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Environmental challenges and women's roles in sustainable development: A survey-based study in Ekiti State, Nigeria

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Abstract

Environmental challenges pose significant threats to sustainable development, particularly for women in Nigeria who are disproportionately affected by climate change, environmental degradation, and pollution. This study aims to investigate the impact of environmental challenges on women's experiences which lead to climate vulnerability and their roles in sustainable development in Nigeria. A descriptive research design was employed, involving a survey of 362 respondents using a structured questionnaire. The key variables in the study included environmental challenges and women experiences, women's role in sustainable development, and challenges of women and opportunities. Data was analyzed using SPSS version 25.0 while multiple regression analysis was employed in testing the hypothesis. The findings of the study reveal that climate change, environmental degradation, and pollution significantly affect women's livelihoods and health. Regression analysis shows a significant relationship between socio-demographic characteristics and women's roles in sustainable development ($R = 0.399$, $p < 0.05$), with socio-demographic predictors explaining 0.356 of the variance. Education level, age, occupation, ethnic group, religion, and marital status are significant predictors of women's roles in sustainable development. The findings emphasize the necessity for an all-encompassing approach to addressing environmental challenges and promoting sustainable development in Nigeria, with a focus on empowering women and addressing the socio-demographic factors that influence their participation. By recognizing the importance of women's roles in sustainable development, policymakers and stakeholders can work towards creating a more equitable and sustainable future.

Keywords: Climate Vulnerability; Environmental Challenges; Women's Livelihood; Socio-Demographic Predictors; Sustainable Development

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1. Introduction

In Nigeria, the connection between environmental issues and gender plays a fundamental role in sustainable development. As the nation confronts pressing environmental challenges, acknowledging the significant contributions of women in environmental conservation and sustainable development is vital (Ezugwu et al., 2024). Sustainable development is a strategic approach to addressing global environmental anxieties, biophysical issues, and social equity (Adejumo and Adejumo, 2014). Both public and private organizations have adopted sustainable development as a strategic framework, recognizing the interdependence of environmental, social, and economic factors (Tchouassi, 2012). This approach emphasizes balancing these considerations to achieve development and improve quality of life (Tchouassi, 2012). Furthermore, achieving sustainable development is inextricably linked to promoting gender equality, underscoring the need for inclusive and equitable solutions.

Gender equality is about fair allocation of resources, opportunities, and decision-making power between men and women, without discrimination (Pathania, 2017). Achieving this balance is crucial for building strong families and a sustainable society, especially in today's swiftly changing world (Adebosin et al., 2018). Historically, women have been excluded from decision-making processes, and this has led to power imbalances, marginalization, and conflict (Tchouassi, 2012).

The issue of gender equality and women's role in sustainable development has gained significant attention in recent times. Women have borne the brunt of gender inequality globally, facing discrimination and marginalization in various sectors (Eke and Sylvia, 2018). This is often due to patriarchal attitudes that view men as dominant and superior, while women are seen as inferior. However, it's essential to recognize that women are equal and complementary partners in development. Without women, men would be unable to achieve much in terms of socio-economic development (Eke and Sylvia, 2018). The significance of gender equality in sustainable development cannot be overstated. According to the United Nations Development Programme (UNDP), achieving gender equality is essential for sustainable development, as it enables women and girls to contribute to and benefit from development processes (UNDP, 2021). Research has shown that gender-responsive approaches to sustainable development can lead to more effective and equitable outcomes (Asuru, 2017; Abolade, 2021).

Women in Nigeria possess unique indigenous knowledge and perspectives that can inform localized solutions to environmental challenges (Abolade, 2021). They are often at the forefront of noticing declining resources and leading efforts to find solutions for their communities (Adebosin et. al., 2018). Moreover, women in Nigeria face significant challenges that limit their ability to partake in environmental policymaking and sustainable development. Limited access to education, training, and resources, as well as cultural and societal norms that perpetuate gender inequality, hinder their progress (UNDP, 2021). Moreover, women are disproportionately affected by environmental degradation due to their roles in agriculture, food security, and household management (Ezugwu, et. al., 2024). Therefore, promoting gender equality and enabling women to take dynamic role in environmental conservation and sustainable development is crucial.

Several strategies can be employed to promote women's role in sustainable development, including integrating gender considerations into climate change adaptation plans (Ezugwu, et. al., 2024) and promoting voluntary sustainability standards that provide women with access to resources and markets (Raimi et al., 2019). Conducting gender audits can also help ensure that governments and organizations are meeting their commitments to gender equality and sustainable development (Raimi et al., 2019). Ibitoye (2025) affirms that

in as much as women are striving towards upholding sustainable development goals, they are limited by the challenge of access to healthcare, leading to poor health outcomes and higher mortality rates. By upholding gender equality and empowering women, we can achieve more equitable and sustainable outcomes.

