

A CLIMATE OF CHANGE: THE ROLE OF WOMEN IN NIGERIA'S FIGHT FOR FOOD SECURITY

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Abstract

Nigeria's food security is increasingly threatened by climate change, yet women — who contribute an estimated 50 to 60 percent of the country's agricultural labour — remain systematically excluded from the resources and institutions that govern agriculture. This paper examines the intersection of gender, climate resilience, and food security in Nigeria, asking how structural barriers constrain women's adaptive capacity and limit the effectiveness of national responses to climate-induced food insecurity. Drawing on a qualitative systematic desktop review of Nigerian policy documents, multilateral reports, and peer-reviewed empirical studies, and employing a feminist political ecology (FPE) framework as the analytical lens, the study synthesises evidence across land tenure, agricultural finance, extension services, decision-making, and climate-smart agriculture (CSA) policy. The review finds that women plot managers in Nigeria produce approximately 30 percent less per hectare than men — a gap driven not by lower ability but by differential access to land, inputs, credit, and advisory services. It further identifies a persistent gap between Nigeria's stated gender commitments in agricultural and climate policy and their operational implementation. Evidence-based pathways toward more resilient food systems — including women-led cooperatives, gender-responsive digital extension, and participatory use of local ecological knowledge — are identified. The paper argues that embedding gender equity at the core of CSA policy — supported by secure land rights, gender-responsive finance and extension, and measurable accountability — is both an equity imperative and a food-security necessity for Nigeria.

Keywords: Gender, Climate-smart agriculture, Food security, Nigeria, Feminist political ecology, Land tenure, Climate adaptation

JEL Classification: Q18, Q56, J16, O13, Q15

1. Introduction

Nigeria faces a convergence of pressures that threatens the food security and livelihoods of millions of its citizens. Climate change is intensifying across the country's diverse agroecological zones: in the north, prolonged dry spells, advancing desertification and increasingly erratic rainfall are undermining

the rain-fed systems on which most rural households depend; in the south, flooding, coastal erosion and soil degradation are disrupting agricultural calendars; and across the country rising temperatures are depressing the yields of staple crops (Oluwatimilehin & Ayanlade, 2021). Because Nigerian agriculture is overwhelmingly rain-fed and smallholder-based, these shifts translate quickly into reduced productivity, food insecurity and deepening rural poverty (Abatemi-Usman, 2023).

Within this setting women occupy a position that is at once central and deeply paradoxical. Nigeria's National Agricultural Technology and Innovation Policy (NATIP) estimates that women contribute between 50 and 60 percent of agricultural labour and serve as primary producers of food, managers of natural resources and custodians of household nutrition, while noting that their role is not fully recognised, resulting in a lack of women's empowerment (Federal Ministry of Agriculture and Rural Development [FMARD], 2022). This under-recognition is not merely symbolic. National survey data show that women are markedly less likely than men to be the primary manager of a farm plot, and that women who do manage plots produce roughly 30 percent less per hectare than men — a gap that widens to about 35 percent in the north and narrows to about 25 percent in the south (World Bank, 2022). This differential reflects not lower ability but unequal access to land, inputs, labour-saving machinery, advisory services and credit.

The implications for national food security are substantial. The Food and Agriculture Organization (FAO) has estimated that giving women the same access to productive resources as men could raise yields on their farms by 20 to 30 percent and reduce the number of hungry people in developing countries by 100 to 150 million (FAO, 2011). Conversely, adaptation and food-security strategies that ignore gender inequality are likely to be less effective, less equitable and less sustainable than those that place women's rights and agency at their centre. This paper examines the intersection of gender, climate change and food security in Nigeria, with particular attention to climate-smart agriculture (CSA) as a framework for integrating productivity, adaptation and mitigation in gender-responsive ways. Section 2 reviews the literature and theoretical framework; Section 3 sets out the methodology; Section 4 presents the structural barriers, emerging opportunities and policy frameworks identified by the review; Section 5 discusses their implications and advances policy recommendations; and Section 6 concludes.

