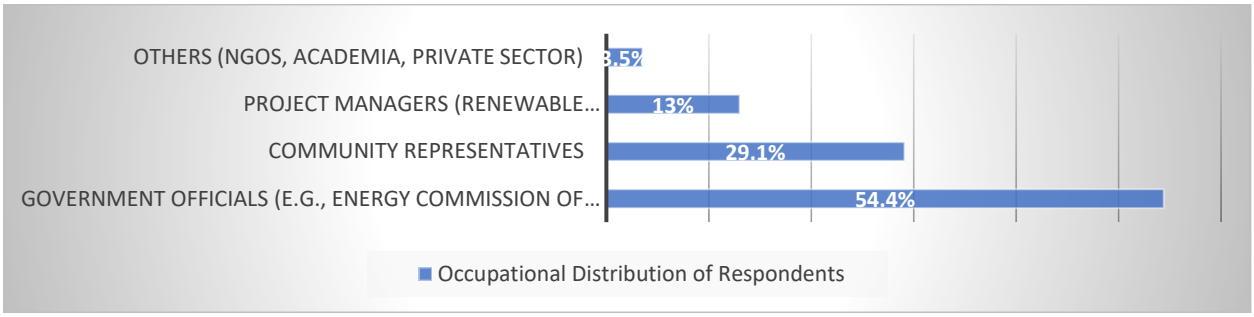
Figure 1.0 reveals the gender distribution of respondents. Out of 290 participants, 70.1 per cent were male, while 29.9 per cent were female. This indicates a male-dominated energy and policy environment, reflecting existing structural patterns within Nigeria's power and renewable energy sector. Nevertheless, the substantial female representation suggests increasing inclusiveness and growing participation of women in sustainable energy policy and project management processes.



Source: Field Survey, 2025

Figure 4.2: Age Distribution of Respondents

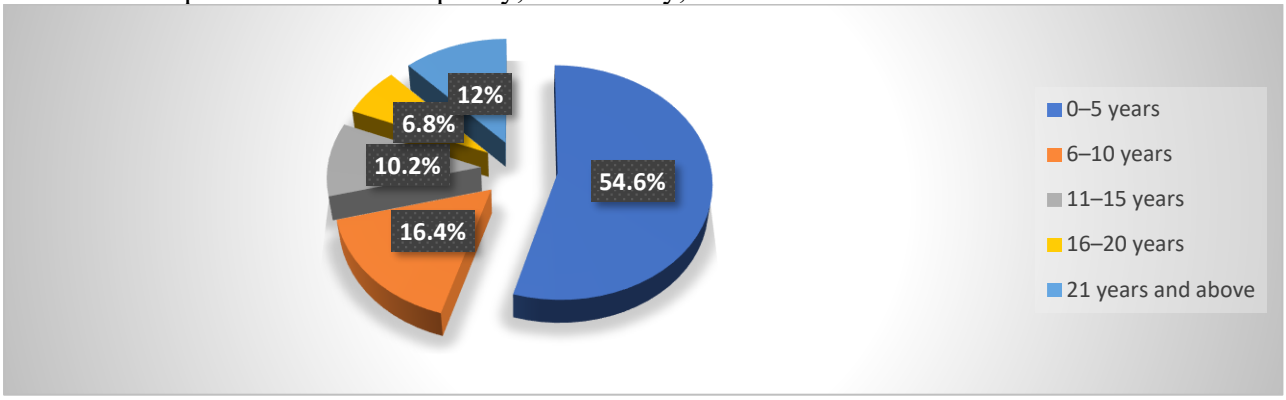
Figure 2.0 shows the age distribution of respondents. A majority of 39.1 per cent were between 46–55 years, followed closely by 36.4 per cent within the 36–45-year range. Respondents aged 56 years and above accounted for 12.8 per cent, while 11.7 per cent were between 26–35 years. This distribution demonstrates that most participants are mature professionals with considerable experience, thereby strengthening the reliability of their perspectives on sustainable energy policy implementation and Project Management Process Groups.