The significance of this study lies in its impending contribution to the current literature on the role of women in sustainable development in Nigeria, the paper further addresses goals 5 and 13 of the sustainable development goals which centers on gender equality and climate change respectively. By exploring the challenges confronting women in environmental conservation and sustainable development, this study aims to offer insights that can inform policies and mediations that promote gender equality and sustainable development. Specifically, this study aims to explore the gendered dimensions of environmental challenges and explore the roles, experiences, and constraints of women in environmental conservation and sustainable development in Ekiti State, Nigeria, with the goal of informing inclusive and equitable environmental policy and practice. The specific objectives of the study are to examine the impact of environmental challenges on women's livelihoods, health, and socio-economic well-being in Ekiti State, to analyze the roles women play in promoting sustainable development and environmental conservation in their communities, highlighting both formal and informal contributions, to identify community-driven and local strategies that can empower women and enhance their capacities to act as agents of change in sustainable development and to recommend gender-inclusive policies and practices that support women's empowerment and promote a more equitable approach to sustainable development and environmental governance.

2. Literature review

2.1. Concept of sustainable development

The concept of sustainable development has been widely accepted globally since its popularization by the Brundtland Report "Our Common Future" in 1987 (Babalola, 2016). The report defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Babalola, 2016). This definition has become an operational definition for sustainable development, and it emphasizes the need to balance the needs of the present with the needs of future generations.

Sustainable development is a dynamic concept with multiple dimensions and interpretations (UNESCO, 2018). It encompasses three key components: environment, society, and economy. Additionally, a vigorous society relies on a vigorous environment to provide essential resources, such as food, water, and air. Pecuniary, social, and ecological factors must be jointly considered and synchronized to preserve the natural world. According to Harris (2013), sustainable development has three essential aspects: economic, environmental, and social. An economically sustainable system must produce goods and services continuously, avoiding sectoral imbalances that damage industrial production (Harris, 2013). An environmentally sustainable system must maintain a stable resource base, preserving biodiversity, atmospheric stability, and ecosystem functions (Harris, 2013). Social sustainability requires fairness in resource distribution, creating opportunities for all, providing adequate social services, and promoting responsible governance (Harris, 2013).

The concept of sustainability has its origin in the word "sustain," which means providing enough of what somebody or something needs to live or exist. The Board on Sustainable Development of the United States National Academy of Sciences suggested that a minimal sustainability transition would involve providing

energy, materials, and information to support human development while reducing poverty and preserving the planet's life support systems (National Research Council, 2018). In conclusion, sustainable development is a multifaceted concept that requires a balanced approach to economic, social, and environmental factors. It involves protecting the natural environment, maintaining economic vitality, and promoting social considerations. By understanding the various dimensions of sustainable development, we can work towards creating a more sustainable future for all.

2.2. Factors influencing gender inequality

Gender inequality is a pervasive issue in Nigeria, affecting various aspects of women's lives. Several factors contribute to this inequality, including social-cultural factors, poverty, and illiteracy, as well as economic problems (Abolade, 2021).

2.2.1. Social-cultural factors

Nigeria's patriarchal society perpetuates gender inequality by preferring males to females. This preference is deeply ingrained in cultural practices, principles, and beliefs, which are transmitted to the workplace and other areas of life (Abolade, 2021). Women are often expected to submit to male authority and play secondary roles, limiting their involvement in decision-making processes. Sagiv and Schwartz (2007), are of the opinion that a society's cultural values have a noteworthy relationship with the manner in which employees discharge their duties in an organization. This highlights the need to challenge and change these cultural norms to promote gender equality.

The societal expectations placed on women also limit their potential. Women are expected to prioritize domestic roles and take care of household chores, which can be burdensome and limit their ability to participate in other activities (Abolade, 2021). This is evident in the way women are treated in many African contexts, where they are often seen as lesser citizens, deprived of rights to land and inheritance, and subjugated to preferential treatment of men (UN Women, 2019).

2.2.2. Poverty and illiteracy

Poverty and illiteracy are significant challenges facing Nigerian women. Limited access to education and economic opportunities hinders their development and contribution to society. According to Abolade (2013), the female illiteracy situation in Nigeria assumes a prevalent percentage, with half of the female population being uneducated and suffering from gender related inequalities. This is further exacerbated by cultural strains, poor socio-economic position, and husband refusal to consent to their wife's participation in literacy programs (Abolade, 2013). The consequences of poverty and illiteracy among women are far-reaching. Education plays a critical role in improving the lives of women, their households, and communities. Educated women are expected to have educated children, setting the tone for continuous improvement and development (Abolade, 2013). Klasen (2002) notes that gender inequality in education and employment adversely affects economic progress, reducing the volume of human capital and hindering economic performance.

