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A Historical Appraisal of the Impact of Climate Change on Nigerian Women from the Pre-colonial Period to the Present

Ezeogueri-Oyewole, Anne Nnenna[1]
Department History International Studies
Prince Abubakar Audu University,
Anyigba, Kogi State

Abstract

Climate change poses a major challenge to human development, but its impacts are uneven. In Nigeria, women- especially in rural, coastal, and agrarian communities- have historically borne disproportionate environmental burdens due to social, economic, and political inequalities. This paper traces women's vulnerabilities, coping strategies, and policy responses from pre-colonial times to today. Pre-colonially, women managed subsistence agriculture through traditional knowledge and communal labor. Colonial land dispossession, cash-crop economies, and gender discrimination worsened vulnerabilities. Post-independence modernization, urbanization, and recurring droughts and floods further marginalized women, despite grassroots adaptation efforts. Today, erratic rainfall, desertification, and flooding disproportionately affect women's health, food security, and agency. Integrating gender-sensitive approaches in climate policy and resilience planning is essential to empower women as active agents of adaptation and mitigation.

Keywords: Climate change, Nigeria, Gender inequality, Gender Discrimination, Drought and Flood.

Introduction

Climate change poses a multidimensional threat to societies worldwide, manifesting in rising temperatures, shifting rainfall patterns, desertification, flooding, and sea-level rise, which affect ecosystems, food systems, health, and socio-economic stability[2]. These impacts are unevenly distributed; women and girls are disproportionately vulnerable due to preexisting gender inequalities, limited access to resources, and constrained decision-making[3]. In Nigeria, where women comprise roughly 70% of the rural agricultural workforce, systemic barriers to land ownership, credit, and technology intensify these

1 Phone Number: 08133257023 Email: ann.ne@ksu.edu.ng
2 Ugwu, C. S., & Lawal, O. Women and Girls' Vulnerability to Climate Change: Gender-Based Policy Strategies for Sustainable Development. Asian Research Journal of Arts & Social Sciences, 2022, 16(2), 56.
2 Ugwu, K., & Lawal, S. Gender, climate change, and resilience in Nigeria: Lessons from history. African Journal of Climate Policy, 2022, 10(3), 58.

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vulnerabilities[4]. Consequently, climate stressors directly threaten women's livelihoods, food security, health, and socio-political participation.

Historically, Nigerian women have been central to subsistence agriculture, using local ecological knowledge to cope with climatic variability, yet lacking formal land rights[5]. Colonial policies favoring male landowners and the commercialization of agriculture increased women's vulnerability, forcing them to absorb losses while maintaining household responsibilities[6]. Post-independence population growth, urbanization, and environmental challenges, including Sahelian droughts and coastal flooding, further constrained women's adaptive capacity, compounded by policies biased toward male farmers[7]. Despite this, women developed grassroots strategies such as cooperative farming, communal resource sharing, and local savings scheme[8].

Today, climate change impacts-erratic rainfall, rising temperatures, northern desertification, and southern flooding-disproportionately affect women, especially as caregivers and subsistence farmers. Health outcomes, including maternal and child health, suffer due to water scarcity, malnutrition, and vector-borne diseases[9]. Socio-political marginalization and gender-blind climate finance further limit women's resilience[10]. A historical perspective reveals that contemporary vulnerabilities stem from long-standing socio-economic inequalities, not just environmental change. This paper examines climate change impacts on Nigerian women from pre-colonial times to the present, tracing vulnerabilities, resilience strategies, and policy responses, providing a foundation for gender-responsive climate action. The study adopts a chronological-historical approach, highlighting environmental changes,

4 Independent NG. Flooding in Lagos and Niger Delta: Women bear the brunt of climate change. Independent Nigeria. https://www.independent.ng/flooding-lagos-niger-delta-women, TheCable. Climate change and women's health in Nigeria: A growing crisis, 2024. TheCable Nigeria. https://www.thecable.ng/climate-change-womens-health-nigeria, 2023

5 Igoche, P. Women, agriculture, and climate vulnerability in Nigeria: A historical analysis. University Press.2024, p.474

6 DRPC. Climate change, food security, and women's livelihoods in Nigeria. Development Research Policy Centre. 2022, p.3

7 Ugwu, C. S., & Lawal, O. Women and Girls' Vulnerability to Climate Change: Gender-Based Policy Strategies for Sustainable Development. Asian Research Journal of Arts & Social Sciences, 2022, 16(2), 54–64, DRPC. Climate change, food security, and women's livelihoods in Nigeria. Development Research Policy Centre. 2022, p.4

8 Ememe, C., & Fajimi, T. Gendered impacts of climate change on Nigerian women: Historical and contemporary perspectives. Journal of Environmental and Social Studies, 18(2), 2024, 8 .

9 TheCable. Climate change and women's health in Nigeria: A growing crisis, 2024. TheCable Nigeria. https://www.thecable.ng/climate-change-womens-health-nigeria, 2023, para. 6

10 Ugwu, C. S., & Lawal, O. Women and Girls' Vulnerability to Climate Change: Gender-Based Policy Strategies for Sustainable Development. Asian Research Journal of Arts & Social Sciences, 2022, 16(2), p.62, Ushie, M. Financing women's climate adaptation in Nigeria: Opportunities and challenges. Nigerian Journal of Development Studies, 12(1), 2024, pp. 22–31.

gendered impacts, and women's adaptation strategies, drawing on historical records, literature, policy documents, and empirical studies.