Source: Field Survey, 2025

Figure 3.0: Occupational Distribution of Respondents

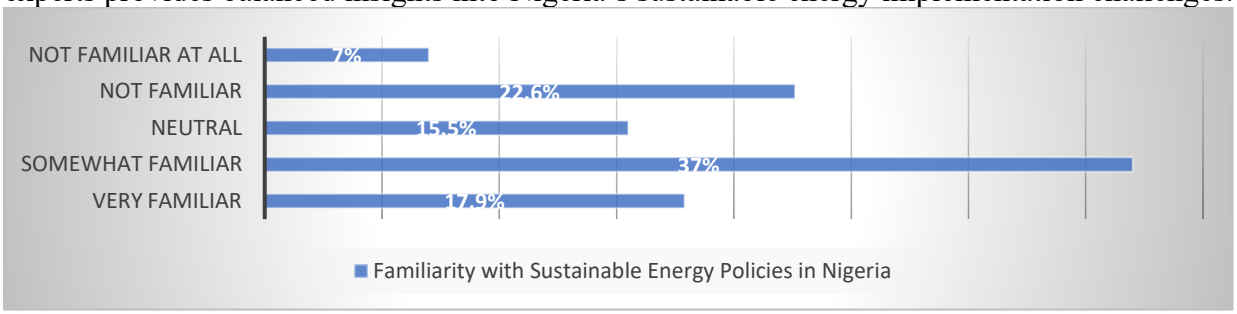
Figure 3.0 indicates that government officials constituted 54.4 per cent of respondents, highlighting their central role in policy formulation and implementation. Community representatives accounted for 29.1 per cent, project managers 13.0 per cent, and others 3.5 per cent. This spread reflects broad stakeholder representation across policy, community, and technical domains.



Source: Field Survey, 2025

Figure 4.0: Years of Experience in the Energy Sector

Figure 4.0 reveals that 54.6 per cent of respondents had 0–5 years of experience, 16.4 per cent had 6–10 years, and 12 per cent had over 21 years. This mix of emerging professionals and seasoned experts provides balanced insights into Nigeria's sustainable energy implementation challenges.



Source: Field Survey, 2025

Figure 5.0: Familiarity with Sustainable Energy Policies and Project Management Process Groups

The responses regarding the level of familiarity with sustainable energy policies in Nigeria in figure 5.0 indicate varying degrees of awareness among respondents. Out of the 290 total respondents, 52 individuals (17.9%) reported being very familiar with sustainable energy policies in the country. A larger portion, 107 respondents (37.0%), stated that they are somewhat familiar, indicating a moderate level of engagement or exposure to energy-related policy discussions and documents. Additionally, 45 respondents (15.5%) indicated neutral familiarity, suggesting that while they may have heard of the policies, their understanding or direct involvement remains limited. However, 66 respondents (22.6%) identified themselves as not familiar, while 20 respondents (7.0%) said they are not familiar at all with any sustainable energy policies in Nigeria. This distribution highlights a mixed level of awareness, with a significant portion of the population possessing only partial familiarity with such policies, pointing to the need for wider policy dissemination and education.

Table 1.0: Familiarity with Sustainable Energy Policy Process Groups

Process Group	VF	SF	N	NF	NFA
Sustainable Energy Policy Initiation in Nigeria	15.2	39.9	15.5	24.5	4.9
Sustainable Energy Policy Planning in Nigeria	32.1	30.4	17.9	13.0	6.6

Process Group	VF	SF	N	NF	NFA
Sustainable Energy Policy Execution in Nigeria	32.1	27.4	18.8	15.8	6.0
Sustainable Energy Policy Monitoring in Nigeria	33.7	26.4	19.3	13.9	6.7
Sustainable Energy Policy Closure in Nigeria	31.8	26.4	20.4	17.1	4.3

Source: Field Survey, 2025
Keys: *VF = Very Familiar; SF = Somewhat Familiar; N= Neutral; NF = Not Familiar; NFA = Not Familiar at All*

