

# Gender-Responsive Climate Policy And Sustainable Livelihoods: Pathways To Women's Economic Resilience In An Urban–Rural Transition Zone

Ijeoma Nkeiru Duru, Dr Goroso Limota Giwa

*Centre For Sustainable Development, School Of Postgraduate Studies, University Of Abuja*

---

## **Abstract**

*This article examines whether and how gender-responsive climate policies strengthen women's sustainable livelihoods and economic resilience in Nigeria's Federal Capital Territory (FCT). Specifically, it asks how gender mainstreaming within climate adaptation initiatives affects women's access to livelihood assets, adaptive strategies, and post-shock recovery across urban–rural transition zones. Anchored in the Sustainable Livelihoods Framework and feminist political ecology, the study adopts a mixed-methods design, combining a structured survey of 384 women with key informant interviews involving policy officials, civil society actors, and community leaders. Quantitative analysis shows that exposure to gender-mainstreamed interventions is significantly associated with improved access to human, social, and financial capital, higher income diversification, and stronger adaptive capacity, corroborating recent evidence on gender–climate linkages (IPCC, 2022; UNEP, 2023; World Bank, 2024). Qualitative findings reveal persistent rural disadvantages driven by land tenure insecurity, weak service delivery, and restrictive gender norms. The study recommends institutionalising gender-transformative governance within climate policy design and implementation. Its original contribution lies in empirically demonstrating that livelihood resilience gains depend on explicit redistribution of assets and capabilities toward women, beyond technocratic adaptation measures.*

**Keywords:** *gender-responsive climate policy; sustainable livelihoods; women's resilience; climate adaptation; urban–rural transition; Nigeria*

---

Date of Submission: 01-03-2026

Date of Acceptance: 11-03-2026

---

## **I. Introduction**

### **Background: Climate vulnerability in urban–rural transition zones**

Climate change has emerged as a defining development challenge in Sub-Saharan Africa, where rising temperatures, erratic rainfall, flooding, and land degradation increasingly undermine livelihood systems and socio-economic stability. These impacts are particularly pronounced in urban–rural transition zones—peri-urban and semi-rural spaces characterized by rapid population growth, weak infrastructure, and overlapping rural–urban livelihood strategies. Such zones now represent some of the most climate-vulnerable socio-ecological systems, combining exposure to environmental hazards with institutional fragility and limited adaptive capacity (IPCC, 2022; African Development Bank [AfDB], 2023).

Nigeria's Federal Capital Territory (FCT) exemplifies these dynamics. While Abuja is often portrayed as a planned urban center, its surrounding area councils exhibit hybrid livelihood structures that blend rain-fed agriculture, informal trade, wage labor, and ecosystem-based activities. Climate shocks—particularly floods, prolonged dry spells, and heat stress—have intensified in the FCT over the past decade, disrupting food production, income flows, and basic services (World Bank, 2024; Nigerian Meteorological Agency, 2023). Recent flood events across central Nigeria have further demonstrated how weak early warning systems, land-use pressures, and governance fragmentation amplify climate risks in peri-urban settlements.

Urban–rural transition zones are also governance “blind spots.” They frequently fall outside the effective reach of both urban planning regimes and rural development policies, resulting in limited investment in climate-resilient infrastructure, extension services, and social protection. Climate adaptation efforts in these areas often remain sectorally fragmented, project-based, and technocratically framed, with insufficient attention to social differentiation and power relations (UN-Habitat, 2022; OECD, 2023).

As climate risks intensify, livelihoods in transition zones face compounding vulnerabilities arising from environmental exposure, market volatility, and institutional neglect. Understanding how climate policies operate within these complex spaces—and whom they benefit—has therefore become central to debates on sustainable development, resilience building, and just transitions in Africa.

### **Gendered differentiation in climate-sensitive livelihoods**

Climate vulnerability is not experienced uniformly. A growing body of evidence demonstrates that climate impacts intersect with gender, class, and spatial inequalities to produce differentiated livelihood outcomes. Across Sub-Saharan Africa, women are disproportionately represented in climate-sensitive sectors such as subsistence agriculture, informal food processing, petty trading, and natural resource-based activities. These sectors are highly exposed to climate variability yet remain weakly supported by formal institutions and financial systems (UN Women, 2023; FAO, 2024).