Pre-Colonial Nigeria (Before 1900s)

In pre-colonial Nigeria, women played an indispensable role in sustaining local economies, food systems, and social cohesion. Agriculture, the backbone of pre-colonial Nigerian societies, was largely subsistence-based, and women were central to planting, weeding, harvesting, and food processing[11]. In many ethnic communities, such as the Igbo, Yoruba, and Hausa-Fulani, women were responsible for cultivating food crops like cocoyam, maize, beans, and vegetables, while men primarily engaged in yam production, hunting, and pastoral activities[12]. This division of labor was not merely economic; it was embedded in social norms that assigned reproductive, domestic, and agricultural responsibilities to women. Consequently, any climatic fluctuations-droughts, erratic rainfall, or localized flooding-directly affected women's workloads and household sustenance. Despite these vulnerabilities, pre-colonial Nigerian women developed sophisticated ecological knowledge systems to manage environmental risk. Ethnographic and historical studies highlight that women employed techniques such as inter-cropping (e.g., cocoyam with beans), preserving drought-resistant seed varieties, and adjusting planting cycles to maintain household food security[13]. In riverine and coastal communities, women participated in small-scale fishing and fish-pond activities, and adjusted their harvest according to seasonal water levels[14]. This ecological literacy provided a form of early adaptive capacity, enabling communities to buffer the effects of environmental variability.

Land tenure, however, was a critical limitation. While women cultivated significant proportions of farmland, formal ownership was often restricted by patrilineal and patriarchal structures[15]. Women typically relied on usufruct arrangements, communal inheritance rights, or access through male relatives, granting them use but not legal control over the land. This limited capacity constrained their ability to implement long-term agricultural improvements or respond independently to climatic shocks. As a result, pre-colonial women's resilience was largely collective, relying on kinship, communal labor exchanges, and women's market networks to pool resources and share risks[16]. Market

11 Shochat, O. (n.d.). Oil and Women's Political Participation in Nigeria: Historical Evidence [Unpublished LSE Thesis].pp. 8-9
12 Ezedinachi, I. E. "Women and Dynamics of Food Security in Pre-Colonial Nigeria: A Historical Perspective." Journal of African History and Archaeology, 1(1), 2023, 110–112.
13 Chuku, G. Igbo Women and Economic Transformation in Southeastern Nigeria, 1900–1960. Routledge. 2005, Martin, S. "Gender and Innovation: Farming, Cooking and Palm Processing in the Ngwa Region, South-Eastern Nigeria, 1900–1930." The Journal of African History, 50(1), 2009, 25–48.
14 Oriire. "The Birth of Feminism in Pre-Colonial Societies in Nigeria." Oriire: African Mythology, History & Stories. 2024,
15 Ezedinachi, I. E. "Women and Dynamics of Food Security in Pre-Colonial Nigeria: A Historical Perspective." Journal of African History and Archaeology, 1(1), 2023, 118.
16 Aduke, E. Women in Pre-Colonial Economic Development in North East Yorubaland. Science Arena Publications, 2019, pp. 62-63

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participation further augmented women's economic agency. In Igbo and Yoruba societies, women dominated local and regional trade in food crops, palm oil, salt, and other artisanal goods, providing an additional buffer against environmental stress. By diversifying income and engaging in trading networks, women could offset localized harvest failures or seasonal scarcities[17]. In some Igbo regions, women's associations functioned as mutual-support systems, offering communal savings, emergency loans, and collective decision-making during environmental crises[18].

Religious and cultural practices also played a role in climate adaptation. Women participated in seasonal rituals and festivals tied to agricultural cycles-such as new yam celebrations-and rites to river deities that sought to secure soil fertility and favorable rainfall. These practices, while spiritual, were deeply rooted in ecological observation and community-based environmental monitoring[19]. Health and labor considerations further underscore women's vulnerability. Pre-colonial women often traveled long distances to fetch water and firewood, a task that grew more arduous during droughts or low river flows[20]. Seasonal shortfalls in food production could produce nutritional stress, especially for women and children. Despite these challenges, women's central roles in production, provisioning, and social cohesion allowed them to sustain family and communal resilience.

Importantly, while women exhibited considerable adaptive agency, structural barriers constrained their power. Their exclusion from formal decision-making, land rights, and political authority meant that many coping strategies remained reactive rather than preventive. Their contributions-though vital-were often marginalized within broader social hierarchies. Nevertheless, the pre-colonial period laid enduring patterns of women's labor, resource management, and resilience strategies that shaped their responses to environmental stress during colonial and post-independence eras[21]. Thus, pre-colonial Nigerian women were both deeply vulnerable to environmental fluctuations and remarkably resourceful. Their labor-intensive engagement in agriculture and household management exposed them to climate risks, yet their ecological knowledge, communal networks, market roles, and cultural practices provided critical mechanisms for coping and adaptation. Understanding this historical foundation is essential for interpreting how colonial and modern transformations-especially those affecting land tenure, gender division of labor,

17 Shochat, O. (n.d.). Oil and Women's Political Participation in Nigeria: Historical Evidence [Unpublished LSE Thesis].p 9
18 Ezedinachi, I. E. "Women and Dynamics of Food Security in Pre-Colonial Nigeria: A Historical Perspective." Journal of African History and Archaeology, 1(1), 2023, 115.
19 Ozi Ikòrò. (n.d.). "The Strong Role the Igbo Women Played in our Pre-Colonial Time to Boost the Igbo Economy Through Farming." Ozi Ikòrò, Oriire. "The Birth of Feminism in Pre-Colonial Societies in Nigeria." Oriire: African Mythology, History & Stories. 2024.
20 Ezedinachi, I. E. "Women and Dynamics of Food Security in Pre-Colonial Nigeria: A Historical Perspective." Journal of African History and Archaeology, 1(1), 2023, p. 120.
21 Ezedinachi, I. E. "Women and Dynamics of Food Security in Pre-Colonial Nigeria: A Historical Perspective." Journal of African History and Archaeology, 1(1), 2023, p. 122.

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and social structure-have altered or amplified women's vulnerability to climate change in Nigeria.