2. Literature Review and Theoretical Framework

2.1 Women, agriculture and food security: global and African foundations

The relationship between gender, agriculture and food security has attracted sustained scholarly attention across disciplines. Foundational work by Boserup (1970) documented women's central role in African food production and showed how colonial and post-colonial development interventions systematically marginalised women farmers, channelling land, technology, credit and advisory services toward men while leaving women to absorb the labour of a feminising agricultural sector. This insight was extended by Deere and León (2001), who showed across Latin American cases that land ownership is not merely an economic resource but a political one: it confers bargaining power, social status and security, and its concentration in male hands reproduces structural inequality across generations.

A parallel literature links women's control of resources to household welfare. Evidence across developing-country settings indicates that when women command a greater share of household resources and decisions, outcomes for child nutrition, dietary diversity and long-term investment in

food security tend to improve (Duflo, 2012). The corollary is that women's constrained access to land and productive assets is associated with lower productivity and greater household vulnerability to shocks. The FAO's landmark assessment captured the aggregate stakes, estimating that closing the gender gap in access to agricultural resources could lift 100 to 150 million people out of hunger globally (FAO, 2011). More granular work has documented the specific mechanisms: Doss et al. (2015) found persistent and widespread disparities in land ownership and control across African countries, driven by a combination of statutory weaknesses, customary bias and institutional inertia, and identified these as major constraints on women's agricultural investment and productivity.

2.2 Gender and agricultural productivity in Nigeria: the empirical record

Nigeria-specific quantitative evidence has confirmed and deepened these patterns. Using Oaxaca-Blinder decomposition applied to 360 rice farmers in south-western Nigeria, Baiyegunhi et al. (2023) found a gender productivity gap of approximately 29 percent in favour of men, driven primarily by differences in marital status, education, farm size and access to market information. Critically, the same study found that female-headed households were not inherently less efficient: when given equivalent endowments, productivity differences narrowed, confirming that the gap is a resource inequality rather than a competence gap. This empirical result is consistent with national-level analysis by the World Bank (2022), which found a 30 percent average productivity disadvantage for women plot managers nationally — 35 percent in the north and 25 percent in the south — attributing it to limited access to fertiliser, hired labour, high-value crops and extension services.

The climate dimension compounds these productivity inequalities. Field evidence from Kwara and Nassarawa States shows that men and women perceive climate change differently and draw on different knowledge and resources in responding to it, with men generally enjoying greater access to decision-making and adaptive resources as household heads (Abatemi-Usman, 2023). The broader pattern of heightened female vulnerability is confirmed by analysis across Nigerian agroecological zones showing high variability in rainfall and rising temperatures that disproportionately affect those with the least buffering capacity (Oluwatimilehin & Ayanlade, 2021). Women's lower asset base and weaker institutional linkages mean they are less able to absorb and recover from climate-induced shocks, creating a negative feedback loop in which climate stress deepens gender inequality and gender inequality deepens climate vulnerability.

2.3 Climate-smart agriculture: the three pillars and their gender blind spots

Climate-smart agriculture has become a dominant paradigm in agricultural development since its articulation by the FAO, which defines it through three interconnected objectives: sustainably increasing agricultural productivity and incomes; adapting and building resilience to climate change; and reducing or removing greenhouse-gas emissions where possible (FAO, 2010). The framework now informs development programmes, climate finance and national adaptation planning across sub-Saharan Africa, and Nigeria's NATIP 2022–2027 explicitly references CSA as a guiding framework (FMARD, 2022).

Yet the treatment of gender within CSA has been questioned on structural grounds. Although CSA guidance routinely acknowledges women's empowerment in principle, gender is frequently handled as a cross-cutting add-on rather than a structural dimension that shapes resource access and adaptive capacity (World Bank, FAO, & IFAD, 2015). This matters because interventions designed without gender

analysis are less likely to reach women, less likely to address the constraints that limit their productivity, and therefore less likely to achieve their efficiency and food-security objectives. Recent Nigerian evidence bears this out. In a sex-disaggregated study of 624 farm households across north-central Nigeria, Egbewole (2025) found a statistically significant gender gap in both CSA adoption and its benefits: male-headed households outperformed female-headed counterparts in farm productivity and welfare outcomes, and adoption was itself shaped by education, farm size, awareness, and access to extension and credit — resources women access less equitably. Where CSA interventions are designed without gender analysis at their core, they risk reproducing the very inequalities they could help dismantle.