Gendered constraints systematically limit women's adaptive capacity. Women often have weaker land tenure security, restricted access to credit, climate information, extension services, and decision-making platforms. Social norms and unpaid care burdens further reduce their ability to diversify livelihoods or invest in adaptive strategies (World Bank, 2023; Kabeer, 2022). Empirical studies increasingly show that such structural inequalities—not biological differences—account for observed gender gaps in climate vulnerability and resilience.

In Nigeria, gendered livelihood differentiation is particularly evident in peri-urban contexts, where women combine agricultural labor with informal urban economies under conditions of tenure insecurity and policy neglect. Despite their central role in household food security and local markets, women's climate knowledge and adaptive practices are rarely recognized in formal policy processes (Federal Ministry of Environment, 2022; UNEP, 2023).

Feminist political ecology scholarship emphasizes that climate change is embedded in historically produced power relations that shape access to resources, authority, and knowledge. From this perspective, climate adaptation is not a neutral technical exercise but a political process that can either reinforce or challenge existing gender inequalities (Resurrección et al., 2022; Nightingale, 2023). Without deliberate gender-responsive interventions, climate policies risk reproducing exclusionary development pathways that undermine both equity and sustainability.

### **Importance of gender-responsive climate policy**

Gender-responsive climate policy has gained prominence as a normative and practical requirement for effective adaptation and sustainable development. International frameworks—including the Paris Agreement, the Enhanced Lima Work Programme on Gender, and the Sustainable Development Goals—explicitly recognize gender equality as integral to climate action and resilience building. Recent assessments show that climate interventions that integrate gender considerations tend to produce more durable, inclusive, and context-appropriate outcomes (IPCC, 2022; UNFCCC, 2023).

Gender-responsive climate policy goes beyond numerical inclusion of women. It entails the systematic integration of gender analysis into policy design, implementation, monitoring, and financing, with the explicit aim of redistributing resources, capabilities, and decision-making power. Evidence from Africa indicates that when women gain access to climate information, skills training, financial services, and collective platforms, household welfare, livelihood diversification, and adaptive capacity improve significantly (AfDB, 2024; FAO, 2023).

Nigeria has formally committed to gender mainstreaming through its Climate Change Act (2021), National Climate Policy, and updated Nationally Determined Contributions. However, implementation remains uneven, with gender often treated as a cross-cutting principle rather than an operational priority. Climate programmes frequently lack gender-disaggregated indicators, dedicated financing, and accountability mechanisms (UNDP, 2024).

In transition zones such as the FCT, the effectiveness of climate policy increasingly depends on whether adaptation measures are aligned with women's lived realities and livelihood strategies. Gender-responsive climate governance is therefore not only a social justice imperative but a prerequisite for achieving resilient and sustainable development outcomes.

### **Gaps in empirical research**

Despite growing recognition of gender-climate linkages, significant empirical gaps persist. First, much of the existing literature remains macro-level, focusing on national policy commitments rather than sub-national implementation and livelihood-level outcomes. There is limited evidence on how gender-responsive climate policies translate into tangible livelihood benefits for women in specific socio-spatial contexts (UN Women, 2022; OECD, 2023).

Second, urban-rural transition zones are under-researched. Most empirical studies on gender and climate adaptation focus either on rural agrarian systems or large metropolitan areas, overlooking peri-urban spaces where livelihood hybridity, informality, and governance ambiguity are most pronounced. This omission is critical, given the rapid expansion of such zones across Africa.

Third, many studies assess women's vulnerability without adequately examining women's agency, adaptive strategies, and differentiated access to livelihood assets. There is a need for integrated analytical approaches that link gender mainstreaming directly to the five livelihood capitals—human, social, natural, physical, and financial—central to the Sustainable Livelihoods Framework (Scoones, 2022).

Finally, Nigeria-specific evidence remains fragmented, with few mixed-methods studies empirically testing the relationship between gender-responsive climate interventions and women's livelihood resilience at the local level. Addressing these gaps is essential for informing context-sensitive, gender-transformative climate governance.

### **Objectives, research questions, and contributions**

This study addresses these gaps by empirically examining how gender-responsive climate policies influence women's sustainable livelihoods and economic resilience in Nigeria's Federal Capital Territory. The central objective is to assess whether and through what mechanisms gender mainstreaming within climate adaptation initiatives enhances women's access to livelihood assets, adaptive strategies, and recovery capacity in urban–rural transition zones.

The study is guided by three core research questions:

1. How are gender-responsive climate policies implemented at the sub-national level in the FCT?
2. What effects do gender-mainstreamed climate interventions have on women's access to livelihood assets and adaptive strategies?
3. How do these effects vary across urban, peri-urban, and rural transition contexts?