Colonial Nigeria (1900–1960)

The colonial period in Nigeria, spanning roughly from the early 1900s to 1960, introduced profound structural changes in social, economic, and environmental systems that significantly affected women's vulnerability to climate stress. British colonial policies transformed subsistence-oriented agrarian societies into cash-crop economies geared toward the export market, prioritizing commodities such as cocoa, groundnuts, and palm oil[22]. While male farmers were often beneficiaries of land grants and colonial favor, women were increasingly marginalized in their roles as food producers, traders, and custodians of household nutrition. This economic restructuring compounded the climate-related challenges they faced, limiting their adaptive capacity.

Land Dispossession and Property Rights

A defining feature of colonial administration was the reorganization of land tenure systems. The introduction of the Land and Native Rights Ordinances in various regions formalized land ownership along Western legal frameworks, typically favoring male chiefs, colonial administrators, and registered male landholders[23]. Women, who had traditionally cultivated land through communal arrangements, were systematically dispossessed of legal control over agricultural plots. As a result, women's access to fertile land became dependent on male relatives or colonial authorities, restricting their ability to invest in long-term soil fertility management or climate-resilient crops[24]. This land dispossession had immediate environmental consequences. Restricted access prevented women from employing traditional adaptive practices, such as crop rotation, fallowing, and diversified cropping, increasing susceptibility to soil depletion and reduced yields during periods of drought or erratic rainfall. In the northern regions, where women's farming activity was concentrated in small, marginal plots, the impact of these legal exclusions was particularly severe, directly undermining household food security[25].

Cash-Crop Economy and Environmental Degradation

Colonial economic policy emphasized the production of export-oriented cash crops, often at the expense of subsistence agriculture. Cocoa plantations in the

22 Igoche, P. Women, agriculture, and climate vulnerability in Nigeria: A historical analysis. University Press. 2024, p. 476
23 DRPC. Climate change, food security, and women's livelihoods in Nigeria. Development Research Policy Centre. 2022, p.3
24 Ugwu, C. S., & Lawal, O. Women and Girls' Vulnerability to Climate Change: Gender-Based Policy Strategies for Sustainable Development. Asian Research Journal of Arts & Social Sciences, 2022, 16(2), p. 58
25 Igoche, P. Women, agriculture, and climate vulnerability in Nigeria: A historical analysis. University Press. 2024, p. 478

southwest, groundnut fields in the north, and palm oil production in the southeast were expanded through coercive labor arrangements and land appropriation[26]. Women, who were historically responsible for subsistence crops, were indirectly affected by this shift: reduced availability of arable land for food crops heightened their vulnerability to climate variability. Moreover, monoculture practices promoted by colonial authorities led to soil exhaustion, erosion, and deforestation, increasing susceptibility to droughts and floods. In effect, environmental degradation exacerbated the challenges women already faced in maintaining household nutrition and livelihoods[27]. The imposition of cash-crop economies also reshaped labor patterns. Men were often conscripted or incentivized to work on commercial farms or for colonial infrastructure projects, leaving women to manage subsistence production and household responsibilities under increasingly difficult environmental and economic conditions[28]. This dual burden-productive and reproductive labor-heightened women's exposure to climate-related stressors, as they were forced to cope with erratic rainfall, crop failure, and food scarcity without institutional or financial support.

Market Participation and Women's Adaptation

Despite structural disadvantages, women continued to exercise agency through market participation and communal networks. Female traders in urban and rural marketplaces leveraged the commercialization of food crops to generate income that could buffer the household against climate shocks[29]. Women's trading networks extended beyond local communities, creating regional safety nets that allowed households to mitigate the impacts of drought, flood, or pest infestation. Cooperative arrangements, such as rotating credit associations and women's guilds, further facilitated resource pooling and risk-sharing in the face of environmental uncertainty[30]. In some regions, women also engaged in small-scale irrigation and water management practices, particularly in riverine and coastal areas prone to flooding[31]. While these interventions were modest compared to colonial infrastructure projects, they represent a continuity of the adaptive strategies observed in the pre-colonial era, reflecting women's persistent agency in coping with climate variability.

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26 Ememe, P. I., & Fajimi, B. A. Rural Women's Resilience to Climate Change in Coastal Communities in Lagos State, Nigeria. Rivers State University Journal of Education, 27(1), 2024, p. 10. rsujoe.com.ng

27 Ugwu, C. S., & Lawal, O. Women and Girls' Vulnerability to Climate Change: Gender-Based Policy Strategies for Sustainable Development. Asian Research Journal of Arts & Social Sciences, 2022, 16(2), p. 60

28DRPC. Climate change, food security, and women's livelihoods in Nigeria. Development Research Policy Centre. 2022, p.4

29 Ememe, P. I., & Fajimi, B. A. Rural Women's Resilience to Climate Change in Coastal Communities in Lagos State, Nigeria. Rivers State University Journal of Education, 27(1), 2024, 11

30 Ugwu, C. S., & Lawal, O. Women and Girls' Vulnerability to Climate Change: Gender-Based Policy Strategies for Sustainable Development. Asian Research Journal of Arts & Social Sciences, 2022, 16(2), p. 59

31 DRPC. Climate change, food security, and women's livelihoods in Nigeria. Development Research Policy Centre. 2022, p.3

Health, Nutrition, and Labor Burden

The colonial period intensified health and nutritional vulnerabilities for women. Restricted access to land and the prioritization of cash crops often led to reduced household food production, contributing to under-nutrition and micro-nutrient deficiencies[32]. Moreover, women continued to bear the burden of labor-intensive tasks such as water collection, fuel gathering, and food processing, which were directly affected by environmental fluctuations. Droughts in the 1920s and 1930s, coupled with localized floods, increased physical burdens and heightened susceptibility to waterborne and vector-borne diseases among women and children[33]. The introduction of Western medical services during the colonial era did little to alleviate these disparities, as rural women often lacked access to clinics or trained personnel. Combined with high maternal workloads, these conditions contributed to persistent health vulnerabilities in the face of climate stress, demonstrating the intersection of environmental and structural disadvantage.