Digital advisory services represent an emerging channel with particular implications for gender equity in CSA. Orkoh (2026) examined the impact of digital extension services on agricultural income and food security in Nigeria using panel data and a difference-in-differences approach, finding that digital extension improved food security overall, with female-headed households showing disproportionate food-security gains even as male-headed households achieved higher income increments. This asymmetric pattern suggests that digital tools, when they do reach women, can be transformative — but the distributional question of who actually receives digital services remains critical.

2.4 Feminist political ecology: bridging critical social science and agricultural governance

Feminist political ecology (FPE) provides the overarching analytical framework for this paper, and it is worth being explicit about how it connects to the engineering and management concerns central to agricultural development studies. FPE is not a retreat from questions of productivity, technology or resource management; rather, it insists that these questions cannot be answered adequately without understanding the social relations of power that determine who controls resources and whose knowledge informs practice. As Rocheleau, Thomas-Slayter and Wangari (1996, p. 3) argue, gender and environment are linked through rights and responsibilities with respect to resources, through knowledge of local ecology and production, and through daily labour on and with the land. Agricultural management that ignores these linkages systematically underestimates the constraints on a majority of its practitioners and misallocates its interventions accordingly.

Applied to Nigeria, an FPE reading draws attention to three dynamics that are directly relevant to agricultural productivity and food-security management. First, it treats customary tenure and patriarchal norms not as fixed cultural traditions but as politically constituted arrangements maintained through law, institutions and programme design, and therefore amenable to deliberate reform (Kabeer, 1994). Second, FPE foregrounds the epistemic politics of agricultural extension — whose knowledge counts in the design and delivery of advisory services — and insists that women's experiential ecological knowledge is as relevant to adaptation as formal agronomic science. Participatory approaches that centre women's knowledge in technology design and extension content have been shown to improve adoption and sustainability outcomes (Lambrecht, 2023). Third, it emphasises intersectionality: climate impacts and governance responses fall differently on women according to class, agroecological zone, household structure and marital status, and programming that treats 'women' as a uniform category will miss significant heterogeneity in vulnerability and adaptive capacity (Abatemi-Usman, 2023). The persistence of gender inequality despite decades of mainstreaming also recalls Kabeer's (1994) caution that gender rhetoric unaccompanied by genuine redistribution of resources and authority tends to

produce symbolic rather than substantive change — a point directly applicable to the gap between Nigeria's stated agricultural gender commitments and their implementation.

3. Materials and Methods

3.1. Study design and context

This study adopts a qualitative systematic desktop review, synthesising and critically analysing secondary evidence rather than generating new primary data. The design is consistent with the interpretive-constructivist epistemological tradition in development studies: it treats policy documents and empirical research as social artefacts that encode specific assumptions about gender, agriculture and governance, and subjects these assumptions to critical analysis through a feminist political ecology lens. This is appropriate for the paper's central aim, which is to interrogate how gender is positioned within Nigeria's climate and food-security governance rather than to generate new site-level data.

The review is systematic in the sense that inclusion and exclusion criteria were applied consistently and the search and analysis process is reproducible, but it is qualitative in orientation: the aim is interpretive synthesis rather than meta-analytic aggregation of effect sizes. This approach is well-established in the gender-and-agriculture literature (see Doss et al., 2015; World Bank, FAO, & IFAD, 2015) and is particularly appropriate where the evidence base spans policy documents, institutional reports and peer-reviewed empirical studies that are not directly commensurable in quantitative terms.

3.2. Data, variables, and sampling

Sources were identified through three complementary search routes.

First, database searches were conducted in Google Scholar, Scopus and PubMed using the following term combinations: ('gender' OR 'women') AND ('agriculture' OR 'food security') AND 'Nigeria'; 'climate-smart agriculture' AND ('gender' OR 'women') AND ('Nigeria' OR 'Sub-Saharan Africa'); 'feminist political ecology' AND 'agriculture'; and 'land tenure' AND 'women' AND 'Nigeria'. Searches were conducted in March–April 2025 and updated in February 2026, at which point Orkoh (2026) was identified and added following a targeted forward citation search.

Second, targeted retrieval of key policy documents was carried out directly from the websites of the FMARD, the FAO, the World Bank and the CGIAR GENDER Impact Platform.

Third, forward and backward citation tracking was used to identify additional relevant sources from the reference lists of key papers and reports.

