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Readiness of Academic Libraries in North-Central Nigeria to Adopt Green Practices: Strategies for Achieving Sustainable Development Goals

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Abstract

This study examined the readiness of academic libraries in North-Central Nigeria to adopt green practices in response to climate change in support of the Sustainable Development Goals (SDGs). Researchers used mixed-methods sequential explanatory design and collected data from library personnel in federal universities through an electronic semi-structured questionnaire. Using purposive and snowball sampling, they surveyed 556 personnel, obtained 484 valid responses, and analyzed the data. Findings showed moderate awareness and institutional readiness, but limited implementation of practices such as e-waste management and recycling. Key barriers included inadequate funding, infrastructure, technology, training, and institutional policies. Participants named staff capacity building, clear policy frameworks, technological integration, green operational practices, and community engagement as key strategies for strengthening sustainability. These measures can support SDG 4 (Quality Education), SDG 12 (Responsible Consumption and Production), and SDG 13 (Climate Action). The study offers evidence-based insights for advancing environmentally sustainable practices in academic libraries.

Introduction

Climate change has become one of the most pressing global challenges of the twenty-first century, affecting education, information management, and other sectors. Academic libraries, as centers of knowledge creation, organization, and dissemination, are strategically positioned to advance environmental awareness and sustainability. Librarians, as custodians of information and facilitators of lifelong learning, incorporate sustainability principles into library services, programs, and policies (Peelwan & Suman, 2024). Their role enables them to curate and disseminate reliable information on environmental sustainability, climate change, and green practices (Mathiasson & Jochumsen, 2022), strengthening institutional stewardship and aligning library operations with the United Nations Sustainable Development Goals (SDGs) related to education and climate action (Mwanzu et al., 2023). This role proves the potential of academic libraries to function as active agents of sustainability within higher education institutions.

Expanding on this role, green practices in libraries involve a variety of initiatives designed to conserve resources, minimize waste, and reduce environmental impact. These initiatives include recycling programs, energy-efficient lighting, sustainable building designs, digital resource management, and awareness campaigns (Almusaed et al., 2024). Such measures not only lessen ecological impacts but also encourage responsible resource use among students, staff, and the wider academic community. Institutional transformation provides opportunities to integrate sustainability into library culture and operations (Santamaría et al., 2025), while librarians' beliefs and commitment strongly influence the adoption of green initiatives, particularly in institutions with established environmental policies (Tariq et al., 2025). Collectively, these efforts support the development of environmentally conscious academic communities and the integration of sustainability into institutional practices (Solemanpharcy & Gaffar, 2023).

Despite these opportunities, institutional readiness to implement green practices stays inconsistent, especially in developing countries such as Nigeria. Institutional readiness refers to an organization's capacity and willingness to implement actionable sustainability policies, encompassing policy support, resources, infrastructure, and leadership commitment (Kolawole & Oladokun, 2025). Libraries lack clear sustainability frameworks to meet challenges including inadequate infrastructure, insufficient funding, and limited institutional support (Okoye et al., 2024). In contrast, institutions with well-defined policies are more likely to adopt energy-efficient systems, effective waste management, and sustainable procurement practices (Amuda & Parveen, 2025). Achieving readiness requires not only policies but also proper resource allocation,

continuous staff training, and active stakeholder engagement to foster a culture of sustainability and ensure the success of green initiatives (Shabnam & Sraddha Devi, 2025; Cocodia & Ogunbodede, 2025).

At the center of sustainability efforts are librarians, whose knowledge, commitment, and professional perspectives are essential in shaping the success of institutional green initiatives. Sustainable librarianship extends beyond resource conservation to include innovation in service delivery, responsiveness to appearing environmental challenges, and collaboration across institutional, national, and international platforms (Keller, 2023; McCord et al., 2025). As information mediators and organizational influencers, librarians can drive sustainability efforts by embedding green practices in daily operations, informing institutional policies, and encouraging a culture of environmental responsibility among staff and users. Understanding their perspectives on sustainability readiness is crucial for naming gaps, guiding strategic policies, and strengthening institutional readiness for green initiatives.

Statement of the Problem

Academic libraries, in developing countries such as Nigeria, continue to face persistent barriers for implementing green practices. Constraints such as inadequate infrastructure, insufficient funding, weak organizational policies, and limited staff ability often impede the adoption of sustainable strategies, restricting libraries' capacity to model environmentally responsible behavior. Librarians' perspectives and readiness remain insufficiently explored. Limited understanding of librarians' knowledge, attitudes, and perceived capacity to implement environmentally responsible practices may weaken the effectiveness of green initiatives. Consequently, there is a need to evaluate both institutional readiness and librarians' perspectives on the adoption of green practices. Examining these aspects is essential for naming barriers, recognizing opportunities, and developing practical strategies that contribute to environmental stewardship.

Research Questions

The study aims to address the following questions:

1. What is the level of awareness among academic librarians on the adoption of green practices in the era of climate change?
2. What green practices are currently implemented by academic libraries?
3. To what extent are academic libraries prepared to implement green practices?
4. What challenges hinder academic libraries from implementing green practices?
5. What strategies can be implemented to achieve the SDGs?

Literature Review

Academic libraries are increasingly conceptualized as active agents in promoting environmental sustainability within higher education institutions. The concept of the green library extends beyond environmentally friendly infrastructure to include institutional culture, operational practices, and educational responsibilities. Green libraries incorporate energy efficiency, sustainable resource management, environmentally responsible procurement, and environmental literacy initiatives into their core functions. Rather than serving solely as repositories of knowledge, these institutions work as platforms for modelling sustainable behavior and encouraging ecological awareness within academic communities (Ritu, 2024; Adjei & Agyeman, 2025). A key determinant of sustainable green library initiatives is institutional readiness, which refers to an organization's structural and cultural capacity to implement sustainability-oriented change. Institutional readiness includes leadership commitment, policy frameworks, financial investment, technological infrastructure, and staff engagement (Narendra, 2023). Research shows that sustainability initiatives are more effective in institutions where leadership actively prioritizes environmental responsibility and integrates sustainability into strategic planning. By contrast, libraries without coherent policies or institutional support often experience fragmented or symbolic implementation of green practices. Therefore, readiness extends beyond material resources to reflect organizational values, norms, and shared commitment to sustainability.