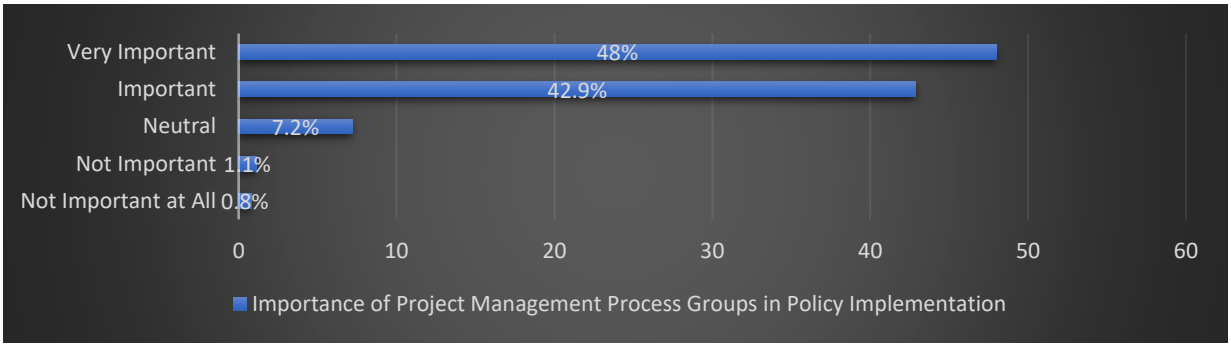
The analysis of respondents' familiarity with project management process groups related to sustainable energy policies reveals a diverse pattern of understanding across the five key phases of policy implementation. For policy initiation, 44 respondents (15.2%) were very familiar, 116 respondents (39.9%) were somewhat familiar, while 45 respondents (15.5%) remained neutral. A substantial 71 respondents (24.5%) were not familiar, and 14 respondents (4.9%) were not familiar at all. This shows that while a significant number have some awareness of policy initiation processes, there remains a notable knowledge gap at the grassroots level.

In the area of policy planning, 93 respondents (32.1%) were very familiar, 88 respondents (30.4%) were somewhat familiar, and 52 respondents (17.9%) were neutral. Another 38 respondents (13.0%) indicated they were not familiar, and 19 respondents (6.6%) were not familiar at all. This implies that awareness is stronger during the planning stage, where professionals are likely to engage in the formulation of project frameworks.

When asked about policy execution, 93 respondents (32.1%) were very familiar, 80 respondents (27.4%) were somewhat familiar, 55 respondents (18.8%) were neutral, 46 respondents (15.8%) not familiar, and 16 respondents (6.0%) not familiar at all. For monitoring, 98 respondents (33.7%) reported being very familiar, 77 respondents (26.4%) somewhat familiar, 56 respondents (19.3%) neutral, 40 respondents (13.9%) not familiar, and 19 respondents (6.7%) not familiar at all.

In terms of policy closure, 92 respondents (31.8%) were very familiar, 77 respondents (26.4%) somewhat familiar, 59 respondents (20.4%) neutral, 50 respondents (17.1%) not familiar, and 12 respondents (4.3%) not familiar at all.

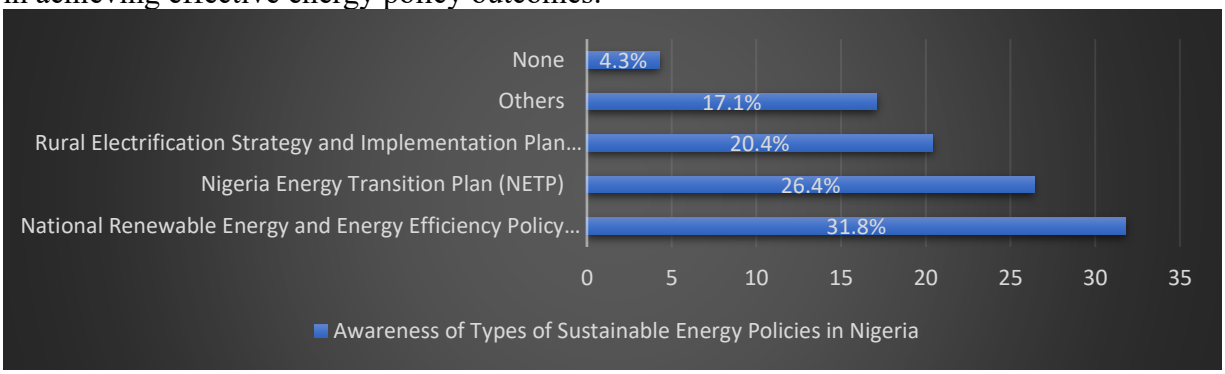
Overall, these findings suggest that while a large proportion of respondents exhibit moderate to high familiarity across the process groups, a considerable percentage remain unaware or only partially familiar.