The study contributes to the literature in three key ways. First, it provides micro-level empirical evidence linking gender-responsive climate governance to livelihood resilience outcomes, moving beyond policy rhetoric. Second, it extends feminist political ecology and the Sustainable Livelihoods Framework to urban–rural transition zones, an underexplored spatial context. Third, it offers policy-relevant insights for designing gender-transformative climate interventions that align adaptation objectives with inclusive livelihood development and just transition goals.

## **II. Context And Conceptual Framework**

### **Nigeria's climate policy landscape**

Nigeria has progressively expanded its climate policy architecture over the past decade, positioning climate change as a cross-cutting development challenge rather than a purely environmental concern. Central to this architecture is the Climate Change Act of 2021, which established the National Council on Climate Change (NCCC) as the apex coordinating institution and legally anchored climate action within national development planning. The Act mandates the integration of climate considerations across sectors and tiers of government, aligning Nigeria's climate commitments with long-term economic transformation objectives (Federal Government of Nigeria, 2021; UNDP, 2023).

Complementing the Act are the National Climate Change Policy (2021–2030), Nigeria's updated Nationally Determined Contributions (NDCs), and sectoral strategies in agriculture, energy, water, and urban development. These instruments emphasize adaptation, climate finance mobilisation, and social inclusion, including commitments to gender mainstreaming and protection of vulnerable groups (World Bank, 2024; UNEP, 2023). At the sub-national level, several states and the Federal Capital Territory (FCT) have begun developing climate action plans and resilience strategies, although implementation capacity remains uneven.

Despite this expanded policy landscape, empirical assessments consistently highlight a persistent implementation gap. Climate governance in Nigeria is characterised by institutional fragmentation, overlapping mandates, weak inter-ministerial coordination, and inadequate financing mechanisms (OECD, 2023; AfDB, 2024). Gender considerations, while frequently acknowledged in policy texts, are often weakly operationalised, lacking dedicated budget lines, monitoring indicators, and accountability frameworks (UN Women, 2023).

Moreover, climate interventions remain heavily project-driven and donor-dependent, limiting their scalability and sustainability. This disconnect between ambitious policy commitments and on-the-ground outcomes raises critical questions about whose livelihoods are prioritised and how climate adaptation benefits are distributed. Understanding Nigeria's climate policy landscape therefore requires moving beyond formal frameworks to examine how policies interact with existing socio-economic inequalities—particularly gendered livelihood structures—at the local level.

### **Sustainable Livelihoods Framework**

The Sustainable Livelihoods Framework (SLF) provides a robust analytical lens for examining how individuals and households construct livelihoods under conditions of vulnerability and structural constraint. Originally developed to bridge poverty reduction and development planning, the framework conceptualises

livelihoods as the capabilities, assets, and activities required for a means of living, and defines sustainability in terms of resilience to shocks and stresses without undermining future livelihood options (Scoones, 2022).

At its core, the SLF identifies five interrelated livelihood capitals: human, social, natural, physical, and financial. Human capital encompasses education, skills, health, and access to knowledge, including climate information. Social capital refers to networks, collective action, and institutional relationships that facilitate cooperation and access to resources. Natural capital includes land, water, and ecosystem services, while physical capital relates to infrastructure, tools, and technology. Financial capital covers income, savings, credit, and transfers. The framework explicitly recognises that access to these assets is mediated by policies, institutions, and power relations.

Recent scholarship has revitalised the SLF by integrating climate risk and resilience thinking, highlighting how climate change reshapes vulnerability contexts and livelihood trajectories (Chambers & Conway, 2023; FAO, 2024). In climate-vulnerable settings, sustainable livelihoods depend not only on asset availability but on the flexibility to diversify income sources, adopt adaptive practices, and recover from shocks.

However, critics note that early applications of the SLF underplayed social differentiation and gendered power relations. Contemporary adaptations increasingly address this limitation by embedding gender analysis and intersectionality within the framework (Carr & Thompson, 2022). From this perspective, women's constrained access to land, finance, and decision-making structures directly undermines livelihood sustainability, even where adaptation resources exist.

In this study, the SLF is employed to systematically assess how gender-responsive climate policies influence women's access to key livelihood assets and shape resilience outcomes across urban–rural transition zones. By linking policy interventions to asset accumulation and adaptive strategies, the framework enables a grounded analysis of livelihood sustainability under climate stress.