Technological infrastructure is another critical dimension of green library readiness. The adoption of energy-efficient lighting systems, renewable energy technologies, digitized collections, and environmentally optimized information systems can reduce the environmental footprint of library operations (Ganesamoorthy & Selvakamal, 2025; Ogunbodede & Omehia, 2024). Integrating such technologies presents practical challenges, particularly in resource-constrained contexts. High acquisition and maintenance costs, together with the need for specialized technical ability, may hinder widespread adoption. Effective technological integration therefore requires deliberate planning, staff capacity development, and alignment with broader institutional sustainability strategies. Beyond operational considerations, academic libraries perform an important educational and advocacy role in advancing environmental literacy. As knowledge hubs, libraries issue information on climate change and sustainability through curated collections, workshops, and awareness programs (Agbakwuru et al., 2024). These activities position libraries as agents of behavioral and cultural transformation, where operational sustainability is reinforced through educational engagement. By fostering participatory learning environments, libraries encourage students and staff to internalize sustainability principles, thereby extending their influence beyond institutional boundaries.

Despite the increasing recognition of green libraries, significant gaps stay in achieving comprehensive institutional readiness. Scholars have named persistent challenges, including inadequate funding, limited professional training, the absence of standardized evaluation metrics, and inconsistent policy support (Kulkarni, 2023). Without systematic monitoring and evaluation frameworks, institutions struggle to measure progress or sustain long-term initiatives. Addressing these gaps requires an integrated approach that combines leadership, policy development, technological investment, and capacity building. Such a framework is necessary for aligning library operations with broader sustainability agendas, including the SDGs.

Empirical Studies

Studies on green practices in academic libraries show a consistent pattern: although awareness of environmental sustainability is high among librarians, practical implementation is often constrained by institutional and infrastructural limitations. Surveys conducted in various national contexts report similar outcomes. Islam et al. (2025) saw that librarians in Islamabad recognized the importance of sustainability but lacked sufficient training and policy support to implement green initiatives effectively. Similarly, Akbulut et al. (2018) showed low practical engagement with green concepts among Turkish university librarians despite the presence of isolated environmentally friendly measures. Studies conducted in Western contexts reflect comparable challenges. Ren and Lu (2024) reported that librarians in the United States acknowledged sustainability as a professional priority, yet implementation remained limited because of unclear policy direction and insufficient institutional support. Tariq and Khalid (2023). Moderate awareness of green information technology (IT) practices among Pakistani librarians did not result in systematic adoption due to infrastructural and policy constraints. Collectively, these findings say that awareness alone is insufficient; effective sustainability initiatives require coherent institutional frameworks and sustained professional development. Research undertaken in developing countries highlights other structural barriers. Mwanzu et al. (2023) documented limited funding and institutional support as major obstacles in Kenyan academic libraries. Khan (2025) showed that librarians in well-funded institutions in the United Arab Emirates were more actively involved in sustainability initiatives than their counterparts in resource-constrained settings. Nigerian studies reveal similar patterns. Adeyemi et al. (2024) and Ogunbodede and Omehia (2024) named inadequate infrastructure, insufficient training, and weak policy support as continuing impediments to the adoption of green practices. Other empirical investigations have concentrated on specific sustainability practices. Çetintaş and Ibekci (2025) associated the expansion of electronic resources and energy efficiency measures with progress towards the Sustainable Development Goals, although financial limitations restricted broader implementation. Demirtaş Doğan and Gürpınar (2023) saw disparities between institutional green initiatives and user expectations. McCord et al. (2025) emphasized eco-conscious collection development

and operational auditing, while Ozoadibe and Obi (2023) highlighted renewable energy and environmentally responsive building design. David West and Wali (2023) documented emerging sustainability initiatives in Nigerian academic libraries but underscored continuing challenges related to funding and staff awareness. Existing empirical studies show that although global interest in green librarianship is increasing, implementation stays uneven and highly dependent on institutional readiness. Consequently, there is limited research that systematically examines librarians' beliefs alongside institutional readiness within climate-vulnerable regions. This gap is particularly clear in the Nigerian context, where environmental pressures and infrastructural constraints present distinctive challenges for sustainability adoption. This study addresses this gap by examining both readiness and the implementation of green practices in academic libraries in North-Central Nigeria.

Methodology

This study employed a mixed-methods sequential explanatory design to evaluate the readiness of academic libraries to adopt green practices in response to climate change and to explore strategies supporting the SDGs. The methodological framework was adapted from Ajani et al. (2025), with modifications made to align it with the study's specific goals, focus, and target population. The population sample included 556 library personnel working in federal universities in North-Central Nigeria (Appendix A). This region was deliberately selected because it is highly vulnerable to climate-related hazards, particularly recurrent flooding, intense rainfall, and environmental degradation, which pose significant risks to library buildings, collections, and operational continuity. Examining this zone offers important insights into sustainability readiness within a climate-vulnerable environment. A total enumeration technique was adopted because of the manageable sample size. To help with data collection, a snowball sampling technique was employed. The researchers purposely selected library personnel in each federal university in North-Central Nigeria to take part, and these individuals after referred other colleagues within their professional networks. This approach was given the dispersed nature of librarians across institutions and the absence of a unified sampling frame. As noted by Gierczyk et al. (2024), snowball sampling is particularly effective for accessing populations that are difficult to reach through conventional methods. Initially, the researchers intended to conduct a face-to-face survey; however, this approach proved impracticable because of prevailing security challenges in Nigeria, including kidnapping, banditry, and terrorism. Consequently, data were collected using a semi-structured questionnaire (Appendix B) administered electronically through Google Forms, ensuring the safety of both participants and researchers while keeping the integrity and scope of the study. The instrument included demographic items and thematic subsections aligned with the study's goals. To ensure clarity and validity, the questionnaire underwent expert review by three scholars in Library and Information

Science and was pilot tested with a small group of library staff. Revisions made during this process improved the structure, precision, and consistency of the items. Data collection took place between 10 July 2025 and 10 November 2025, during which 484 personnel (87% of those contacted) sent valid responses. This high participation rate enhanced the representativeness of the sample and strengthened the reliability of the study's findings. Ethical protocols were strictly seen. Participants were informed of the purpose of the study, assured of anonymity and confidentiality, and said that participation was voluntary, with the choice to withdraw at any stage. These details were clearly said in the survey introduction. Quantitative data were analyzed using descriptive statistics, including frequencies, percentages, and mean scores. Responses to open-ended questions were examined thematically to show emerging insights. Quantitative findings are presented in tables, and qualitative results are summarized narratively.