Inclusion criteria required that sources (a) address gender dimensions of agriculture, food security or climate adaptation in Nigeria or a directly relevant comparative context; (b) be published or issued in 2006 or later, with preference for sources published since 2020; and (c) be primary, open-access or verifiable from institutional repositories. Pre-2006 canonical theoretical works (Boserup, 1970; Kabeer, 1994; Rocheleau et al., 1996; Deere & León, 2001) were retained as foundational references given their continued citation in the empirical literature. Sources were excluded if they were not peer-reviewed or from a credible institutional source, if they were not available in English, or if they could not be verified against original text. A total of 20 sources met inclusion criteria and are cited in this review.

3.3. Analytical methods

The analysis proceeded in three stages. In stage one, a thematic mapping of the evidence on women's agricultural roles, structural barriers and climate vulnerability established the empirical landscape, synthesising findings across sources at the level of substantive themes (land tenure, finance, extension, decision-making, productivity). In stage two, an evaluative reading of Nigerian and multilateral CSA and agricultural policy assessed the degree to which gender equity is addressed in framework design, implementation mechanisms and monitoring arrangements, using the three CSA pillars as an organising grid. In stage three, a synthesis of evidence on women-led and community-based initiatives identified promising practices and the conditions under which they are effective.

Throughout, the feminist political ecology framework was used to interpret the findings, maintain analytical attention on structural power relations and connect empirical evidence to questions of agricultural policy design and governance.

4. Results

4.1 Structural barriers to women's participation in climate-resilient agriculture

Five interconnected structural barriers constrain women's participation in and benefit from climate-resilient agriculture in Nigeria. These are summarised in Table 1 and discussed in turn below.

Table 1. Structural barriers to women's participation in climate-resilient agriculture in Nigeria

Barrier	Mechanism of exclusion	Implication for CSA adoption	Key evidence (Nigeria)
Land tenure insecurity	Patrilineal customary inheritance overrides statutory LUA 1978 rights; widowhood/divorce extinguishes access	No secure rights → no collateral, no incentive for agroforestry or long-term soil investment	Landesa (2021); Aluko & Amidu (2006); World Bank (2022)
Credit exclusion	Formal lenders require land-title collateral women rarely hold; informal savings insufficient for productive investment	Women unable to purchase improved seeds, fertiliser, irrigation at the right time in the cropping cycle	World Bank (2022); Egbewole (2025)
Extension access gap	Predominantly male extension workforce; delivery modalities clash with women's time and mobility constraints	Lower awareness of CSA options; lower adoption rates even when technologies are appropriate	Egbewole (2025); Lambrecht (2023); Orkoh (2026)
Decision-making exclusion	Spousal approval norms subordinate women's production decisions; under-representation in governance bodies	Adaptation choices shaped by male preferences; women's ecological knowledge excluded from policy	Abatemi-Usman (2023); FMARD (2022)
Productivity gap	Combined effect of input poverty: smaller plots, less fertiliser, fewer hired labour days	30% national yield gap (35% north, 25% south) limits food production potential	World Bank (2022); Baiyegunhi et al. (2023)

Source: Authors' synthesis from reviewed literature.

4.1.1 Land tenure and property rights

The most fundamental barrier facing women farmers in Nigeria is insecure and inequitable access to land. The Land Use Act of 1978 vested control of land in state governments with the stated aim of providing uniform and equitable access for men and women alike (Aluko & Amidu, 2006). In practice, however, transfers of land remain governed largely by customary law, under which inheritance is predominantly patrilineal and women typically access land only as wives or daughters — a contingent tenure that can be extinguished on widowhood, divorce or remarriage (Landesa, 2021). The result is that statutory guarantees of equality coexist with customary practices that continue to discriminate against women, and that few rural landholders of either sex hold formal documentation of ownership (World Bank, 2022).

Insecure tenure has direct consequences for adaptive capacity. Without secure rights, women cannot readily use land as collateral for credit; they have weak incentives to invest in long-term soil-fertility management, agroforestry or irrigation; and they are poorly placed to make autonomous decisions about crop choice and inputs. Because many CSA practices — agroforestry, soil-and-water conservation and perennial diversification — require long-term land security to be viable, insecure tenure effectively forecloses precisely the investments that would strengthen women's resilience to climate change.