2.2.3. Economic problems

According to the World Bank (2020), female-owned businesses in Africa consistently lag behind male-owned businesses, with 34% lower profits on average. The factors contributing to this gap include legal discrimination, social norms, risk of gender-based violence, household distribution of productive resources, time limitations, and care (World Bank, 2020). Women in Nigeria perform most economic activities, including insignificant

trading and farming, but are frequently not recognized or compensated for their contributions. Many employed women face family demands and stress, which can lead them to quitting their jobs (Abolade, 2019).

The economic challenges faced by women are further compounded by limited access to resources, including land and capital. Women manage only 13% of agricultural land worldwide (UN Women, 2019), and face significant barriers in competing with men in the labor market. According to Abolade (2019), many Nigerian women are engaged in paid employment and other economic activities, but their contributions are often not recognized or valued. In conclusion, gender inequality in Nigeria is a complex issue, influenced by social-cultural factors, poverty, and illiteracy, as well as economic problems. Addressing these challenges requires a multifaceted approach that promotes education, economic opportunities, and challenges cultural norms. By empowering women and promoting gender equality, Nigeria can unlock the potential of its female population, driving economic growth, development, and progress.

2.3. Women, environmental challenges and sustainable development

Climate change has been having a disproportionate impact on vulnerable groups in Nigeria, including women, children, farmers, youths, persons with disabilities, and the elderly. These groups face higher hazards and greater burdens due to their limited capacity to fend for themselves and their families (Federal Ministry of Environment, 2020). The environmental problems associated with climate change, such as erosion, flooding, desertification, pollution, drought, and heat waves, have put a strain on natural resources and livelihoods (Federal Ministry of Environment, 2020). The limited participation of women in policymaking processes and labor markets have deepened inequalities and prevented them from fully contributing to climate-related planning, policy-making, execution, monitoring, and evaluation (Federal Ministry of Environment, 2020). Rather than focusing solely on equality, it is indispensable to emphasize equity and complementarity, recognizing women's capabilities and treating them fairly and justly in environmental management and development. This approach acknowledges that women have unique knowledge and capabilities that can inform climate change mitigation and adaptation strategies (Aziz and Anjum (2024).

Unfortunately, women are often viewed as victims of climate change rather than agents of change. This perception overlooks their potential to add to environmental management and growth. In reality, women have a crucial role to play in addressing environmental problems and climate issues, and their inclusion in policy and leadership roles is vital for building a more sustainable future. Despite efforts towards gender mainstreaming, disparities persist between male and female gender in Nigeria, particularly in the socio-economic and socio-political spheres. According to the National Bureau of Statistics (2018), the literacy level for women is 59.3% compared to 70.9% for men. Furthermore, women make up only 38.16% of civil service employees, while men account for 68.84% (National Bureau of Statistics, 2018). The under-representation of women is also evident in the political domain, where men constitute 94.71% of the National Parliament (National Bureau of Statistics, 1999-2015). These disparities have significant implications for women's ability to contribute to climate-related planning and decision-making. To address these disparities and promote equity and fairness, women must be integrated into policy process design, implementation, monitoring, and evaluation. This will enable them to contribute fully to climate-related planning and decision-making, ultimately enhancing the effectiveness of environmental management and development initiatives.

According to Leach et al (2025) in his article on gender relations and environmental change, they discuss gender as a key element of social difference distressing people's experiences, concerns and experiences in

natural resource management and also highlight the two-way interactions between gender relations and environmental change in a variety of settings coupled with the incorporation of gender issues into analysis of environment and sustainable development policies in ways which will lead to progressive change for women. Bala (2024), emphasizes the role of women and society in sustainable development in his article by saying that women's contribution in sustainable development is crucial for achieving long term global goals, as women. Similarly, Fertő and Bojnec (2024) in their article on empowering women in sustainable agriculture, they undertake climate change action with the adoption of sustainability of farming practices to fast-track sustainable development gains and its significance in interdisciplinary research, policy and society responses. In the same vein, Leal Filho et al. (2023) in their article on empowering women in sustainable agriculture underscore the important role of women in global, social, economic and environmental prosperity while Rama et al. (2022) provide insights into the development of women entrepreneurship research, including a new analysis through the lens of sustainable development and the impact of the COVID-19 pandemic. Bibliometric indicators and a systematic literature review approach are used to analyze literature published between 1991 and 2021 to better map the development of research and related opportunities for enhancing studies on women entrepreneurship. Unlike previous studies explained above, this study is divergent because it focuses on the impact of environmental challenges on women's experiences which often lead to climate vulnerability and their roles in sustainable development in Nigeria. Another uniqueness of this study is the use of primary data which has enhanced the originality of the work. Ultimately this article fills the knowledge gap of contending the challenges women face in environmental conservation and sustainable development with the presentation of fresh evidence, conduction of unique analyses, and its contribution to new knowledge in the field of sustainable development and gendered environmental challenges.