Early Political and Social Marginalization

Colonial governance structures formalized ma-dominated political authority, further marginalizing women from decision-making regarding resource allocation, agricultural policy, and climate-related planning[34]. Although women retained influence within informal networks, their exclusion from formal governance limited the recognition of their knowledge and adaptive practices. This political marginalization contributed to a gendered hierarchy of vulnerability: women remained on the front lines of climate stress yet were largely invisible in colonial policy frameworks.

Resilience and Adaptive Strategies

Despite the compounded challenges, women continued to develop adaptive strategies that drew on traditional knowledge, community networks, and market engagement. Cooperative labor arrangements, seed sharing, and communal storage practices mitigated the impact of climatic variability on food security[35]. Women's markets served not only as economic outlets but also as platforms for information exchange about seasonal changes, pest outbreaks, and flood events, enabling rapid collective responses to environmental stress.

32 Ugwu, C. S., & Lawal, O. Women and Girls' Vulnerability to Climate Change: Gender-Based Policy Strategies for Sustainable Development. Asian Research Journal of Arts & Social Sciences, 2022, 16(2), p. 60
33 Igoche, P. Women, agriculture, and climate vulnerability in Nigeria: A historical analysis. University Press. 2024, p. 479
34 Ugwu, C. S., & Lawal, O. Women and Girls' Vulnerability to Climate Change: Gender-Based Policy Strategies for Sustainable Development. Asian Research Journal of Arts & Social Sciences, 2022, 16(2), p. 62
35 Ememe, P. I., & Fajimi, B. A. Rural Women's Resilience to Climate Change in Coastal Communities in Lagos State, Nigeria. Rivers State University Journal of Education, 27(1), 2024, p. 12.

These strategies highlight continuity with pre-colonial adaptive mechanisms, demonstrating women's resilience in the face of systemic marginalization. In summary, the colonial period in Nigeria was characterized by structural transformations that intensified women's vulnerability to climate stress. Land dispossession, cash-crop economies, environmental degradation, and social marginalization all compounded the impacts of droughts, floods, and soil exhaustion. Nevertheless, women maintained adaptive capacity through market participation, communal networks, and ecological knowledge, laying the groundwork for post-independence resilience strategies. Understanding this historical period is critical for contextualizing the persistent gendered inequalities in climate vulnerability that continue to shape Nigerian women's experiences today.

Post-Independence Nigeria (1960-1990)

Following Nigeria's independence in 1960, rapid political, economic, and social transformations reshaped the country. Population growth, urbanization, industrialization, and efforts to modernize agriculture opened new development pathways-but also altered the nature of environmental vulnerabilities, especially for women. Climate stressors such as drought, flooding, and land degradation increasingly intersected with entrenched gender inequalities, disproportionately affecting Nigerian women[36].

Agricultural Modernization and Gendered Constraints

Post-independence agricultural policies emphasized mechanization, commercial cash-crop cultivation, and large-scale farming via the Agricultural Development Projects (ADPs), which provided credit, improved seeds, fertilizers, and extension services. However, women were often excluded from these benefits. Extension efforts largely bypassed women farmers: until the late 1980s, extension services were male-dominated, and many agents failed to recognize women's critical agricultural roles[37]. Women also faced systemic constraints in accessing land and capital. Customary tenure systems and gender norms limited women's land rights, restricting their ability to invest in modern methods. Empirical studies from the period show that women with insecure tenure earned less and were less efficient than those with more secure rights[38].

36 Ogunjo, S. T., Ife-Adediran, O. O., & Owoola, E. O. Quantification of historical drought conditions over different climatic zones of Nigeria. arXiv. ArXiv, 2018.
37 FAO. (2004). Improving the relevance and effectiveness of agricultural extension activities for women farmers. Article-FAO. FAOHome, Mayer, A. Improving the relevance and effectiveness of agricultural extension activities for women farmers (FAO Research Study). FAO. FAOHome. 1987.
38 Adeyemo, R., Kirk, M., & Olusegun, O. Women and land tenure security: The Nigerian experience. International Journal of Agricultural Economics, 4(2), 2019, 41–47.

Moreover, agricultural credit was tied to land ownership, making it difficult for women-who often lacked formal title-to borrow[39].

Climate Events and Environmental Stress

Major climatic shocks heightened this vulnerability. The Sahelian droughts of the 1970s and early 1980s severely affected northern Nigeria, reducing crop yields, increasing water scarcity, and triggering food insecurity[40]. As primary food producers and household managers, women bore the brunt of these crises: they faced longer journeys to collect water and fuel, greater labor burdens, and diminished food availability. At the same time, flooding in coastal zones and riverine cities-exacerbated by rapid urban growth-disrupted women's livelihoods in southern Nigeria. Floods damaged farmland, contaminated water sources, and caused displacement, disproportionately affecting women's productivity and health[41].

Food Security and Nutritional Challenges

Environmental stresses reduced food production, increasing rural households' reliance on markets for food. Women, with limited income and restricted access to inputs, often struggled to buffer these shocks. Empirical studies show that female farmers faced increased workloads during droughts but still experienced declining food security-both for their families and in terms of nutrition[42].