4.1.2 Finance and agricultural credit

Women's access to agricultural finance is similarly constrained. Formal lenders typically require collateral — land titles or formal employment records — that women are less likely to hold, while informal savings arrangements provide only limited capital for productive investment. National analysis finds that women's limited access to credit, hired labour and labour-saving machinery contributes both to their lower participation in agriculture and to their concentration in lower-value crops (World Bank, 2022). The consequences for CSA adoption are direct: many climate-smart practices — improved seed varieties, precision irrigation, conservation tillage inputs — require up-front capital investment at specific points in the cropping cycle, and women's exclusion from credit makes these investments systematically less accessible to them (Egbewole, 2025).

4.1.3 Agricultural advisory services and the extension gap

Agricultural extension — a key conduit for technical knowledge, improved inputs and climate information — has historically been designed around an implicitly male farmer, with predominantly male agents and delivery modalities that fit poorly with women's time constraints and mobility. Recent Nigerian evidence confirms that access to extension is among the factors shaping whether households adopt CSA practices, and that female-headed households are less well served on this dimension (Egbewole, 2025). Digital advisory tools offer a partial remedy but introduce their own access barriers: women's lower mobile-phone ownership and digital literacy mean they receive digital extension services less consistently, even when the services exist (Lambrecht, 2023; Orkoh, 2026).

4.1.4 Decision-making and governance exclusion

Women's marginalisation from decision-making operates at multiple levels. Within the household, prevailing norms often subordinate women's decisions about production and resources to spousal approval, and women are substantially less likely than men to be the primary manager of a plot (World Bank, 2022). Comparative field evidence from Kwara and Nassarawa states shows that men, as

household heads, generally enjoy greater access to resources and decision-making power in farming, and that this shapes the adaptation practices households adopt (Abatemi-Usman, 2023). At community and governmental levels, women remain under-represented in the traditional institutions and policy bodies that set agricultural and environmental priorities, so that their needs and knowledge are less likely to inform programme design — a pattern national policy itself acknowledges in noting that women’s role is not fully recognised (FMARD, 2022).

4.1.5 The compound productivity gap

The structural barriers described above combine to produce a compound productivity gap that is well documented at the national level. World Bank (2022) analysis shows women plot managers producing 30 percent less per hectare nationally, with the gap larger in the north where land insecurity, purdah norms and extension access barriers are more pronounced. Baiyegunhi et al. (2023) decompose a similar gap among rice farmers, finding that the gap is primarily an endowment gap — a function of differential access to resources — rather than an efficiency gap, since female farmers who do gain access to equivalent inputs perform comparably to male counterparts. This distinction is analytically important: it means that interventions that improve women’s access to productive resources can be expected to close the productivity gap directly, with significant implications for national food production.

4.2 Emerging opportunities: women-led and community-based approaches

4.2.1 Cooperatives and collective action

Despite these barriers, Nigerian women farmers have developed effective strategies for building resilience through collective action. Women’s cooperatives and farmer groups provide platforms for pooled access to inputs, credit, markets and knowledge that individual women could not secure alone, and such groups can lower the transaction costs that otherwise deter women from adopting new technologies (World Bank, 2022). The Women Farmers Advancement Network (WOFAN), founded in Kano in 1993, illustrates the model: organising rural women into registered cooperatives, it has combined labour-saving and solar-powered technologies, dry-season and diversified cropping, and value-chain development to raise productivity and incomes among participating women (WOFAN, n.d.). Collective structures of this kind also serve as channels for disseminating climate-smart practices and as a foundation for women’s bargaining power.

4.2.2 Local ecological knowledge and participatory adaptation

Women farmers hold substantial bodies of local ecological knowledge — about soils, seed selection, pest management, water and weather — accumulated through generations of adaptive practice and highly relevant to climate adaptation. Feminist political ecology insists that this experiential knowledge is as pertinent to adaptation as formal agronomy, and that agricultural governance should ask whose knowledge counts (Rocheleau et al., 1996). Empirical work in Nigeria supports the point: men and women perceive climate change differently and draw on different knowledge in choosing adaptation strategies, so that adaptation planning that ignores women’s perceptions risks overlooking locally viable options (Abatemi-Usman, 2023). From a technology management perspective, the practical implication is that participatory approaches which integrate women’s ecological knowledge into extension design and content can improve the relevance and adoption of CSA practices (Lambrecht, 2023).