Climate change affects vulnerable groups in Nigeria, with women being disproportionately impacted. Emphasizing equity and complementarity, recognizing women's capabilities, and supporting their participation in decision-making processes are critical for addressing environmental problems and climate issues. By working towards a more inclusive and equitable approach, we can build a more sustainable future for all.

2.4. Women and environmental sustainability

The affiliation between human society and the environment is complex and multifaceted, with gender playing a significant role in shaping this dynamic. The notion that the connection between humans and the environment is gender-neutral is far-fetched, as it ignores the historical and cultural divisions of labor between male and female gender (Ezegwu et al., 2024). In reality, women and men have different experiences, perspectives, and roles in environmental management and sustainability. Abiding by the laws of nature is crucial for achieving unity and avoiding disasters (Ezugwu, 2022). This requires exploring nature in conformity with principles that do not provoke it. Complementarity, equity, harmonization, and solidarity are essential for addressing environmental problems, and these values can be achieved through the vigorous participation of both males and females. To effectively address climate change and environmental sustainability, women must be given the opportunity to showcase their expertise in environmental policies and considerations (Odunjo et al., 2015). This requires bringing women into establishments at high levels to guarantee visibility and credibility. Sustainable environment and development can only be achieved through joint works and efforts of all citizens, including women, men, young and old, communities, churches, mosques, academia, local government unions, and civil society groups.

Democracy is essential for sustaining the environment, as it allows for the participation of every section of the society on an impartial basis (Arizpe et al., 1993, cited in Ezegwu et al., 2024). This includes participation in decision-making processes related to environmental policies and the distribution of resources. By prioritizing complementary relationships and recognizing the unique contributions of men and women, we can work towards achieving great tasks together. Ultimately, addressing environmental problems requires a shift in mindset, particularly among men, to recognize women as equal partners in formulating policies and discharging environmental responsibilities (Ezegwu et al., 2024). This is corroborated by Ibitoye (2026) when she opines that nuanced systemic exclusion dynamics against should be alleviated to encourage women's support in achieving Sustainable development goals and by working together and valuing the contributions of all individuals, we can build a more sustainable future for all.

3. Theoretical framework: Ecofeminism theory

This study is guided by the ecofeminist theory, which aligns ecological concerns with feminist principles. Ecofeminism recognizes the interconnectedness of environmental degradation and women's oppression, stemming from similar patriarchal and capitalist structures (Shiva, 1988). This theory is relevant to this study as it provides insights into the role of women in sustainable development, particularly in countries like Nigeria where environmental degradation and social inequality are significant issues.

Ecofeminism's emphasis on women's knowledge and experiences in environmental conservation and sustainable development (Mies and Shiva, 1993) informs the research question: How do women in Nigeria experience environmental challenges, and what role do they play in promoting sustainable development? The descriptive research design used in this study allows for an exploration of women's experiences and perspectives on environmental degradation and sustainable development.

The ecofeminist perspective highlights the need to address the intersections of social, economic, and environmental factors in development approaches (Shiva, 1988). This study's findings can inform the development of more inclusive and sustainable approaches to development that prioritize women's agency and expertise. By applying an ecofeminist lens, this study aims to contribute to a deeper understanding of the relationships between environmental degradation, women's oppression, and sustainable development in Nigeria.

4. Research methods

4.1. Research design

This study utilised a descriptive research design to examine the role of women in sustainable development. A self-designed questionnaire was administered to a selected sample of respondents to gather relevant information.

4.2. Study population

The study was carried out in Ekiti State, which has a population of approximately 3,788,000 people as of 2025, with women constituting 51.5% of the population (Worldmeter, 2025). The study focused on women aged 15-54 years, totaling 526,310 across three Local Government Areas (LGAs): Ado-Ekiti LGA (261,254), Ikole LGA (141,240), and Ikere LGA (123,816).