Grassroots Adaptation and Resilience

Despite structural barriers, Nigerian women demonstrated adaptive capacity. Throughout the 1970s and 1980s, they organized themselves into self-help and cooperative labor groups, pooling resources for seeds, sharing labor, and building informal irrigation schemes to cope with erratic rainfall[43]. Women's market networks also served as important coping mechanisms, providing alternative income during difficult seasons. In 1988, in response to the gender gaps in extension, the "Women in Agriculture" (WIA) program was introduced within ADPs. WIA established female extension agents and supported women's

39 Chikwendu, D. O., & Arokoyo, J. O. Landownership and access to farm inputs by rural women in Nigeria. In Land Reform, Land Settlement and Cooperatives (FAO). FAOHome, 1993
40 FAO. Chapter 9: Improving women farmers' access to extension services. In FAO Training for Agricultural and Rural Development Programme. FAOHome, 2006.
41 Ogunjo, S. T., Ife-Adediran, O. O., & Owoola, E. O. (2018). Quantification of historical drought conditions over different climatic zones of Nigeria. arXiv. ArXiv
42 Kehinde, M. O., Shittu, A. M., Adeyonu, A. G., & Ogunnaike, M. G. (2021). Women empowerment, land tenure & property rights, and household food security among smallholders in Nigeria. Agriculture & Food Security, 10, Article 25.
43 FAO. Chapter 9: Improving women farmers' access to extension services. In FAO Training for Agricultural and Rural Development Programme. FAOHome, 2006

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groups, enabling more effective dissemination of agricultural technologies tailored to women's needs[44].

Health and Reproductive Implications

The climate shocks also had gendered health impacts. Water shortages and flooding increased women's exposure to disease, as they continued to be responsible for water collection, food preparation, and caregiving[45]. The effects of malnutrition and infectious disease burden were compounded by high maternal workloads and limited access to gender-sensitive health or adaptation policies.

Policy and Political Marginalization

Even as women adapted, their representation in formal decision-making remained limited. Agricultural and environmental policies largely failed to incorporate their voices or experiences, with institutional planning and extension services continuing to overlook women's unique challenges[46].

Contemporary Era (1990–Present)

The contemporary period in Nigeria has been marked by an intensification of climate-change impacts-extreme weather events, rising temperatures, sea-level rise, desertification, and erratic rainfall-that disproportionately affect women, especially in rural, coastal, and peri-urban communities, due to entrenched gender inequalities, gendered labor divisions, and limited access to resources[47].

Intensification of Climate Change Effects

Nigeria now wrestles with overlapping climate stressors. In the northern region, desertification and recurrent droughts reduce water access and arable land, undermining subsistence agriculture on which many women depend[48].

44 UNDP / NOUN Course Material. (n.d.). Women in Agriculture (WIA) and extension for women farmers. Nigerian Open University – Course Notes. National Open University of Nigeria, 2019.
45 Odur, O. Impacts of the Women-in-Agriculture (WIA) extension programme on women's lives: implications for subsistence agricultural production of women in Imo State, Nigeria [Master's Thesis]. 2006. lrrd.cipav.org.co
46 FAO. Improving the relevance and effectiveness of agricultural extension activities for women farmers. Article – FAO. FAOHome, Mayer, A. (1987). Improving the relevance and effectiveness of agricultural extension activities for women farmers (FAO Research Study). FAO. FAOHome, 2004.
47 Ugwu, C. S., & Lawal, O. Women and Girls' Vulnerability to Climate Change: Gender-Based Policy Strategies for Sustainable Development. Asian Research Journal of Arts & Social Sciences, 2022, 16(2), p. 60
48 Akinsemolu, A. A., & Olukoya, O. A. P. The Vulnerability of Women to Climate Change in Coastal Regions of Nigeria: A Case of the Ilaje Community in Ondo State. The Green Institute. 2023.

Coastal and riverine areas-including parts of Lagos and the Niger Delta-face flooding, storm surges, and sea-level rise, which threaten housing, farmland, and clean water[49]. Women in these zones often shoulder the burden of managing disrupted households, care-giving, and loss of income-generating activities[50]. Furthermore, pastoralist communities feel these climate shocks acutely. In central and northern Nigeria, pastoralist women responsible for dairy processing and household nutrition contend with shrinking grazing lands and resource conflicts, which force them to travel further for water and forage[51].

Food Security and Economic Vulnerability

Women continue to bear disproportionate food-security risks. Despite making up a large share of Nigeria's agricultural labor, many women lack access to credit, land, and modern climate-smart technologies, limiting their adaptive capacity[52]. Surveys show that female-headed households are more likely to experience food insecurity during floods and droughts than male-headed ones[53]. In urban settings, women face food-price inflation, disrupted supply chains, and limited access to safe water during heat waves or flooding-factors that intensify nutritional and health stress[54].

Health Implications

Climate-driven health risks disproportionately affect women. Floods, water scarcity, and rising temperatures increase the transmission of cholera, malaria, and other vector- and water-borne diseases. Since women are often responsible for water collection, food preparation, and care-giving, they are more exposed to these threats[55]. The stress of repeated environmental shocks also raises maternal and neonatal health risks through increased food insecurity and

49 Ajibade, I. M. Climate Change Vulnerability and Adaptation in Coastal Communities in Nigeria: A Case Study of Lagos, Nigeria [PhD Thesis, University of Western Ontario]. ir.lib.uwo.ca 2016.
50 Ajibade, I. M. Climate Change Vulnerability and Adaptation in Coastal Communities in Nigeria: A Case Study of Lagos, Nigeria [PhD Thesis, University of Western Ontario]. ir.lib.uwo.ca, 2016.
51 Ugwu, C. S., & Lawal, O. Women and Girls' Vulnerability to Climate Change: Gender-Based Policy Strategies for Sustainable Development. Asian Research Journal of Arts & Social Sciences, 2022, 16(2), p. 60
52 Akinsemolu, A. A., & Olukoya, O. A. P. The Vulnerability of Women to Climate Change in Coastal Regions of Nigeria: A Case of the Ilaje Community in Ondo State. The Green Institute. 2023.
53 Ajibade, I. M. Climate Change Vulnerability and Adaptation in Coastal Communities in Nigeria: A Case Study of Lagos, Nigeria [PhD Thesis, University of Western Ontario]. ir.lib.uwo.ca, 2016.
54 TheCable. Climate change and women's health in Nigeria: A growing crisis, 2024. TheCable Nigeria. https://www.thecable.ng/climate-change-womens-health-nigeria, 2023, para. 6
55 Duru, J., Aro, J., & Oladipo, R. E. The effects of climate change on the livelihood of rural women: a case study of Ilorin South, Nigeria. Bulletin of the National Research Centre, 46, Article 165. 2022.

psycho-social strain[56]. Mental health is becoming more salient: women in highly exposed communities report anxiety, depression, and trauma associated with displacement, care-giving burden, and economic loss[57].