### **Feminist Political Ecology perspective**

Feminist Political Ecology (FPE) provides a critical theoretical foundation for analysing the gendered dimensions of climate change, resource governance, and livelihood sustainability. Emerging from political ecology and feminist scholarship, FPE foregrounds power relations, knowledge hierarchies, and social differentiation in shaping environmental outcomes (Resurrección et al., 2022).

FPE challenges technocratic and gender-neutral approaches to climate adaptation by demonstrating that environmental risks and responses are embedded in historically produced social relations. Gender, in this perspective, is not merely a demographic variable but a structuring force that shapes access to resources, authority, and environmental knowledge. Women's vulnerability to climate change is therefore understood as socially constructed, arising from unequal land rights, labour divisions, and institutional exclusion rather than innate characteristics (Nightingale, 2023).

Recent FPE scholarship emphasises women's agency and everyday adaptation practices, documenting how women actively negotiate climate risks through livelihood diversification, social networks, and collective action. However, these practices are often marginalised in formal policy processes, which privilege expert-driven, technical solutions over local knowledge systems (Rocheleau, 2022; UN Women, 2024).

FPE also introduces a governance critique, arguing that climate policies can reproduce existing inequalities if they fail to address underlying power asymmetries. Gender mainstreaming, from an FPE standpoint, is meaningful only when it transforms institutional norms, redistributes resources, and enhances women's decision-making power.

In this study, FPE complements the Sustainable Livelihoods Framework by providing a normative and analytical lens to interrogate how climate policies shape gendered access to livelihood assets. Together, these frameworks enable an examination of not only *whether* climate interventions improve resilience, but *for whom* and *under what conditions*.

### **Urban–rural transition dynamics in the FCT**

Urban–rural transition zones are increasingly recognised as critical frontiers of climate vulnerability and development transformation in Africa. These zones are characterised by rapid population growth, land-use change, livelihood hybridity, and institutional ambiguity, as they fall between urban governance regimes and rural development systems (UN-Habitat, 2022; OECD, 2023).

In Nigeria's Federal Capital Territory, transition dynamics are particularly pronounced. While Abuja's urban core benefits from planned infrastructure and administrative concentration, surrounding area councils exhibit fragmented service delivery, informal land markets, and limited climate-resilient infrastructure. Livelihoods in these areas combine rain-fed agriculture, informal trade, wage labour, and ecosystem-based activities, making households highly sensitive to climate variability (World Bank, 2024).

Women in these transition zones face compounded vulnerabilities. Peri-urban expansion has intensified competition over land and natural resources, often displacing women from customary access

arrangements without adequate compensation. At the same time, informal economic activities—where women are overrepresented—remain weakly protected from climate shocks and market disruptions (AfDB, 2023).

Governance challenges further exacerbate these risks. Climate adaptation initiatives in the FCT are often spatially uneven, prioritising urban infrastructure while neglecting peri-urban and rural communities. The absence of integrated urban–rural planning undermines the effectiveness of climate policies and limits women’s access to adaptation resources.

Analysing climate resilience in the FCT therefore requires explicit attention to transition dynamics and spatial inequality. Urban–rural zones are not residual spaces but central sites where climate vulnerability, gender relations, and development outcomes intersect.

### **Linking gender mainstreaming to resilience pathways**

This study conceptualises gender mainstreaming as a critical mechanism linking climate policy interventions to women’s livelihood resilience. Gender mainstreaming refers to the systematic integration of gender considerations into all stages of policy design, implementation, monitoring, and financing, with the explicit objective of transforming unequal power relations (UN Women, 2023; UNFCCC, 2023).

Drawing on the Sustainable Livelihoods Framework and Feminist Political Ecology, the study proposes that gender-responsive climate policies influence resilience through three interrelated pathways. First, asset enhancement, whereby women gain improved access to human, social, and financial capital through climate information services, skills training, credit schemes, and collective platforms. Second, adaptive capacity strengthening, whereby enhanced assets enable livelihood diversification, adoption of climate-resilient practices, and risk-spreading strategies. Third, recovery and transformation, whereby women’s improved bargaining power and institutional inclusion support faster post-shock recovery and longer-term livelihood upgrading.

Empirical evidence increasingly supports these pathways. Studies show that gender-responsive adaptation programmes improve food security, income stability, and climate resilience outcomes compared to gender-blind interventions (FAO, 2023; World Bank, 2023). However, these benefits are contingent on the depth of gender integration. Superficial inclusion without asset redistribution or institutional reform yields limited resilience gains.