4.3. Sample size

A sample size of 400 women was determined using the Taro Yamane (1967) sample size formula. The formula is a widely accepted method for determining the optimal size in research studies, particularly when the population size is known (i.e. 216254, 141240, and 123816). The respondents were selected proportionately across the three LGAs: Ado-Ekiti LGA (199 respondents), Ikole LGA (107 respondents), and Ikere LGA (94 respondents).

4.4. Sampling techniques

The study employed a multi-stage sampling technique, combining stratified, simple random, and purposive sampling methods. Ekiti State was divided into three strata based on senatorial districts: Ekiti Central, Ekiti North, and Ekiti South. A Local Government Area (LGA) and community were randomly selected from each stratum. The LGA and community selected were those with highest population and at least a tertiary institution (e.g. University) in the state. Women aged 18-54 years were then purposively selected from each community across the selected LGA. The women were adults group who are still within the working age.

4.5. Data collection

A questionnaire was designed to collect data for the study. The questionnaire consisted of two sections: Section A captured socio-demographic characteristics, Section B focused on environmental challenges and women's experiences while Section C focused on women's roles in sustainable development, and Section C focused on challenges faced by women and opportunities available. The questionnaire featured open-ended, close-ended, and Likert scale questions and was administered by the researcher and two trained field assistants. The field assistants (who are students of tertiary institutions) were recruited across the study areas for easy administration of the instrument. The researchers explained the purpose of the research to the participants in both English and Yoruba language, particularly, those with low education

4.6. Data analysis

The collected data were analyzed using the Statistical Package for Social Sciences (SPSS). Descriptive statistics (frequency and percentage) and inferential statistics (multiple regressions) were used to present the hypothesis.

4.7. Ethical considerations

This study was conducted with the utmost consideration of the rights and dignity of the participants. To ensure the integrity and responsibility of the research, several ethical principles were adhered to.

First, informed consent was obtained from all participants prior to their involvement in the study. They were fully informed about the purpose, procedures, benefits, and potential risks associated with the research. Participants were assured that their involvement was voluntary and that they could withdraw at any time without penalty.

The confidentiality and anonymity of respondents were strictly maintained throughout the study. Personal identifiers were not collected, and all data were aggregated to prevent individual identification. This measure ensured that participants' privacy was protected and that they felt comfortable providing honest responses.

The research respected the autonomy and dignity of all participants, ensuring that they were treated with courtesy and respect. Special care was taken to ensure that vulnerable groups, if any, were protected and not

exploited. The study aimed to maximize benefits while minimizing any potential harm to participants. The research design and methods were carefully chosen to ensure that no physical, psychological, or social harm would come to the participants.

Before commencing the study, necessary approvals were obtained from relevant institutional review boards or ethics committees which is specifically the Human Research Ethics Committee, Federal Teaching Hospital, Ido-Ekiti with number ERC/2025/07/16/1307B. This ensured that the study met the required ethical standards for research involving human subjects. The selection of participants was conducted in a fair and unbiased manner, ensuring that no group was unfairly included or excluded. The study population was selected based on relevance to the research question rather than convenience or other biases.

5. Results

The study's results are presented in this section, derived from a comprehensive analysis of 362 valid responses out of 400 administered questionnaires, yielding a response rate of 90.5%. The key findings are outlined as follows.

5.1. Respondent's socio-demographic background

Table 1. Distribution of respondents by socio-demographic characteristics (N=362)

SN	Socio-Demographic Characteristics	Variables	Frequency (N= 362)	Percentage (%)
1.	Age (at last birthday)	Less than 21years 21-30 31-40 41-50 Above 50years	23 78 109 83 69	6.4 21.5 30.1 22.9 19.1
2.	Religion	Christianity Islam Traditional	268 86 8	74.0 23.8 2.2
3.	Ethnic group	Yoruba Igbo Hausa Others (Ebira, Idoma, etc)	221 59 18 64	61.0 16.3 5.0 17.7
4.	Level of education	No formal education Primary Secondary Post-secondary	21 36 162 143	5.8 9.9 44.8 39.5
5.	Marital status	Single Married Separated Divorced Widow/er	112 163 39 26 22	30.9 45.0 10.8 7.2 6.1
6.	Occupation	Unemployed Civil servant Trading Artisan Farming Others (Sales person, etc)	33 101 65 54 61 48	9.1 27.9 18.0 14.9 16.8 13.3