Women's Resilience and Adaptation Strategies

Despite these challenges, Nigerian women have shown strong adaptive resilience. Rural women in coastal and riverine communities draw on traditional ecological knowledge-crop diversification, drying, early planting, and soil conservation-to buffer climate effects[58]. Women's savings groups and cooperatives provide microloans and collective funds that help house-holds weather climate shocks. In flood-prone riverine areas, women traders collaborate to rebuild their businesses after floods, sharing resources and local knowledge[59]. There are also organized, higher-level efforts: for example, rural women in several Nigerian states are being empowered to lead in climate adaptation by managing drainage systems, reclaiming abandoned farmland, and instituting rainwater harvesting[60].

Policy Gaps and Institutional Challenges

Even so, national climate policies often remain gender-blind. While Nigeria's climate frameworks mention adaptation, they lack targeted provisions for women's specific vulnerabilities and opportunities[61]. Gender-responsive climate finance is limited, and women producers, especially in agriculture and informal trade, seldom receive direct support[62]. Structural barriers-patriarchal norms, unequal land rights, and limited participation in governance-continue to restrict women's full involvement in adaptation planning[63].

56 SAGE-Open. (n.d.). Patriarchy and Women Vulnerability to Adverse Climate Change in Nigeria. Directory of Open Access Journals.
57 Ememe, P. I., & Fajimi, B. A. Rural Women's Resilience to Climate Change in Coastal Communities in Lagos State, Nigeria. Rivers State University Journal of Education, 27(1), 2024, p. 12.
58 Ememe, P. I., & Fajimi, B. A. Rural Women's Resilience to Climate Change in Coastal Communities in Lagos State, Nigeria. Rivers State University Journal of Education, 27(1), 2024, p. 12.
59 Frontiers in Sustainability. Adapting to climate change-induced flooding: insights from women traders in the riverine areas of Nigeria. Frontiers. 2024.
60 United Nations Framework Convention on Climate Change (UNFCCC). (n.d.). Preparing Rural Nigerian Women to Take the Lead in Climate Change Adaptation. UNFCCC
61 United Nations Framework Convention on Climate Change (UNFCCC). (n.d.). Preparing Rural Nigerian Women to Take the Lead in Climate Change Adaptation. UNFCCC
62 Ugwu, C. S., & Lawal, O. Women and Girls' Vulnerability to Climate Change: Gender-Based Policy Strategies for Sustainable Development. Asian Research Journal of Arts & Social Sciences, 2022, 16(2), p. 61
63 Ugwu, C. S., & Lawal, O. Women and Girls' Vulnerability to Climate Change: Gender-Based Policy Strategies for Sustainable Development. Asian Research Journal of Arts & Social Sciences, 2022, 16(2), p. 61

Historical Patterns and Continuities

A historical perspective of climate change impacts on Nigerian women reveals both continuity and transformation in patterns of vulnerability, resilience, and socio-economic exclusion. Across pre-colonial, colonial, post-independence, and contemporary periods, women have consistently faced disproportionate exposure to environmental stressors due to structural inequalities, gendered labor roles, and limited access to resources. Yet, despite persistent marginalization, women have demonstrated remarkable adaptive agency, employing traditional ecological knowledge, cooperative networks, market engagement, and grassroots advocacy to mitigate climate risks[64].

Recurring Vulnerabilities

Several structural factors emerge as enduring determinants of women's climate vulnerability in Nigeria. First, restricted access to land has historically constrained women's agency in both agricultural production and climate adaptation. In pre-colonial Nigeria, women cultivated subsistence plots but lacked formal ownership, relying on communal or male-relative arrangements[65]. Colonial land policies formalized male ownership, further limiting women's control over productive resources[66]. Post-independence modernization and contemporary reforms have improved access in some contexts but have largely failed to dismantle systemic inequities, leaving women dependent on male-controlled tenure systems[67]. Land inequity directly affects women's ability to implement climate-resilient practices, invest in soil conservation, or respond to extreme weather events.

Second, gendered labor roles and socio-cultural expectations have consistently increased women's exposure to environmental stressors. Across all historical periods, women have been responsible for subsistence agriculture, household provisioning, water and fuel collection, and caregiving[68]. These responsibilities amplify the impact of drought, flooding, and other climate shocks, as women must manage both productive and reproductive labor. The cumulative effect is a

64 Ememe, P. I., & Fajimi, B. A. Rural Women's Resilience to Climate Change in Coastal Communities in Lagos State, Nigeria. Rivers State University Journal of Education, 27(1), 2024, p. 13
65 Igoche, P. Women, agriculture, and climate vulnerability in Nigeria: A historical analysis. University Press. 2024, p. 476
66 DRPC. Climate change, food security, and women's livelihoods in Nigeria. Development Research Policy Centre. 2022, p.3
67 Ugwu, C. S., & Lawal, O. Women and Girls' Vulnerability to Climate Change: Gender-Based Policy Strategies for Sustainable Development. Asian Research Journal of Arts & Social Sciences, 2022, 16(2), p. 58
68 Ememe, P. I., & Fajimi, B. A. Rural Women's Resilience to Climate Change in Coastal Communities in Lagos State, Nigeria. Rivers State University Journal of Education, 27(1), 2024, p. 12.

heightened risk of food insecurity, malnutrition, illness, and psycho-social stress, particularly during periods of extreme environmental stress[69].