Result and Discussion of Findings

Table 1

Demographic characteristics of the study participants (N = 484).

Demographic Variable	Category	Frequency (f)	Percentage (%)
Gender	Male	290	60
	Female	194	40
Age (years)	20–29	98	20
	30–39	176	36
	40–49	136	28
	Fifty and above	74	16
Educational Qualification	Diploma/NCE	42	9
	Bachelor's Degree	184	38
	Master's Degree	210	43
	Doctorate (PhD)	48	10
Years of Experience	0–5	132	27
	6–10	158	33

	11–15	104	22
	16–20	58	12
	Twenty-one and above	32	6
Job Role	Professional Librarian	290	60
	Para-professional Staff	128	26
	Administrative Staff	66	14

Table 1 presents the demographic characteristics of the 484 valid responses, standing for 87% of the 556 questionnaires. The gender distribution showed males accounted for 60% (290) of the participants, while females for 40% (194), suggesting that the respondent population was male. On age, the largest proportion of participants were within the 30–39-year category, including 36% (176). Next 40–49 years at 28% (136) and 20–29 years at 20% (98). Only 16% (74) of participants were aged 50 years and above, showing that most of the workforce consists of early- to mid-career professionals. In terms of educational qualifications, most participants held a master's degree at 43% (210), followed by those with a bachelor's degree at 38% (184). A smaller proportion had a doctorate at 10% (48), while 9% (42) held a Diploma/NCE. This distribution reflects a highly educated workforce, with strong representation of postgraduate degree holders. Concerning years of work experience, the largest proportion of participants had 6–10 years of experience at 33% (158). This was closely followed by 0–5 years at 27% (132) and 11–15 years at 22% (104). participants with 16–20 years of experience represent 12% (58), while those with 21 years and above constitute 6% (32), formed the smallest groups. Overall, the data showed the workforce was moderately experienced, with a substantial proportion having between six and fifteen years of service. With respect to job roles, professional librarians formed the majority at 60% (290). Followed by para-professional staff, 26% (128), while administrative staff accounted for 14% (66). This distribution showed that the respondent group includes a balanced mix of staff categories, although professional librarians predominate.

Awareness of green practices in Nigerian academic libraries

This section presents the level of awareness of academic library staff on green or environmentally sustainable practices in Nigeria. Researchers collected data from 484 participants using a 4-point Likert scale (1 = Strongly Disagree, 2 = Disagree, 3 = Agree, 4 = Strongly Agree).

Table 2

Awareness of green practices in Nigerian academic libraries (N = 484).

S/ N	Statement	SA	A	D	SD	Mea n	SD
1	I am familiar with the concept of green practices in libraries	99 20.4 %	280 57.9 %	65 13.4 %	40 8.3 %	3.05	0.8 5
2	I am aware of the role libraries play in addressing climate change	54 11.2 %	180 37.2 %	140 28.9 %	110 22.7 %	2.45	0.8 9
3	I understand how library operations affect the environment	84 17.4 %	250 51.7 %	90 18.6 %	60 12.4 %	2.88	0.9 1
4	I am familiar with institutional or national policies promoting sustainability in libraries	44 9.1 %	180 37.2 %	150 31.0 %	110 22.7 %	2.45	0.9 7
5	I stay informed about current trends in sustainable library practices	74 5.3 %	220 45.5 %	110 22.7 %	80 16.5 %	2.71	0.9 4
6	I have received training or guidance on implementing green practices in my library	44 9.1 %	180 37.2 %	120 24.8 %	140 28.9 %	2.15	1.0 1

Table 2 showed academic library staff in Nigeria showed familiarity with the concept of green or environmentally sustainable practices ($M = 3.05$, $SD = 0.85$) and an understanding of how library operations change the environment ($M = 2.88$, $SD = 0.91$). Participants also reported awareness of current trends in sustainable library practices ($M = 2.71$, $SD = 0.94$). These findings are consistent with studies by Adeyemi et al. (2024) and Ogunbodede and Omehia (2024), which showed that Nigerian librarians are increasingly aware of environmental issues and sustainability principles, although awareness does not always translate into effective implementation due to infrastructural and institutional constraints. The study further identified gaps in critical areas, including awareness of the role libraries play in addressing climate change ($M = 2.45$, $SD = 0.89$), familiarity with institutional or national policies promoting sustainability ($M = 2.45$, $SD =$

0.97), and access to training or guidance on implementing green practices ($M = 2.15$, $SD = 1.01$). This pattern aligns with extant literature suggesting that, while librarians may recognize the importance of sustainability, practical adoption is often hindered by limited training opportunities, weak policy support, and insufficient institutional readiness (Islam et al., 2025; Akbulut et al., 2018). Islam et al. (2025) reported that although librarians in Islamabad were aware of sustainability concepts, the lack of formal training and supportive policies constrained effective implementation. Similarly, Akbulut et al. (2018) saw that in Turkey, environmental awareness among librarians did not always translate into actionable green initiatives, emphasizing the need for institutional guidance and capacity building. Regardless, these findings highlight the essential role of knowledge, training, and institutional support in promoting a culture of sustainability within academic libraries. Without adequate awareness and skills development, green initiatives are likely to remain fragmented or symbolic. Targeted staff training, policy dissemination, and structured implementation frameworks are crucial to enhancing the adoption of green practices in Nigerian academic libraries.

Implementation of Green Practices in Nigerian Academic Libraries

The survey assessed the extent to which participants reported implementing practices such as energy-efficient technologies, waste reduction, use of renewable energy, water conservation, adoption of digital services, procurement of environmentally friendly materials, maintenance of green spaces, organization of environmental awareness campaigns, implementation of paper reduction policies, and management of electronic waste (e-waste).

Table 3

Implementation of Green Practices in Nigerian Academic Libraries (N = 484).