Source: Field Survey, 2025

The socio-demographic characteristics of the respondents are presented as follows: The age distribution of the respondents showed that the majority (93.6%) were 50 years old or younger. Specifically, 30.1% of the respondents fell within the 31-40 age bracket, making them the largest proportion. In terms of religion, Christians dominated the sample, accounting for 74% of the respondents, while Muslims made up 23.8%, and traditionalists represented 2.2%. The ethnic distribution revealed that Yoruba respondents comprised the largest ethnic group, accounting for 61% of the sample. This was followed by Igbo respondents, who made up 16.3%, Hausa respondents, who accounted for 5%, and other ethnic groups, which represented 17.7% (see Table 1). Regarding educational background, a significant majority (84.3%) of the respondents had at least a secondary education. Specifically, 44.8% held secondary school certificates, and 39.5% had post-secondary education. The marital status of the respondents showed that 45% were married, while 30.9% were single. The remaining 24.1% were either separated, divorced, or widowed. In terms of occupation, civil servants and traders were prominent, accounting for 27.9% and 18% of the respondents, respectively. Artisans made up 14.9%, farmers accounted for 16.8%, and the unemployed represented 9.1%.

These demographic characteristics provide valuable context for understanding the study's findings.

5.2. Environmental challenges and women's experiences

Table 2. Distribution of respondents by the environmental challenges and women's experiences (N=362)

SN	Items	Agree		Undecided		Disagree	
		N	%	N	%	N	%
1.	Climate change is a significant threat to women's livelihoods in Nigeria.	321	88.7	11	3.0	30	8.3
2.	Women in Nigeria are disproportionately affected by environmental degradation.	314	86.7	9	2.5	39	10.8
3.	Water scarcity is a major issue affecting women's health and well-being in Nigeria.	288	79.6	21	5.8	53	14.6
4.	Environmental pollution has serious health implications for women in Nigeria.	306	84.5	14	3.9	42	11.6
5.	Women's traditional roles in agriculture make them more vulnerable to environmental challenges.	326	90.0	18	5.0	18	5.0

Source: Field Survey, 2025

The survey results on environmental challenges and women's experiences revealed significant insights. An overwhelming majority (88.7%) of respondents agreed that climate change poses a substantial threat to women's livelihoods in Nigeria, while 8.3% disagreed, and 3% remained neutral. Furthermore, a substantial proportion (86.7%) of respondents concurred that women in Nigeria are disproportionately affected by environmental degradation, with 10.8% holding a contrary view, and 2.5% being undecided. The survey also found that 79.6% of respondents agreed that water scarcity is a major issue impacting women's health and well-being in Nigeria, whereas 14.6% disagreed, and 5.8% remained neutral. Moreover, 84.5% of respondents acknowledged that environmental pollution has severe health implications for women in Nigeria, while 11.6% disagreed, and 3.9% were neutral. Lastly, a significant majority (90%) of respondents agreed that women's traditional roles in agriculture render them more vulnerable to environmental challenges, with 5% disagreeing, and 5% remaining neutral (see Table 2).

These findings highlight the critical intersection of environmental challenges and women's experiences in Nigeria, underscoring the need for targeted interventions to address these issues.

5.3. Women's role in sustainable development

Table 3. Distribution of respondents by women's role in sustainable development (N=362)

SN	Items	Agree		Undecided		Disagree	
		N	%	N	%	N	%
1.	Women play a critical role in promoting sustainable development in Nigeria.	306	84.5	18	5.0	38	10.5
2.	Women's participation is essential for effective environmental decision-making in Nigeria.	326	90.0	18	5.0	18	5.0
3.	Women can contribute significantly to sustainable agriculture practices in Nigeria.	296	81.7	14	3.9	52	14.4
4.	Women's empowerment is critical for achieving sustainable development goals in Nigeria.	288	79.6	21	5.8	53	14.6
5.	Women can be effective leaders in environmental conservation efforts in Nigeria.	259	71.6	28	7.7	75	20.7

Source: Field Survey, 2025

The survey results on women's roles in sustainable development yielded important findings. A significant majority (84.5%) of respondents agreed that women play a vital role in promoting sustainable development in Nigeria, while 10.5% disagreed, and 5% remained neutral. Furthermore, an overwhelming majority (90%) of respondents concurred that women's participation is essential for effective environmental decision-making in Nigeria, with only 5% disagreeing and 5% remaining neutral. The survey also revealed that 81.7% of respondents believed that women can make significant contributions to sustainable agriculture practices in Nigeria, although 14.4% disagreed, and 3.9% were neutral. Moreover, 79.6% of respondents agreed that empowering women is critical for achieving sustainable development goals in Nigeria, while 14.6% disagreed, and 5.8% remained neutral. Lastly, 71.6% of respondents agreed that women can be effective leaders in

environmental conservation efforts in Nigeria, although 20.7% disagreed, and 7.7% were neutral (see Table 3).