Third, policy exclusion has remained a persistent feature of Nigerian women's climate vulnerability. Colonial administrations formalized male-dominated governance structures that marginalized women from decision-making. Post-independence agricultural modernization programs and contemporary climate policies have continued to overlook women's specific needs, resulting in limited access to extension services, credit, and climate finance[70]. Historical continuity in policy exclusion underscores the structural dimensions of vulnerability and the need for gender-sensitive climate governance.

Patterns of Resilience

Despite systemic barriers, women's resilience has persisted across historical periods. In pre-colonial Nigeria, women leveraged ecological knowledge, communal labor exchanges, and market participation to mitigate climate variability[71]. During the colonial period, women adapted to land dispossession and cash-crop economies through market networks, cooperative labor, and small-scale irrigation schemes[72]. Post-independence, grassroots adaptation strategies, such as cooperative farming, savings groups, and microfinance initiatives, allowed women to buffer droughts, floods, and market disruptions[73]. In the contemporary era, women have built on these historical strategies while incorporating modern tools. Participation in advocacy groups, urban gardening, mangrove restoration, and climate education initiatives reflects an integration of traditional knowledge with contemporary social and environmental challenges[74]. Women's resilience is thus both adaptive and cumulative, reflecting lessons learned across centuries of environmental stress.

69 TheCable. Climate change and women's health in Nigeria: A growing crisis, 2024. TheCable Nigeria. https://www.thecable.ng/climate-change-womens-health-nigeria, 2023, para. 6
70 Ugwu, C. S., & Lawal, O. Women and Girls' Vulnerability to Climate Change: Gender-Based Policy Strategies for Sustainable Development. Asian Research Journal of Arts & Social Sciences, 2022, 16(2), p. 61
71 Igoche, P. Women, agriculture, and climate vulnerability in Nigeria: A historical analysis. University Press. 2024, p. 476
72 Ememe, P. I., & Fajimi, B. A. Rural Women's Resilience to Climate Change in Coastal Communities in Lagos State, Nigeria. Rivers State University Journal of Education, 27(1), 2024, p. 11.
73 Ememe, P. I., & Fajimi, B. A. Rural Women's Resilience to Climate Change in Coastal Communities in Lagos State, Nigeria. Rivers State University Journal of Education, 27(1), 2024, p. 11.
74 TheCable. Climate change and women's health in Nigeria: A growing crisis, 2024. TheCable Nigeria. https://www.thecable.ng/climate-change-womens-health-nigeria, 2023, para. 7

Structural Inequalities and Inter-sectional Vulnerability

The historical analysis highlights the intersection of gender, class, and geography in shaping climate vulnerability. Rural women in northern Nigeria are disproportionately affected by desertification and water scarcity, while women in coastal and riverine areas face flooding and saltwater intrusion. Poverty, lack of formal education, and exclusion from political decision-making amplify these vulnerabilities[75]. Inter-sectional analysis demonstrates that climate change does not affect women uniformly; rather, it compounds preexisting inequalities, reinforcing cycles of disadvantage.

Continuities and Transformations

Several key continuities emerge across historical periods:
Dependence on subsistence agriculture and resource-based livelihoods**,** making women highly sensitive to climatic variability. Limited access to land, credit, and modern technology**,** constraining adaptive capacity. Exclusion from formal governance and policy-making, reducing recognition of women's contributions and needs. Transformations, however, are evident in the scale and complexity of climate impacts, as well as in women's strategies. Contemporary climate variability-exacerbated by global warming, industrialization, and urbanization-presents multidimensional challenges that surpass the adaptive capacities available in pre-colonial and colonial periods. At the same time, women's resilience strategies have evolved, incorporating modern financial tools, advocacy, and climate education alongside traditional ecological knowledge. This evolution demonstrates adaptive learning and highlights women as central actors in climate adaptation[76].

Lessons for Policy and Practice

The historical perspective underscores several critical lessons for contemporary climate governance in Nigeria. First, addressing women's vulnerability requires dismantling structural barriers, particularly regarding land ownership, access to credit, and representation in decision-making. Second, resilience strategies must build on women's existing knowledge, networks, and adaptive practices, integrating traditional ecological insights with modern technologies. Third, climate policies must be gender-sensitive, explicitly targeting women's specific vulnerabilities and capacity-building needs, particularly in rural, coastal, and peri-urban regions.

75 Independent NG. Flooding in Lagos and Niger Delta: Women bear the brunt of climate change. Independent Nigeria. https://www.independent.ng/flooding-lagos-niger-delta-women.
76 Ememe, P. I., & Fajimi, B. A. Rural Women's Resilience to Climate Change in Coastal Communities in Lagos State, Nigeria. Rivers State University Journal of Education, 27(1), 2024, p. 13.

Policy Implications and Recommendations

The historical analysis of climate change impacts on Nigerian women highlights the interplay of environmental stressors, structural inequalities, and gendered labor roles across centuries. From pre-colonial reliance on subsistence agriculture to contemporary challenges posed by extreme weather, women have consistently borne disproportionate climate-related burdens. The persistence of these vulnerabilities underscores the urgent need for gender-responsive policy interventions, institutional reforms, and inclusive climate adaptation strategies[77].

Gender-Sensitive Climate Policy

A fundamental policy implication is the necessity of mainstreaming gender into national climate frameworks. Nigeria's National Policy on Climate Change (2012) and the National Adaptation Strategy and Plan of Action on Climate Change offer valuable guidance but remain largely gender-neutral. Integrating explicit provisions for women-particularly in rural, coastal, and peri-urban areas-can ensure that adaptation programs address women's unique vulnerabilities, such as disproportionate labor burdens, health risks, and limited access to land and finance[78]. Policy instruments should include mechanisms to monitor gender equity in climate finance allocation, participation in decision-making, and access to climate-smart technologies.