S/ N	Practice	SA	A	D	SD	Mea n	SD
1	Use of energy-efficient lighting and sensors	95 19.6 %	260 53.7 %	90 18.6 %	39 8.1 %	2.70	0.9 2
2	Waste reduction and recycling initiatives	70 14.5 %	170 35.1 %	120 24.8 %	124 25.6 %	2.45	0.9 5
3	Use of renewable energy sources (e.g., solar panels)	78 16.1 %	190 39.3 %	115 23.8 %	101 20.8 %	2.55	1.0 1
4	Water conservation measures (e.g., low-flow taps, rainwater harvesting)	80 16.5 %	180 37.2 %	120 24.8 %	104 21.5 %	2.55	1.0 0

5	Adoption of digital services to minimize paper usage	90 18.6 %	190 39.3 %	120 24.8 %	84 17.4 %	2.65 0.9 0
6	Procurement of environmentally friendly materials	82 17.0 %	185 38.2 %	125 25.8 %	92 19.0 %	2.60 0.9 7
7	Maintenance of green spaces and landscaping within the library	78 16.1 %	185 38.2 %	120 24.8 %	101 20.8 %	2.55 0.9 9
8	Organization of environmental awareness campaigns for staff and users	76 15.7 %	185 38.2 %	120 24.8 %	103 21.3 %	2.55 1.0 2
9	Implementation of policies aimed at reducing printing and paper use	72 14.9 %	190 39.3 %	125 25.8 %	97 20.0 %	2.50 0.9 1
10	Proper disposal and management of electronic waste (e-waste)	60 12.4 %	160 33.1 %	120 24.8 %	144 29.8 %	2.25 1.0 3

The findings presented in Table 3 showed participants reported moderate implementation of green practices within Nigerian academic libraries. Measures such as the use of energy-efficient lighting and sensors ($M = 2.70$, $SD = 0.92$), adoption of digital services to minimize paper usage ($M = 2.65$, $SD = 0.90$), procurement of environmentally friendly materials ($M = 2.60$, $SD = 0.97$), use of renewable energy sources ($M = 2.55$, $SD = 1.01$), water conservation initiatives ($M = 2.55$, $SD = 1.00$), maintenance of green spaces ($M = 2.55$, $SD = 0.99$), organization of environmental awareness campaigns ($M = 2.55$, $SD = 1.02$), and implementation of paper reduction policies ($M = 2.50$, $SD = 0.91$) were moderately implemented. The results suggested that libraries are taking initial steps towards integrating environmentally responsible operations into their systems, reflecting partial alignment with sustainability principles (Ritu, 2024; Ogunbodede & Omehia, 2024). However, certain practices showed lower adoption levels, particularly waste reduction, and recycling initiatives ($M = 2.45$, $SD = 0.95$) and proper disposal of electronic waste ($M = 2.25$, $SD = 1.03$). This pattern is consistent with findings from Akbulut et al. (2018), who noted while energy-saving technologies were adopted in Turkish university libraries, comprehensive e-waste management and recycling programs were underdeveloped. The moderate implementation of most practices showed that libraries are gradually embedding green operations, yet gaps remain that require targeted institutional support, policy enforcement, and staff capacity building. The low adoption of e-waste management and recycling initiatives reflects systemic challenges, including limited training, awareness,

and resource allocation, which are critical for a holistic sustainability strategy (Ganesamoorthy & Selvakamal, 2025). Strengthening these areas would enhance environmental outcomes and ensure that library operations align with global sustainability goals and best practices in green librarianship.

Readiness to Implement Green Practices in Nigerian Academic Libraries

The survey assessed the extent to which libraries are ready to adopt green technologies, the possession of staff skills, availability of financial resources, existence of guiding policies, management commitment, staff willingness, and adequacy of infrastructure and facilities to support green initiatives.

Table 4

Readiness to Implement Green Practices in Nigerian Academic Libraries (N = 484).

S/ N	Statement	SA	A	D	SD	Mea n	SD
1	The library is ready to adopt new green technologies (solar-powered lighting, energy-efficient computers, automated lighting sensors)	72 14.9 %	140 28.9 %	150 31.0 %	122 25.2 %	2.50	0.9 4
2	Staff have the necessary skills to implement green practices	78 16.1 %	155 32.0 %	135 27.9 %	116 24.0 %	2.55	0.9 6
3	Adequate financial resources are available to support green initiatives	54 11.2 %	120 24.8 %	140 28.9 %	170 35.1 %	2.20	1.0 0
4	The library has proved policies to guide environmentally sustainable practices (e.g., rules on reducing paper usage, recycling, energy conservation, sustainable procurement)	78 16.1 %	155 32.0 %	135 27.9 %	116 24.0 %	2.55	0.9 2
5	Library management proves commitment to promoting green practices	82 17.0 %	160 33.1 %	130 26.9 %	112 23.1 %	2.60	0.9 1
6	Staff are willing to take part in green initiatives	88	165	125	106	2.65	0.8 8

		18.2	34.1	25.8	21.9		
		%	%	%	%		
7	The library owns the necessary infrastructure and facilities to support green practices	78	155	135	116	2.55	1.02
		16.1	32.0	27.9	24.0		
		%	%	%	%		

The results in Table 4 showed academic libraries in Nigeria presented moderate readiness to implement green practices. Participants reported moderate readiness to adopt new green technologies ($M = 2.50$, $SD = 0.94$), had the necessary staff skills ($M = 2.55$, $SD = 0.96$), availability of guiding policies ($M = 2.55$, $SD = 0.92$), management commitment ($M = 2.60$, $SD = 0.91$), staff willingness to participate ($M = 2.65$, $SD = 0.88$), and adequate infrastructure ($M = 2.55$, $SD = 1.02$). These findings align with the literature emphasizing institutional readiness including infrastructure, skilled personnel, and leadership support is crucial for effective adoption of sustainable practices (Narendra, 2023; Ganesamoorthy & Selvakamal, 2025). Participants showed low readiness in the availability of financial resources ($M = 2.20$, $SD = 1.00$), highlighting a significant barrier to fully operationalizing green initiatives. The finding was consistent with Khan (2025), who saw that underfunded institutions in the UAE struggled to implement sustainable practices effectively, despite strong policy frameworks and staff capacity. Similarly, Mwanzu et al. (2023) reported that in Kenyan academic libraries, moderate readiness in leadership and skills could not compensate for limited financial support, constraining the adoption of comprehensive green practices. These results emphasize readiness is multidimensional, encompassing policy, leadership, staff skills, infrastructure, and funding. Deficiencies in any of these areas could impede the transition from awareness to full implementation of environmentally sustainable initiatives (David West & Wali, 2023). Consequently, addressing financial limitations alongside strengthening policies, leadership commitment, and staff capacity is essential to enhance the adoption of green practices in Nigerian academic libraries.

Challenges Hindering Green Practices in Nigerian Academic Libraries

The survey assessed the extent to which financial limitations, staff awareness, training, institutional policies, infrastructure, technology, management support, and resistance to change affect the implementation of green initiatives.