4.2.3 Digital extension: promise and conditions

The spread of mobile telephony and digital financial services has opened new channels through which women farmers can reach information, finance and markets. Evidence from Nigeria using panel data and causal mediation analysis shows that digital extension services improve food security and agricultural income, with female-headed households showing disproportionate food-security gains relative to male-headed households (Orkoh, 2026). This finding is consistent with evidence from Nigeria and Ethiopia indicating that information-and-communication-technology-based extension can support women's empowerment, though the benefits depend on whether women can actually access devices and act on advice (Lambrecht, 2023). Realising the digital opportunity therefore requires deliberate, gender-intentional design — gender-disaggregated user research, investment in women's digital literacy and partnership with women's organisations — rather than an assumption that technology will reach women automatically.

4.3 Gender in Nigerian agricultural and climate policy: commitments and gaps

Nigeria's recent agricultural and climate frameworks incorporate gender as a stated priority. The NATIP 2022–2027, building on the earlier Agricultural Promotion Policy, explicitly recognises women's contribution to agriculture and commits to meeting the needs of women, youth and people with special needs by embedding technology and innovation in the sector (FMARD, 2022). These commitments are reinforced by a dedicated national gender policy for agriculture and by Nigeria's Nationally Determined Contributions under the Paris Agreement. Table 2 provides a comparative overview of the key frameworks and their gender provisions.

Table 2. Comparison of gender provisions in key agricultural and climate frameworks affecting Nigeria

Policy / framework	Stated gender commitments	Identified implementation gaps
NATIP 2022–2027 (FMARD)	Women contribute 50–60% of agricultural labour; policy commits to 'meeting the needs of women' through technology and innovation	Commitments expressed as principles, not measurable targets; no gender-disaggregated KPIs or budget lines
Agricultural Promotion Policy 2016–2020 (FMARD)	Acknowledges gender gaps in extension and credit access; calls for targeted women's programmes	Gender units underfunded and marginalised within ministry structures; limited evidence of outcome monitoring
FAO CSA framework (FAO, 2010; World Bank, FAO, & IFAD, 2015)	Gender mainstreaming in all three CSA pillars (productivity, adaptation, mitigation); women's empowerment as cross-cutting objective	Gender treated as add-on rather than structural dimension; no binding mechanism to require gender analysis in country-level CSA programmes
Nigeria NDC / Paris Agreement commitments	Commits to climate-resilient agriculture and reduced vulnerability; references women and youth	Gender-differentiated climate vulnerability not systematically measured; adaptation finance not tracked by beneficiary sex

Source: Authors' synthesis from FMARD (2022), FAO (2010), World Bank, FAO, & IFAD (2015).

A critical reading of these frameworks nonetheless reveals a persistent implementation gap. Gender provisions tend to be expressed as broad principles rather than specific, measurable targets, with

limited provision for gender-disaggregated data, gender-responsive budgeting or mandatory gender impact assessment. Responsibility for implementation is often assigned to gender units with limited budgets and weak coordinating authority, leaving mainstreaming peripheral to the core operations of agricultural institutions; and monitoring and accountability mechanisms for gender performance remain weak. The World Bank's assessment of the Nigerian sector reaches a similar conclusion, recommending concrete measures — extending women's access to fertiliser, hired labour and higher-value crops, and strengthening the gender-responsiveness of services — to close a productivity gap that carries a measurable cost to national output (World Bank, 2022).

5. Discussion

Read together, the evidence supports a clear interpretation: women are simultaneously central to Nigeria's food security and systematically marginalised within the governance systems that should support their work. The barriers documented here — in land, finance, advisory services and decision-making — are not natural features of Nigerian agriculture but politically constituted conditions, sustained through law, institutional practice and programme design, and therefore amenable to deliberate reform. This is the central insight of a feminist political ecology reading, and it reframes the gender gap not as a regrettable side-effect but as a structural constraint on national agricultural productivity, climate adaptation and food security.