Land Tenure and Resource Access

Land ownership remains a central determinant of women's adaptive capacity. Historical patterns demonstrate that restricted access to land, from pre-colonial communal arrangements to colonial and post-independence tenure reforms, has consistently constrained women's ability to implement sustainable agricultural practices[79]. Policy reforms that secure women's land rights-through formal registration, joint ownership schemes, and legal protections-are critical for enhancing resilience to climate shocks. Improved access to land should be coupled with technical support, such as training in climate-smart agriculture and soil conservation, to maximize adaptive benefits.

77 Ugwu, C. S., & Lawal, O. Women and Girls' Vulnerability to Climate Change: Gender-Based Policy Strategies for Sustainable Development. Asian Research Journal of Arts & Social Sciences, 2022, 16(2), p. 64.
78Ushie, M. Financing women's climate adaptation in Nigeria: Opportunities and challenges. Nigerian Journal of Development Studies, 12(1), 2024, 22–31.
79 Igoche, P. Women, agriculture, and climate vulnerability in Nigeria: A historical analysis. University Press. 2024, p. 476

Financial Inclusion and Climate Finance

Access to financial resources is another critical factor. Historical evidence shows that women have successfully mitigated climate impacts through cooperative networks, savings groups, and microfinance initiatives[80]. Scaling these mechanisms through gender-responsive climate finance programs can empower women to invest in resilient livelihoods, diversify income sources, and recover from environmental shocks. Government and development agencies should prioritize low-interest loans, grants, and insurance schemes targeted at women-headed households, small-scale farmers, and entrepreneurs in climate-sensitive regions.

Health and Social Protection

Climate change disproportionately affects women's health, particularly through increased exposure to waterborne diseases, malnutrition, and maternal stress during droughts, floods, and heatwaves[81]. Policies must integrate climate adaptation with public health and social protection programs. Strategies could include targeted nutrition programs, maternal and child health services, climate-resilient water and sanitation infrastructure, and early warning systems for climate-related disasters. Social protection mechanisms, such as conditional cash transfers and disaster relief, should explicitly prioritize women to reduce vulnerability and build resilience.

Education and Capacity Building

Education and capacity-building initiatives are essential for enhancing women's adaptive agency. Historical continuity shows that women's ecological knowledge has been central to coping with climate variability, but structural barriers often limit its application in formal decision-making[82]. Programs that provide climate education, vocational training, and technical skills-especially in agriculture, renewable energy, and disaster management-can empower women to innovate and lead local adaptation efforts. Awareness campaigns should also promote gender equality in climate governance, encouraging women's active participation in local councils, advisory boards, and policy making processes.

Institutional and Governance Reforms

80 Ememe, P. I., & Fajimi, B. A. Rural Women's Resilience to Climate Change in Coastal Communities in Lagos State, Nigeria. Rivers State University Journal of Education, 27(1), 2024, p. 12

81 TheCable. Climate change and women's health in Nigeria: A growing crisis, 2024. The Cable Nigeria. https://www.thecable.ng/climate-change-womens-health-nigeria, 2023, para. 6

82 TheCable. Climate change and women's health in Nigeria: A growing crisis, 2024. TheCable Nigeria. https://www.thecable.ng/climate-change-womens-health-nigeria, 2023, para. 6

Finally, institutional reforms are needed to ensure that women's voices are central to climate governance. Historical patterns show persistent exclusion from formal decision-making, from colonial-era councils to modern climate policy frameworks[83]. Establishing quotas for women in local and national climate governance structures, creating women-focused advisory committees, and incorporating gender-sensitive monitoring and evaluation frameworks can institutionalize inclusion. Additionally, partnerships with women's civil society organizations can enhance policy implementation and ensure that adaptation strategies are culturally appropriate, locally relevant, and sustainable.

Conclusion

A historical examination of climate change impacts on Nigerian women demonstrates both continuity and transformation in patterns of vulnerability and resilience. From the pre-colonial era through colonial rule, post-independence modernization, and the contemporary period, women have consistently been at the front-line of environmental stress. Their central role in subsistence agriculture, household provisioning, and resource management has made them highly sensitive to climatic variability, including droughts, floods, desertification, and erratic rainfall. Historical factors such as restricted land access, exclusion from formal governance, and gendered labor divisions have compounded these vulnerabilities across centuries. Despite systemic barriers, Nigerian women have demonstrated remarkable resilience. Pre-colonial women employed ecological knowledge, crop diversification, and communal labor networks to sustain food security. During colonial and post-independence periods, women adapted to land dispossession, cash-crop economies, and modernization initiatives through market engagement, cooperative labor, and microfinance schemes. In the contemporary era, women continue to innovate, integrating traditional knowledge with modern strategies, including climate-smart agriculture, urban gardening, mangrove restoration, and grassroots advocacy. These enduring adaptive practices underscore women's agency as central actors in climate resilience. However, historical patterns also reveal persistent structural inequities. Women remain disproportionately affected by climate-induced food insecurity, health risks, and economic vulnerability due to gender-blind policies, limited access to finance, and unequal land tenure. Addressing these challenges requires integrated, gender-sensitive approaches that combine secure land rights, financial inclusion, health and social protection, education, and inclusive governance. Policy frameworks must recognize women not merely as beneficiaries but as key agents of adaptation and mitigation.

Understanding the historical trajectory of Nigerian women's climate vulnerability provides critical insights for contemporary climate policy. The

83 Ugwu, C. S., & Lawal, O. Women and Girls' Vulnerability to Climate Change: Gender-Based Policy Strategies for Sustainable Development. Asian Research Journal of Arts & Social Sciences, 2022, 16(2), p. 62.

interplay of structural inequality, environmental stress, and resilient agency highlights both the challenges and opportunities in fostering sustainable, gender-responsive adaptation strategies. Empowering women through targeted interventions is not only a matter of social equity but also a strategic imperative for national climate resilience, food security, and sustainable development. By learning from historical experiences, Nigeria can design policies that mitigate risks, strengthen adaptive capacity, and secure a more equitable and resilient future for women in the face of ongoing climate change.

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