These findings underscore the importance of women's involvement in sustainable development initiatives and highlight the potential benefits of promoting women's empowerment and leadership in environmental conservation efforts.

5.4. Challenges and opportunities

Table 4. Distribution of respondents by challenges and opportunities (n=362)

SN	Items	Agree		Undecided		Disagree	
		N	%	N	%	N	%
1.	Limited access to education and training hinders women's participation in sustainable development.	241	66.6	24	6.6	97	26.8
2.	Cultural and social norms limit women's role in environmental decision-making in Nigeria.	299	82.6	21	5.8	42	11.6
3.	Government initiatives are effective in promoting women's participation in sustainable development.	314	86.8	16	4.4	32	8.8
4.	Community-based initiatives can empower women to take a more active role in environmental conservation.	329	90.9	10	2.8	23	6.3
5.	Women's groups can influence environmental policy-making in Nigeria.	312	81.2	18	5.0	32	8.8

The survey results on challenges and opportunities yielded the following insights: Limited access to education and training was identified as a significant barrier to women's participation in sustainable development, with 66.6% of respondents agreeing, while 26.8% disagreed, and 6.6% remained neutral. A substantial majority (82.6%) of respondents concurred that cultural and social norms restrict women's roles in environmental decision-making in Nigeria, with 11.6% holding a contrary view, and 5.8% being neutral.

Interestingly, 86.8% of respondents believed that government initiatives are effective in promoting women's participation in sustainable development, although 8.8% disagreed, and 4.4% remained neutral. Furthermore, an overwhelming majority (90.9%) of respondents agreed that community-based initiatives can empower women to take a more active role in environmental conservation, with only 6.3% disagreeing, and 2.8% being neutral. Additionally, 81.2% of respondents believed that women's groups can influence environmental policy-making in Nigeria, while 8.8% disagreed, and 5% remained neutral (see Table 4).

These findings highlight the complexities surrounding women's participation in sustainable development and environmental conservation, emphasizing the need for targeted initiatives to address the challenges and leverage the opportunities.

5.5. Hypothesis

H_0: There is no significant relationship between socio-demographic background and women's contribution to sustainable development in Nigeria.

Table 5. Multiple regression analysis showing the relationship between the socio demographic background and women's role in sustainable development in Nigeria

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta (β)		
1	(Constant)	1.278	.159		2.512	.001
	Age	.351	.212	.322	2.865	.001
	Religion	.379	.228	.263	3.249	.005
	Ethnic group	.333	.195	.230	2.652	.003
	Education level	.395	.241	.335	3.496	.003
	Marital status	.401	.266	.211	3.654	.005
	Occupation	.306	.183	.273	2.511	.005
a. Dependent Variable: Women's role in sustainable development						
Multiple R = 0.399; Multiple R^2 = 0.356; Adjusted Multiple R^2 = 0.356; F5.414 = 42.360						

P<0.01

The regression analysis results (Table 5) indicate a significant relationship between socio-demographic characteristics and women's roles in sustainable development ($R = 0.399$, $p < 0.05$), leading to the rejection of the null hypothesis and acceptance of the alternative hypothesis. The coefficient of determination (R^2) is 0.356, meaning that socio-demographic characteristics explain 35.6 of the variance in women's roles in sustainable development in Nigeria.

The results show that education level is the strongest predictor of women's roles in sustainable development, with a beta weight of 0.335. This is followed by age ($\beta = 0.322$), occupation ($\beta = 0.273$), ethnic group ($\beta = 0.230$), religion ($\beta = 0.228$), and marital status ($\beta = 0.211$). The analysis also reveals that all socio-demographic characteristics significantly contribute to the variations in women's roles in sustainable development ($F5.414 = 44.360$, $p < 0.05$).

These findings highlight the importance of socio-demographic factors in shaping women's involvement in sustainable development initiatives in Nigeria.

6. Discussion

This study's findings underscore the disproportionate impact of environmental challenges on women in Nigeria, consistent with the Federal Ministry of Environment's (2020) report. Climate change and environmental degradation exacerbate women's vulnerability, particularly in agriculture, where they play a crucial role. The results align with feminist political ecology theory, which highlights the intersectionality of gender, environment, and development (Rocheleau, et. al., 1996). Women's traditional roles and responsibilities make them more susceptible to environmental degradation, which affects their health, well-being, and livelihoods.

The study also highlights the critical role women play in promoting sustainable development in Nigeria. Women's participation in environmental decision-making is essential for effective policy-making, and they can contribute significantly to sustainable agriculture practices. This finding supports the argument that women's empowerment is crucial for achieving sustainable development goals (UN Women, 2020). Moreover, the study's results align with research emphasizing the importance of women's involvement in environmental policies and deliberations (Odunjo, et. al., 2015).