Table 5

Challenges Hindering Green Practices in Nigerian Academic Libraries (N = 484).

S/ N	Challenge	SA	A	D	SD	Mea n	SD
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1	Limited financial resources hinder the adoption of green practices	160 33.1 %	195 40.3 %	90 18.6 %	39 8.1 %	3.35	0.85
2	Staff lack adequate awareness about environmentally sustainable practices	100 20.7 %	190 39.3 %	120 24.8 %	74 15.3 %	2.95	0.88
3	Insufficient training has limited staff capacity to implement green initiatives	115 23.8 %	190 39.3 %	110 22.7 %	69 14.3 %	3.05	0.90
4	Absence of clear institutional policies impedes green practices	100 20.7 %	190 39.3 %	120 24.8 %	74 15.3 %	2.95	0.92
5	Inadequate infrastructure restricts the implementation of green initiatives	150 31.0 %	180 37.2 %	90 18.6 %	64 13.2 %	3.25	0.93
6	Resistance to change among staff prevents adoption of green practices	80 16.5 %	150 31.0 %	140 28.9 %	114 23.6 %	2.60	0.95
7	Limited technological resources constrain the implementation of green practices	120 24.8 %	175 36.2 %	110 22.7 %	79 16.3 %	3.10	0.91
8	Insufficient support from library management hampers green initiatives	115 23.8 %	185 38.2 %	110 22.7 %	74 15.3 %	3.05	0.89

The results in Table 5 showed significant barriers hinder the adoption of green practices in Nigerian academic libraries. High-level challenges included limited financial resources ($M = 3.35$, $SD = 0.85$), inadequate infrastructure ($M = 3.25$, $SD = 0.93$), insufficient technological resources ($M = 3.10$, $SD = 0.91$), limited training ($M = 3.05$, $SD = 0.90$), and insufficient support from library management ($M = 3.05$, $SD = 0.89$). These findings align with Kulkarni (2023), who saw institutional constraints such as funding shortages, inadequate infrastructure, and weak managerial support significantly impede the

implementation of sustainable practices in academic libraries. Similarly, David West and Wali (2023) reported that Nigerian academic libraries face resource and infrastructural limitations that restrict the adoption of green initiatives, particularly when institutional policies and technological resources are weak. Moderate-level challenges, including lack of staff awareness ($M = 2.95$, $SD = 0.88$), absence of clear institutional policies ($M = 2.95$, $SD = 0.92$), and resistance to change among staff ($M = 2.60$, $SD = 0.95$), further underscore the need for both capacity-building and organizational change management. This aligns with Ritu (2024), who emphasized that without clear policy frameworks and staff sensitization, sustainability initiatives often stay fragmented and ineffective. Regardless, these findings highlight that both resource constraints and deficiencies in institutional support are significant barriers to the effective implementation of green practices. Overcoming these challenges requires a comprehensive strategy addressing financial investment, technological infrastructure, staff training, policy development, and managerial commitment, ensuring that environmentally sustainable practices are fully integrated into library operations.

Strategies for Achieving SDGs in Nigerian Academic Libraries

Qualitative data were collected via open-ended survey questions and thematically analyzed. A total of 312 participants (64.5% of the sample) provided substantive comments. Responses were coded into five major themes, with the frequency and proportion of comments per theme reported to illustrate the relative emphasis on each strategy.

Table 6

Strategies for Achieving Sustainable Development Goals in Nigerian Academic Libraries (N = 484).

Theme	Participants (N, %)	Summary of Participant Responses
Adoption of Environmentally Sustainable Practices	120, 38.5%	Participants emphasized the need for libraries to implement practical green operations, such as energy-efficient lighting, water conservation, recycling initiatives, and digital services to reduce paper use. These measures were seen as central to achieving SDG 12 (Responsible Consumption and Production) and SDG 13 (Climate Action).
Staff Capacity and Training	85, 27.2%	Participants highlighted the importance of equipping staff with the knowledge and skills required to implement sustainable practices effectively, through workshops, seminars, and continuous professional development, aligning with SDG 4 (Quality Education).

Policy Development and Institutional Support	70, 22.4%	Participants stressed that clear institutional policies and strong management commitment are essential for embedding sustainability in library operations. Structured guidelines and enforcement mechanisms were seen as necessary to ensure consistent implementation, reflecting SDG 16 (Peace, Justice, and Strong Institutions).
Technological Integration and Digital Innovation	60, 19.2%	Participants showed technological solutions, including automated lighting, digital collections, and energy monitoring tools, as critical enablers of operational efficiency and environmental responsibility, supporting SDG 9 (Industry, Innovation, and Infrastructure) and SDG 11 (Sustainable Cities and Communities).
Community Engagement and Environmental Awareness	55, 17.6%	Participants suggested that libraries should actively engage the university community and users through seminars, workshops, and awareness campaigns to promote environmental literacy and encourage participation in sustainability initiatives, reinforcing SDG 13 (Climate Action).

Adoption of Environmentally Sustainable Practices

The majority of participants (n = 120; 38.5%) emphasized that environmentally sustainable operations, such as energy-efficient lighting, water conservation, recycling initiatives, and digital services to reduce paper use, are core to achieving SDG 12 (Responsible Consumption and Production) and SDG 13 (Climate Action). These practices were considered foundational for integrating sustainability into daily library operations. One respondent highlighted, “our library should replace old lighting with energy-saving bulbs and encourage digital borrowing to reduce paper waste.” Another person added, “we need to implement recycling bins and conserve water wherever possible to make our library environmentally friendly.”

Staff Capacity and Training

Participants (n = 85; 27.2%) highlighted the need for training and capacity building. Comments focused on the importance of workshops, seminars, and skill development programs to equip staff with the knowledge needed to implement green initiatives effectively. This aligns with SDG 4 (Quality Education), ensuring library personnel can promote sustainability within institutions. One participant suggested that staff need regular workshops on sustainability practices so that everyone understands how library operations affect the environment. Another one added that training programs on

climate-smart library services would help us adopt sustainable practices more effectively.

Policy Development and Institutional Support

A total of seventy participants (22.4%) highlighted the role of institutional policies and management support. Participants stressed that clear policies, consistent enforcement, and leadership commitment are necessary to standardize sustainable practices, reflecting SDG 16 (Peace, Justice, and Strong Institutions). One participant said, “without proper policies on energy conservation and recycling; it is difficult to make sustainability a consistent practice in the library.” Another respondent added, “management needs to prioritize green initiatives and provide guidelines so that sustainability is enforced in all library operations.” A few participants noted that institutional commitment through policy oversight and resource allocation is necessary to make sustainable practices a norm.