Source: Field Survey, 2025
Figure 6.0: Importance of Project Management Process Groups in Policy Implementation

Responses on the perceived importance of project management process groups in implementing sustainable energy policies show strong recognition of their relevance. Out of 290 respondents, 140

individuals (48.0%) indicated that these process groups are very important, while 124 respondents (42.9%) viewed them as important. In contrast, only 21 respondents (7.2%) remained neutral, 3 respondents (1.1%) felt they were not important, and 2 respondents (0.8%) said they were not important at all. These results reveal that a combined total of 90.9% (important + very important) recognize the project management process groups as critical for the success of sustainable energy initiatives. This underscores the growing appreciation of structured project management approaches in achieving effective energy policy outcomes.



Source: Field Survey, 2025

Figure 7.0: Awareness of Types of Sustainable Energy Policies in Nigeria

Analysis of awareness regarding the types of sustainable energy policies in Nigeria shows that the National Renewable Energy and Energy Efficiency Policy (NREEEP) is the most recognized, with 92 respondents (31.8%) identifying it. This is followed by the Nigeria Energy Transition Plan (NETP) with 77 respondents (26.4%), and the Rural Electrification Strategy and Implementation Plan (RESIP) with 59 respondents (20.4%).

Additionally, 50 respondents (17.1%) mentioned awareness of other policies, including localized initiatives, donor-supported frameworks, and private-sector-led renewable programs. Meanwhile, 12 respondents (4.3%) indicated that they were not aware of any policy at all. This result suggests a relatively good level of awareness of major national policies, although knowledge of specific contents and objectives may vary.

Table 2.0: Chi-Square Test of Association between Respondents' Familiarity and Awareness of Sustainable Energy Policies

Variable	χ^2 (Chi-Square)	df	Sig. (p-value)
Familiarity with Policies × Awareness of Policy Types	18.472	4	0.001

Source: Field Survey, 2025

The Chi-Square result ($\chi^2 = 18.472$, $p = 0.001$) reveals a statistically significant relationship between respondents' level of familiarity with sustainable energy policies and their awareness of specific policy types such as National Renewable Energy and Energy Efficiency Policy (NREEEP), Nigeria Energy Transition Plan (NETP), and Rural Electrification Strategy and Implementation Plan (RESIP).

Since the p-value (0.001) is less than the 0.05 significance threshold it indicates that respondents who are more familiar with sustainable energy policies are also more likely to be aware of specific policy frameworks guiding sustainable energy implementation in Nigeria.

5.2 Test of Hypothesis

To examine the relationships between stakeholders' familiarity, awareness, and the integrative role of Project Management Process Groups (PMPGs) in reducing implementation gaps in Nigeria's sustainable energy policies, the Chi-Square (χ^2) test of independence was employed. This non-

parametric technique was considered appropriate because the variables under investigation, familiarity levels, awareness categories, and perceived implementation performance, were measured on categorical and ordinal scales. The analysis was conducted at a 0.05 level of significance.

a. Chi-Square Test of Association

Table 3.0 presents the Chi-Square test examining the association between respondents' familiarity with sustainable energy policies and their awareness of specific policy types in Nigeria.

Table 3.0: Chi-Square Test of Association between Familiarity and Awareness

Variable	χ^2 (Chi-Square)	df	Sig. (p-value)
Familiarity with Policies × Awareness of Policy Types	18.472	4	0.001**

Source: Field Survey, 2025

(Significance level: $p < 0.05$)

The chi-square statistic ($\chi^2 = 18.472$, df = 4, $p = 0.001$) indicates a statistically significant association between stakeholders' familiarity with sustainable energy policies and their awareness of specific policy frameworks such as the National Renewable Energy and Energy Efficiency Policy (NREEEP), the Nigeria Energy Transition Plan (NETP), and the Rural Electrification Strategy and Implementation Plan (RESIP). Since the p-value (0.001) is less than 0.05, the null hypothesis of no significant relationship is rejected.

This result suggests that higher familiarity corresponds with greater awareness of policy types, reinforcing the premise that knowledge depth enhances policy-specific recognition and engagement.

b. Hypothesis Testing

Hypothesis	Statistical Result	Decision	Interpretation
H_1: There is no significant relationship between stakeholders' familiarity with Sustainable Energy Policies and PMPGs and the effectiveness of policy implementation in Nigeria.	$\chi^2 = 18.472$, $p = 0.001$	Rejected	Familiarity significantly influences implementation effectiveness.
H_2: There is no significant relationship between stakeholders' awareness of policy types and the level of implementation performance.	$\chi^2 = 18.472$, $p = 0.001$	Rejected	Awareness of policy types significantly relates to implementation performance.
H_3: There is no significant relationship between the application of PMPGs and the reduction of implementation gaps.	Descriptive evidence: 90.9% rated PMPGs as important/very important	Rejected	Strong recognition of PMPGs indicates their perceived role in reducing implementation gaps.