However, the study identifies significant challenges that hinder women's participation in sustainable development, including limited access to education and training, and cultural and social norms that limit their roles in environmental decision-making. These findings are consistent with Abolade's (2021) study, which highlights the impact of Nigeria's patriarchal society on gender inequality. The results also support the argument that limited access to education and economic opportunities hinders women's contributions to society (Abolade, 2013).

The study's findings suggest that government initiatives and community-based programs can promote women's participation in sustainable development. By creating opportunities for women to contribute to environmental conservation efforts, policymakers and stakeholders can work towards creating a more equitable and sustainable future. This approach is consistent with the sustainable development goals' emphasis on gender equality and women's empowerment (UNDP, 2020).

In conclusion, the study's findings highlight the need for a comprehensive approach to addressing ecological challenges and supporting sustainable development in Nigeria. By recognizing the crucial role women play in sustainable development and addressing the challenges they face, policymakers and stakeholders can work towards creating a more equitable and sustainable future.

7. Limitations to the study

Based on the findings of the study, the following were the limitations to the study:

- Limited geographical scope and generalizability: The study's focus on Ekiti State, Nigeria, may not be representative of other states or regions, limiting the generalizability of the findings.
- Methodological limitations: The descriptive research design may not provide causal relationships between variables, and the self-reported data may be subject to biases such as social desirability bias.

- Sampling limitations: The study may be prone to sampling bias, and the sample size may not capture the diversity of women's experiences and perspectives in Ekiti State.
- Measurement and respondent limitations: The study's measurement tools may not fully capture the complexity of environmental challenges and women's roles in sustainable development, and respondents may not provide accurate or honest responses.
- Contextual limitations: The study may not fully account for cultural and socio-economic factors that influence women's roles in sustainable development in Ekiti State, and the timeframe may not capture long-term impacts.

8. Conclusion

In conclusion, this study underscores the imperative of adopting an inclusive approach to sustainable development in Nigeria, one that acknowledges the intricate relationships between environmental challenges and women's experiences. By recognizing the disproportionate impact of climate change and environmental degradation on women, policymakers and stakeholders can design targeted interventions that not only mitigate these effects but also leverage women's potential as agents of change. This is in conformity with Ibitoye (2026)'s standpoint that inclusive institutional reform models that prioritise equity focused strategies and cross-border collaboration should be encouraged. The study highlights the need to address the structural barriers that hinder women's participation in environmental decision-making, such as limited access to education and training, and cultural and social norms that perpetuate gender inequality. By doing so, policymakers can unlock women's potential to contribute to sustainable development and environmental conservation, ultimately promoting a more equitable and sustainable future. This requires a nuanced understanding of the intersections between gender, environment, and development, and a commitment to empowering women as key stakeholders in sustainable development efforts. By prioritizing women's empowerment and participation, Nigeria can make meaningful progress towards achieving the Sustainable Development Goals and creating a more just and sustainable future for all.

9. Recommendations

Based on the study's findings, several recommendations are proposed to promote women's participation in sustainable development and environmental conservation in Nigeria.

- Policymakers should integrate gender-sensitive approaches into environmental policies and programs to address the unique challenges faced by women. This can be achieved by considering the specific needs and experiences of women in the design and implementation of environmental initiatives.
- Government and non-governmental organizations should provide women with access to education and training opportunities in sustainable agriculture, environmental conservation, and leadership skills. This will enable women to acquire the knowledge and skills necessary to participate effectively in environmental decision-making and sustainable development.
- Community-based initiatives should be supported and scaled up to empower women to take a more active role in environmental conservation and sustainable development. These initiatives can provide women with opportunities to develop their skills, build their confidence, and contribute to their communities.

- Efforts should be made to empower women through economic opportunities, decision-making roles, and leadership positions in environmental governance. This can be achieved by promoting women's participation in environmental decision-making processes and providing them with opportunities to take on leadership roles.
- Stakeholders should work towards challenging and changing cultural and social norms that limit women's participation in environmental decision-making and sustainable development. This can be achieved through awareness-raising campaigns, education, and community outreach programs.
- Finally, government agencies, non-governmental organizations, and community groups should collaborate to promote women's participation in sustainable development and environmental conservation. By working together, these stakeholders can leverage their resources and expertise to support women's empowerment and promote sustainable development.

By implementing these recommendations, Nigeria can harness the potential of women to drive sustainable development and environmental conservation, ultimately contributing to a more equitable and sustainable future.

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