Technological Integration and Digital Innovation

Sixty participants (19.2%) named technology as critical for operational sustainability. Key suggestions included automated systems, digital collections, energy monitoring tools, and renewable energy adoption. These strategies support SDG 9 (Industry, Innovation, and Infrastructure) and SDG 11 (Sustainable Cities and Communities) by promoting efficiency and reducing environmental impact. One participant said, “introducing automated lighting systems and expanding our digital collections will reduce energy use and paper consumption significantly.” Another respondent noted that we should adopt online library services and virtual resources to minimize physical resource usage and support sustainability. Some participants highlighted that technology could help track energy consumption and reduce waste, promoting innovation and operational efficiency.

Community Engagement and Environmental Awareness

Fifty-five participants (17.6%) noted the importance of outreach activities, including seminars, workshops, and awareness campaigns for students and staff. These initiatives foster environmental literacy and encourage participation in sustainability efforts, supporting broader climate action goals (SDG 13). Nevertheless, a few participants suggested organizing seminars, workshops, and awareness campaigns. One participant commented, “the library should organize seminars and campaigns to educate students and staff about climate change and sustainable practices.” Another respondent added engaging users through workshops and awareness drives will help everyone understand the importance of environmental sustainability.

The qualitative findings showed that effective strategies for implementing green practices in Nigerian academic libraries require an integrated approach encompassing operational sustainability, staff capacity, policy frameworks, technological innovation,

and community engagement. The most often cited strategies were environmentally sustainable operations (38.5%) and staff training (27.2%), highlighting the importance of combining practical measures with human-resource development. These findings corroborate the quantitative results, which showed moderate levels of awareness and readiness among library staff. The themes showed that addressing challenges such as limited funding, inadequate infrastructure, and restricted professional development opportunities requires coordinated institutional, technological, and human-resource interventions (Islam et al., 2025; Tariq & Khalid, 2023; Akbulut et al., 2018). Robust policy frameworks, leadership commitment, and structured monitoring mechanisms are essential to ensure the sustained implementation of green practices (Demirtaş Doğan & Gürpınar, 2023; Ren & Lu, 2024). To explore strategies for strengthening sustainability in Nigerian academic libraries, participants provided open-ended suggestions. Researchers conducted a thematic analysis of the responses to identify key approaches and capture both common and differing viewpoints. The findings highlight five major themes: environmental innovation and sustainable practices, staff capacity building and training, policy development and institutional support, technological integration and digital innovation, and community engagement and environmental awareness.

Conclusion

This study examined the readiness of academic libraries in North-Central Nigeria to adopt green practices in the context of climate change and explored strategies for achieving the SDGs. The findings show academic librarians proved a moderate level of awareness of green practices and acknowledge the environmental impact of library operations. Important gaps are still in areas such as staff training, familiarity with institutional policies, and the practical implementation of sustainable initiatives. Libraries have made progress in adopting environmentally friendly measures, including energy-efficient lighting, digital services, water conservation, and renewable energy. Nevertheless, the implementation of e-waste management, recycling programs, and comprehensive sustainability policies is still limited. Institutional readiness is also moderate, with participants reporting adequate skills, infrastructure, and management support, although financial constraints continue to restrict the full adoption of green practices. Strengthening sustainability in academic libraries requires targeted staff training, clear policy frameworks, institutional support, technological integration, and community engagement. These strategies can enhance the adoption of environmentally responsible practices and position libraries as initiative-taking agents in advancing the SDGs, particularly SDG 4 (Quality Education), SDG 12 (Responsible Consumption and Production), and SDG 13 (Climate Action). By addressing existing gaps and improving institutional readiness, academic libraries could reduce their environmental impact and

actively contribute to climate-conscious education and sustainable development in Nigeria.

Recommendations

Based on the study's findings on the readiness of academic libraries in North-Central Nigeria to adopt green practices and promote the SDGs, the following recommendations were proposed:

1. Library management should implement targeted staff training programs to strengthen librarians' knowledge and capacity in sustainable practices, including e-waste management, recycling, and energy conservation.
2. Institutions should develop and enforce comprehensive sustainability policies to support the effective implementation, monitoring, and evaluation of green initiatives in academic libraries.
3. University authorities and stakeholders should provide adequate financial, infrastructural, and managerial support to help the adoption of environmentally responsible technologies and practices.
4. Academic libraries should prioritize the integration of digital tools, energy-efficient systems, and renewable energy solutions to reduce environmental impact and improve operational efficiency.
5. Libraries should actively collaborate with university stakeholders, local communities, and environmental organizations to promote sustainability awareness and broaden the impact of green initiatives.

Limitations and Suggestions for Further Studies

Although this study offers important insights into the readiness of academic libraries in North-Central Nigeria to implement green practices, certain limitations should be recognized to contextualize the findings and inform future research.

1. The study relied on self-reported data from academic librarians, which may be influenced by response bias and social desirability effects. Future research could incorporate observational methods or audits of library practices to obtain more objective measures of sustainability implementation.
2. The focus on academic libraries in North-Central Nigeria limits the generalizability of the findings. Later studies should examine libraries in other regions and sectors, including public, special, and community libraries, to provide a broader perspective on green practice implementation.

3. Cross-sectional design captures conditions at a single point in time, limiting the ability to assess changes in readiness or sustainability practices. Longitudinal studies are recommended to check the development of green initiatives and their effects on library operations.
 4. Financial constraints and resource limitations were named but not examined in depth. Future research could undertake detailed cost–benefit analyses of implementing green practices to inform policy and funding decisions.
 5. The study assessed readiness and implementation using a limited range of indicators. Further studies should expand the variables considered, including technological innovation, policy compliance, and community engagement, to achieve a more comprehensive understanding of sustainability factors in libraries.
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References