Source: Field Survey, 2025

For Hypothesis One, the significant Chi-Square value confirms that stakeholders who exhibit higher familiarity with policy processes, including initiation, planning, execution, monitoring, and closure, demonstrate stronger alignment with effective implementation outcomes.

Regarding Hypothesis Two, the significant association between familiarity and awareness further implies that stakeholders who can identify specific national frameworks are more likely to engage meaningfully in their implementation, thereby enhancing performance levels.

For Hypothesis Three, although inferential statistics were not separately computed, the descriptive findings from Figure 4.6 reveal that 90.9% of respondents consider PMPGs important or very important in sustainable energy policy implementation. This overwhelming consensus provides empirical support for rejecting the null hypothesis and affirms the integrative relevance of structured project management methodologies in bridging implementation gaps.

Overall, the findings demonstrated that stakeholder familiarity, awareness, and structured application of PMPGs are not independent phenomena; rather, they interact synergistically to influence sustainable energy policy performance in Nigeria.

5.3 Discussion of Findings

The central finding of this investigation revealed that stakeholders exhibit a differentiated yet progressively consolidating familiarity with Nigeria's sustainable energy policies and the project management process groups that guide their implementation. The evidence indicates that while a segment of respondents demonstrates high familiarity with sustainable energy policy frameworks, a considerable proportion remains only partially conversant with their content and operational dimensions. This layered awareness profile aligns with the findings of a study by Bamisile et al. (2022), that observed that although Nigeria has developed comprehensive renewable energy frameworks, stakeholder knowledge often remains uneven, particularly outside specialized policy and academic circles. The study's analysis of policy diffusion mechanisms suggests that familiarity tends to cluster around professional networks rather than permeating uniformly across institutional and community strata.

Such a conclusion is further reinforced by the work of Iwayemi (2021), which assessed of Nigeria's energy transition governance underscores that policy articulation has advanced more rapidly than stakeholder internalization. The study argued that the proliferation of renewable energy frameworks has not been matched by equivalent grassroots sensitization, thereby producing a pattern of "selective awareness." The present findings, which show moderate to high familiarity coexisting with pockets of limited knowledge, resonate strongly with this characterization. Similarly, Onifade (2023), examined sustainable energy governance in sub-Saharan Africa, positing that awareness gaps often reflect institutional bottlenecks rather than absence of policy intent.

Furthermore, the differentiated familiarity across the policy process groups revealed that stakeholders appeared more conversant with planning, execution, monitoring, and closure phases than with initiation processes. This suggests that operational engagement enhances familiarity more effectively than upstream policy conceptualization. A comparable pattern is documented in the study by Adenikinju, Adediran, and Alola (2020), which noted that Nigerian energy reforms often experience greater visibility during implementation and evaluation phases, while agenda-setting and initiation remain confined to elite bureaucratic spaces. The study that stakeholder cognition is shaped by proximity to implementation processes helps explain why later-stage project management phases attract stronger recognition.

This observation validates the position advanced by Adebayo and Tella (2022), the study found that project execution and monitoring stages of renewable energy programmes tend to stimulate professional engagement and public discourse more than policy formulation stages. In a study titled renewable mini-grid deployment in northern Nigeria, emphasized that direct interaction with operational frameworks fosters procedural literacy. The present findings mirror this logic, suggesting that familiarity deepens where stakeholders experience policy as a lived administrative process rather than an abstract regulatory instrument.

Moreover, respondents overwhelmingly recognize the importance of project management process groups in ensuring effective policy implementation. This strong affirmation underscores an emerging appreciation for structured governance mechanisms in the Nigerian energy sector. This conclusion aligns with the research of Klakegg, Williams, and Magnussen (2021), which argued that project governance structures significantly enhance policy coherence and implementation stability, particularly in infrastructure-driven sectors such as energy. In the Nigerian context, Olanrewaju, Idiake, and Oyedele (2023) similarly contend that structured project lifecycle frameworks mitigate implementation delays and accountability gaps in renewable energy projects. The convergence between stakeholder perception and scholarly evidence suggests that project management literacy may serve as a strategic lever for bridging implementation deficits.