From an agricultural management perspective, the productivity analysis is particularly instructive. Baiyegunhi et al. (2023) and World Bank (2022) both show that the gender productivity gap is primarily an endowment gap: women who gain equivalent access to land, inputs, extension and finance perform comparably to men. This means that closing the gender gap is not a welfare concession but a productivity and efficiency imperative: expanding women's access to productive resources would directly increase national agricultural output without requiring any new technology or infrastructure, simply by removing institutional barriers. The FAO (2011) estimate that this could raise yields by 20 to 30 percent on women's farms and reduce global hunger by 100 to 150 million people gives a measure of the aggregate stakes.

The implementation gap documented in Table 2 also explains why stated policy commitments have not translated into outcomes. As Kabeer (1994) argued, gender mainstreaming that is not accompanied by genuine redistribution of resources, authority and decision-making tends to produce rhetorical rather than substantive change. The Nigerian frameworks reviewed here embed gender in their language but have not yet reconfigured the budgetary allocations, institutional incentives and accountability structures that determine whether women actually gain access to land, credit, knowledge and a voice in governance. Closing the gap therefore requires moving from declaration to implementation. Five priorities follow from the analysis.

First, women's land rights must be strengthened through reform of the legal and administrative framework to prohibit gender-discriminatory allocation and inheritance, together with simplified and affordable registration that includes affirmative measures for women, addressing the most fundamental barrier and unlocking the long-term investments that climate adaptation requires (Aluko & Amidu, 2006; World Bank, 2022).

Second, finance for women's agriculture should be expanded and redesigned, with collateral-light windows for women's groups and cooperatives and gender performance standards attached to the climate finance Nigeria accesses, so that a defined share of adaptation funding reaches women farmers.

Third, advisory services require structural reform to reach women effectively: expansion of the female extension workforce, delivery through women's existing collective structures, integration of women's ecological knowledge into extension content, and gender-intentional design of digital services so that they reach rather than bypass women (Egbewole, 2025; Lambrecht, 2023; Orkoh, 2026).

Fourth, gender-responsive budgeting and accountability should be institutionalised — gender-disaggregated data and key performance indicators, gender budget analysis, mandatory gender impact assessment of major agricultural investments and independent, publicly reported gender auditing — so that commitments are matched by resources and verified against outcomes.

Fifth, women's leadership in agricultural and climate governance should be actively promoted, including measures to raise women's representation in policy bodies, community development structures and water-user and cooperative associations, supported by capacity-building and efforts to shift discriminatory norms.

6. Conclusions

This paper has argued that women are both central to Nigeria's food security and systematically marginalised from the agricultural governance that should support them. As climate change intensifies pressure on the country's rain-fed, smallholder-based food systems, the failure to address gender inequality is not only an injustice but a structural constraint on Nigeria's capacity to achieve food and climate security.

A feminist political ecology reading shows that the barriers women face are politically constituted and therefore changeable. The evidence indicates that where women gain access to land, finance, knowledge and decision-making authority, productivity, food security and adaptive capacity all improve, and that the gains from closing the agricultural gender gap are transformative rather than merely redistributive, benefiting whole communities. Realising them requires a decisive shift — from treating gender as a rhetorical commitment to embedding it as a structural imperative and a measurable standard of policy performance, supported by secure land rights, gender-responsive finance and extension, and genuine accountability.

6.1. Practical and policy implications

The five policy priorities identified in the Discussion section represent the key practical and policy implications of this review. Land reform must guarantee women's secure tenure; finance must be redesigned to reach women without collateral; extension and digital advisory services must be intentionally built around women's constraints; gender-responsive budgeting and accountability mechanisms must accompany policy commitments; and women's meaningful representation in governance must be actively pursued. Together these constitute a shift from symbolic gender mainstreaming to structural gender transformation — one that would deliver productivity and food-security gains for Nigeria as a whole, not only for women.

6.2. Limitations and future research

The study is limited by its reliance on secondary sources and its inability to capture subnational variation in detail. As a qualitative desktop review, it cannot fully account for the diversity of women's agricultural experiences across Nigeria's six geopolitical zones and multiple agroecological contexts. Future research should prioritise primary qualitative and quantitative studies that disaggregate outcomes by agroecological zone, ethnic group and household structure; evaluate the implementation fidelity and gender outcomes of specific CSA programmes; and assess the effectiveness of emerging policy instruments such as gender-responsive climate finance allocation and gender-transformative extension models.

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