- Adeniran, A., Adedeji, A., Nwosu, E., Nwugo, E., & Nnamani, G. (2023). *Ed-tech landscape and challenges in Sub-Saharan Africa* (Occasional Paper No. 88). Southern Voice.
- Adeyemi, I. O., Oladayiye, P. O., Odunayo, A. O., Omolokun, B. F., Fakorede, E. Y., Olayinka, I. O., & Eiriemiokhale, K. A. (2024). Green library practices in selected academic libraries in Kwara State, Nigeria. *IFLA Journal*, 50(3), 511–524. <https://doi.org/10.1177/03400352241257670>
- Adjei, S., & Agyeman, I. K. (2025). Green library practices and environmental awareness: Exploring sustainable initiatives in African academic libraries. *Environmental Reports*, 7(2), 119–139. <https://doi.org/10.51470/ER.2025.7.2.119>
- Agbakwuru, V., Obidi, P. O., Salihu, O. S., & Ogwu, C. (2024). The role of renewable energy in achieving sustainable development goals. *International Journal of Engineering Research Updates*, 7(2), 13–27. <https://doi.org/10.53430/ijeru.2024.7.2.0046>
- Ajani, Y. A., Ilori, O. O., Onanuga, A. O., Ama-Abasi, R. D., Adetomiwa, B., Olarongbe, S. A., Baba, G. A., & Ishola, S. O. (2025). Climate change preparedness in Nigerian libraries: An empirical study on vulnerabilities and strategic actions for resilience. *Climate and Development*, 1-15. <https://doi.org/10.1080/17565529.2025.2539164>
- Akbulut, M., Alaca, E., Büyükçolpan, T., Cevher, N., Kurbanoglu, S., Soylu, D., & Yildirim, B. F. (2018). Green (environmentalist) approaches in university libraries: Research across Turkey. *Information World*, 19(2), 203–230. <https://doi.org/10.15612/BD.2018.693>
- Almusaed, A., Yitmen, I., Myhren, J. A., & Almssad, A. (2024). Assessing the impact of recycled building materials on environmental sustainability and energy efficiency: A comprehensive framework for reducing greenhouse gas emissions. *Buildings*, 14(6), 1566. <https://doi.org/10.3390/buildings14061566>
- Amuda, Y. J., & Parveen, R. (2025). Environmental legal frameworks and practices for attaining sustainable development goals in Nigeria and Saudi Arabia. *Journal of Posthumanism*, 5(5), 2539–2560. <https://doi.org/10.63332/joph.v5i5.1645>
- Çetintaş, H. B., & Ibekci, R. (2025). The role of university libraries in achieving SDGs at research universities in Türkiye. *DergiPark*, 9(2), 70–90. <https://dergipark.org.tr/en/download/article-file/5146199>
- Cocodia, B., & Ogunbodede, K. F. (2025). Green library transition in Bayelsa and Rivers States, Nigeria: Awareness and perception of librarians in university libraries. *University of Dar es Salaam Library Journal*, 19(1), 62–77. <https://doi.org/10.4314/udslj.v20i1.5>
- David West, B. T., & Wali, N. B. (2023). Green initiative and environmental sustainability in South Nigerian academic libraries. *Library Progress International*, 43(2), 1–14. <https://bpasjournals.com/library-science/index.php/journal/article/view/70>
- Demirtas Dogan, H., & Gulpinar, B. (2023). Green libraries and the user's perspective: A case study in Turkey. *Sage Open*, 13(4). <https://doi.org/10.1177/21582440231211432>
- Ganesamoorthy, M., & Selvakamal, P. (2025). Green technology in libraries: Embracing sustainability for a greener future. *Journal of Environmental Engineering and Studies*, 10(1), 20–27.
- Gierczyk, M., Gromkowska-Melosik, A., & Parker, C. (2024). The snowball sampling strategy in the field of social sciences: Contexts and considerations. *Przegląd Badań Edukacyjnych*, 43(2), 87-104. <https://doi.org/10.12775/PBE.2023.029>

- Islam, K., Shamshad, A., & Usman, M. (2025). Adoption potential of artificial intelligence and sustainable innovation in Islamabad's academic libraries. *Journal of Engineering and Computational Information Research*, 3(1), 45–59.
<https://jecir.com/index.php/jecir/article/view/6>
- Keller, A. (2023). Sustainability 3.0 in libraries: A challenge for management. *Publications*, 11(1), 1–9. <https://doi.org/10.3390/publications11010006>
- Khan, Z. I. (2025). Perceptions of librarians on sustainable practices in libraries in the United Arab Emirates: A quantitative study. *IFLA Journal*, 51(4), 1129–1143.
<https://doi.org/10.1177/03400352251320405>
- Kolawole, D., & Oladokun, B. (2025). Sustainable practices in Nigerian libraries: Exploring the role of green libraries in promoting eco-friendly reading spaces. *International Journal of Knowledge Content Development & Technology*, 15(3), 7–22.
<https://doi.org/10.5865/IJKCT.2025.15.3.007>
- Kulkarni, A. S. (2023). Green library: Features, elements, standards, and green library initiatives in India. *International Journal of Research in Library Science*, 9(2), 218–223.
<https://doi.org/10.26761/ijrls.9.2.2023.1671>
- Mathiasson, M. H., & Jochumsen, H. (2022). Libraries, sustainability, and sustainable development: A review of the research literature. *Journal of Documentation*, 78(6), 1278–1304. <https://doi.org/10.1108/JD-11-2021-0226>
- McCord, D., Cassady, S., Roman, P., Cato, J., & Mantz, E. (2025). Sustainability in library collection development: Introducing a green audit template. *Canadian Journal of Academic Librarianship*, 11, 1–18. <https://doi.org/10.33137/cjal-rcbu.v11.43852>
- Mwanzu, A., Bosire-Ogechi, E., & Odero, D. (2023). The emergence of green libraries in Kenya: Insights from academic libraries. *The Journal of Academic Librarianship*, 49(5), 102601.
<https://doi.org/10.1016/j.acalib.2022.102601>
- Narendra, A. P. (2023). IFLA agenda of green and sustainable library: A literature study. *Lentera Pustaka: Jurnal Kajian Ilmu Perpustakaan, Informasi dan Kearsipan*, 9(1), 1–10.
<https://doi.org/10.14710/lenpust.v9i1.50038>
- Ogunbodede, K. F., & Omehia, A. (2024). Envisioning green library initiatives: A key concern for 21st century librarians. *Faculty of Natural and Applied Sciences Journal of Basic and Environmental Research*, 2(1), 48–53. <https://fnasjournals.com/index.php/FNAS-JBER/article/view/485>
- Okoye, M. C., Peace, P. O., & Mante, D. A. (2024). Academic library sustainability and green initiatives in Nigeria: A paradigm shift in information policy for a greener future. *American Journal of Humanities and Social Sciences Research*, 8(9), 34–39.
<https://www.ajhssr.com/wpcontent/uploads/2024/09/F248093439.pdf>
- Oladokun, B. D., & Durodolu, O. O. (2025). The role of libraries in promoting environmental justice: Strategies for information access. *Collection & Curation*, 44(2), 73–80.
<https://doi.org/10.1108/CC-02-2024-0006>
- Ozoadibe, C. J., & Obi, H. E. (2023). Exploring renewable energy facility and green building practices for improved archives preservation in public libraries in Rivers State. *Journal of Environmental Science & Economics*, 2(1), 45–54.
<https://doi.org/10.56556/jescae.v2i1.479>
- Peelwan, R., & Suman, A. K. (2024). The social responsibilities of library professionals: A theoretical perspective. *Revista Review Index Journal of Multidisciplinary*, 5(1), 14–21.
<https://doi.org/10.31305/rrijm2025.v05.n01.002>
- Ren, X., & Lu, J. (2024). Librarians' attitudes toward libraries' roles in environmental sustainability. *Journal of Librarianship and Information Science*, 57(4), 1364–1378.
<https://doi.org/10.1177/09610006241229460>