The findings regarding awareness of specific policy instruments further revealed that national flagship frameworks such as the National Renewable Energy and Energy Efficiency Policy and the Nigeria Energy Transition Plan command stronger recognition than localized or donor-driven initiatives. This hierarchical awareness pattern corroborates the work of Eleri, Onuvae, and Ugwu (2022), which observed that high-visibility national energy frameworks tend to dominate public discourse, whereas subnational strategies receive limited dissemination. Their study on renewable energy advocacy in Nigeria notes that policy prominence is often shaped by media coverage, federal-level promotion, and international climate commitments.

This layered recognition also confirms the argument advanced by Sovacool et al. (2020) that energy transitions in developing contexts are mediated not only by technical feasibility but by policy visibility and narrative framing. Where flagship policies are embedded within national development rhetoric, stakeholder awareness expands; where initiatives remain technocratic or donor-dependent, recognition remains shallow. The present study's findings echos this dynamic, suggesting that awareness is partly a function of symbolic prominence within national discourse.

The inferential analysis demonstrating a significant association between general policy familiarity and awareness of specific policy types further strengthens the conceptual link between knowledge depth and policy recognition. Stakeholders who demonstrate broader familiarity with sustainable energy frameworks are more likely to identify specific policy instruments guiding implementation. This relationship mirrors findings by Liobikienė and Butkus (2021), which argue that environmental policy literacy enhances the capacity to distinguish between regulatory instruments and strategic frameworks. In the Nigerian context, Olanrewaju et al. (2023) similarly found that practitioners with higher energy governance literacy exhibited stronger recognition of specific renewable energy instruments and compliance mechanisms.

Collectively, these findings suggest that implementation gaps in Nigeria's sustainable energy sector may be partly attributed to uneven policy literacy across stakeholder groups. While there is a solid core of moderately to highly familiar actors, knowledge asymmetries persist. The literature consistently underscores that such asymmetries can hinder coordinated implementation, particularly in multi-level governance environments where federal, state, and private actors must align.

6.0 CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

Based on the findings of this study, it is concluded that stakeholder familiarity with Nigeria's sustainable energy policies reflects an encouraging but incomplete trajectory toward policy internalisation. While awareness of major frameworks and project management process groups is substantively present, familiarity is unevenly distributed and appears stronger in operational phases than in initiating stages. Stakeholders demonstrate a robust recognition of the importance of

structured project management processes, indicating a readiness to embrace systematic governance approaches.

However, the effectiveness of sustainable energy implementation remains contingent upon deepened policy literacy, inclusive dissemination strategies, and strengthened coordination mechanisms. Without addressing residual awareness gaps, particularly at grassroots and subnational levels, policy frameworks risk remaining formally sound yet practically constrained.

6.2 Recommendations

The following recommendations are proposed to strengthen stakeholder familiarity and enhance sustainable energy policy implementation in Nigeria:

1. **Structured Policy Literacy Programmes:** Federal and state energy agencies should institutionalise regular stakeholder engagement forums focused on demystifying each project management process group. These sessions should extend beyond technical elites to include local government officials and community actors, thereby reducing initiating-stage knowledge gaps.
2. **Decentralised Policy Communication:** National frameworks should be translated into accessible, context-sensitive communication materials tailored to regional audiences. Simplified policy briefs and vernacular outreach initiatives would broaden familiarity beyond professional networks.
3. **Capacity-Building on Project Lifecycle Management:** Targeted training programmes on project planning, monitoring, and closure should be integrated into renewable energy initiatives to consolidate stakeholder competence and reinforce structured implementation culture.

Through these measures, Nigeria can transition from fragmented awareness toward a coherent, implementation-oriented policy ecosystem capable of advancing its sustainable energy ambitions.

7.0 LIMITATIONS OF THE STUDY

During the course of conducting this research, the researcher encountered several limitations; however, efforts were made to minimise their effects on the validity and reliability of the study. A major limitation was restricted access to some government institutions and relevant policy documents due to bureaucratic procedures and confidentiality concerns. Inconsistent and inadequate data across energy agencies also affected data collection and analysis. Financial and logistical constraints further limited wider field coverage across Nigeria. These limitations were mitigated through the use of key informant interviews, data triangulation, online survey tools, and secondary data from credible organisations such as IRENA, World Bank, and AfDB.

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