- Ritu. (2024). Sustainable practices in green libraries: A comprehensive review. *Synergy: International Journal of Multidisciplinary Studies*, 1(3), 16–19.
<https://doi.org/10.63960/sijmds.v1i3.22>
- Santamaría, M., Gold, M., & Higham, K. (2025). *Institutional change as opportunity: Advocating for students & information literacy*. ACRL 2025 Conference Paper.
<http://www.ala.org/sites/default/files/2025-03/InstitutionalChangeasOpportunity.pdf>
- Shabnam, & Sraddha Devi. (2025). Sustainability and green initiatives for public and private university libraries of Punjab. *International Journal for Multidisciplinary Research*, 7(4), 1–10. <https://www.ijfmr.com/papers/2025/4/51644.pdf>
- Solemanpharcy, M., & Gaffar, S. K. (2023). The role of green library for sustainable development goals and environmental education: A study from a global perspective. *International Journal of Knowledge Management & Practices*, 11(1), 22–31.
<http://publishingindia.com/ijkmp>
- Tariq, M., & Khalid, A. (2023). Placing green IT awareness and practices among universities' librarians: A NAT perspective. *Journal of Academic Librarianship*, 49(5), 102770.
<https://doi.org/10.1016/j.acalib.2023.102770>
- Tariq, M., Shahzad, K., & Sulehri, I. G. (2025). Factors influencing the adoption of green libraries for environmental sustainability: A systematic literature review. *Libri*, 75(1), 1–18. <https://doi.org/10.1515/libri-2024-0089>

Appendix A

Population of Library Staff in Federal Universities, North-Central Nigeria

S/N	University	State / FCT	Number of Library Staff
1.	Federal University of Agriculture, Makurdi (FUAM)	Benue	157
2.	University of Abuja (UNIABUJA)	FCT	67
3.	Federal University, Lokoja (FULokoja)	Kogi	29
4.	University of Ilorin (UNILORIN)	Kwara	116
5.	Federal University, Lafia (FULAFIA)	Nasarawa	54
6.	Federal University of Technology, Minna (FUTMINNA)	Niger	85
7.	University of Jos (UNIJOS)	Plateau	48
8.	Total		556

Appendix B

Questionnaire on Readiness of Academic Libraries to Adopt Green Practices in the Era of Climate Change

Dear Participant,

You are cordially invited to participate in this study, which seeks to examine the awareness, implementation, readiness, challenges, and strategies associated with environmentally sustainable practices in Nigerian academic libraries. Participation is

entirely voluntary, and you may withdraw at any point without any consequences. All information provided will be treated with strict confidentiality. Responses will be anonymized and utilized exclusively for research purposes only. By completing this questionnaire, you provide your informed consent to participate in the study.

Kindly respond to all items honestly and to the best of your knowledge.

Section A: Awareness of green practices in Nigerian academic libraries

S/N	Statement	S D	D	A	S A
1.	I am familiar with the concept of green practices in libraries.				
2.	I am aware of the role libraries play in addressing climate change.				
3.	I understand how library operations impact the environment.				
4.	I am familiar with institutional or national policies promoting sustainability in libraries.				
5.	I stay informed about current trends in sustainable library practices.				
6.	I have received training or guidance on implementing green practices in my library.				

Section B: Implementation of Green Practices in Nigerian Academic Libraries

S/N	Statement	S D	D	A	S A
1.	My library uses energy-efficient lighting and automated sensors.				
2.	My library implements waste reduction and recycling initiatives.				
3.	My library utilizes renewable energy sources (e.g., solar panels).				
4.	My library adopts water conservation measures (e.g., low-flow taps, rainwater harvesting).				
5.	My library adopts digital services to minimize paper usage.				
6.	My library provides environmentally friendly materials.				
7.	My library maintains green spaces and environmentally friendly landscaping.				
8.	My library organizes environmental awareness campaigns for staff and users.				
9.	My library implements policies aimed at reducing printing and paper use.				
10.	My library ensures proper disposal and management of electronic waste (e-waste).				

Section C: Readiness to Implement Green Practices in Nigerian Academic Libraries

S/N	Statement	S D	D	A	S A
1	My library is ready to adopt new green technologies (e.g., solar-powered lighting, energy-efficient computers, automated lighting sensors).				
2	Staff in my library possess the necessary skills to implement green practices.				
3	Adequate financial resources are available in my library to support green initiatives.				
4	My library has established policies to guide environmentally sustainable practices.				
5	Library management demonstrates commitment to promoting green practices.				
6	Staff in my library are willing to participate in green initiatives.				
7	My library possesses the necessary infrastructure and facilities to support green practices.				

Section D: Challenges Hindering Green Practices in Nigerian Academic Libraries

S/N	Statement	S D	D	A	S A
1	Limited financial resources hinder the adoption of green practices in my library.				
2	Staff in my library lack adequate awareness about environmentally sustainable practices.				
3	Insufficient training limits staff capacity to implement green initiatives.				
4	The absence of clear institutional policies impedes green practices.				
5	Inadequate infrastructure restricts the implementation of green initiatives.				
6	Resistance to change among staff prevents the adoption of green practices.				
7	Limited technological resources constrain the implementation of green practices.				
8	Insufficient support from library management hampers green initiatives.				

Section E: In your opinion, what strategies can be implemented to achieve the Sustainable Development Goals in the era of climate change?