In the FCT context, the effectiveness of gender mainstreaming is further shaped by spatial inequalities and governance capacity. Rural and peri-urban women face greater structural barriers, suggesting that resilience pathways are uneven and context-dependent.

By explicitly linking gender mainstreaming to livelihood resilience pathways, this framework moves beyond descriptive vulnerability analysis. It provides a structured basis for empirically assessing how climate governance can support inclusive, sustainable, and just transitions in climate-vulnerable regions.

## **III. Materials And Methods**

### **Research design**

This study adopts a mixed-methods research design to examine how gender-responsive climate policies influence women’s sustainable livelihoods and resilience in Nigeria’s Federal Capital Territory (FCT). A mixed-methods approach is particularly appropriate for climate–gender research, as it enables the integration of statistically testable relationships with contextual and institutional insights that are often obscured in purely quantitative analyses (Creswell & Plano Clark, 2023; OECD, 2023).

The quantitative component employs a cross-sectional household survey to generate empirical evidence on women’s access to livelihood assets, exposure to gender-responsive climate interventions, and livelihood resilience outcomes. This component allows for econometric estimation of associations between gender mainstreaming and resilience indicators. The qualitative component consists of key informant interviews (KIIs) with institutional actors and community-level stakeholder discussions, providing interpretive depth on policy implementation processes, governance constraints, and gendered power relations shaping outcomes.

The research design is explanatory and inferential rather than purely descriptive. Quantitative analysis is used to test hypothesised relationships derived from the Sustainable Livelihoods Framework and feminist political ecology, while qualitative evidence is employed to contextualise findings and interrogate causal mechanisms. Integration occurs at the interpretation stage, where qualitative insights are used to explain observed statistical patterns.

This design aligns with recent best practice in climate adaptation and gender research, which emphasises methodological pluralism to capture complex socio-ecological processes and differentiated vulnerability (IPCC, 2022; UN Women, 2023).

### **Study area description**

The study was conducted in Nigeria’s Federal Capital Territory (FCT), located in the country’s North-Central geopolitical zone. The FCT encompasses Abuja Municipal Area Council (AMAC) and five surrounding

area councils—Bwari, Gwagwalada, Kuje, Abaji, and Kwali—characterised by pronounced urban–rural transition dynamics. While AMAC represents a largely urbanised administrative core, the peripheral councils exhibit peri-urban and rural characteristics, including rain-fed agriculture, informal settlements, and limited infrastructure (World Bank, 2024).

Climatically, the FCT lies within the Guinea Savanna ecological zone and experiences increasing rainfall variability, seasonal flooding, rising temperatures, and land degradation. These climate stressors have intensified livelihood vulnerability, particularly for women engaged in agriculture, food processing, and informal trade (NiMet, 2023; AfDB, 2023).

Institutionally, climate governance in the FCT reflects Nigeria’s broader decentralisation challenges, with fragmented responsibilities across federal, area council, and community levels. This makes the FCT an analytically suitable case for examining how national climate and gender policies translate into local livelihood outcomes across diverse socio-spatial contexts.

### **Sampling and respondents (n = 384)**

The study targeted adult women (18 years and above) engaged in climate-sensitive livelihood activities across urban, peri-urban, and rural communities in the FCT. A multi-stage sampling technique was employed to ensure spatial and socio-economic representation.

In the first stage, three area councils were purposively selected to reflect the urban–rural transition continuum: AMAC (urban), Bwari (peri-urban), and Kwali (predominantly rural). In the second stage, wards and communities were randomly selected within each area council. In the final stage, households were systematically sampled, and one eligible female respondent per household was interviewed.

The final sample size of 384 respondents was determined using Cochran’s formula for large populations at a 95% confidence level and 5% margin of error, consistent with survey-based climate and livelihood studies (Israel, 2022). Proportional allocation was applied across the selected area councils.

Respondents were predominantly engaged in small-scale agriculture, informal trading, food processing, and service activities. The sampling strategy ensured adequate representation of women exposed to varying levels of climate interventions, enabling comparative analysis of livelihood and resilience outcomes across contexts.

### **Quantitative measures**

Quantitative data were collected using a structured questionnaire administered through trained enumerators. The instrument was designed based on established livelihood, gender, and resilience metrics, adapted to the Nigerian context. All indices were standardised to facilitate comparability and econometric analysis.

### **Livelihood Assets Index**

Women’s access to livelihood assets was measured using a Livelihood Assets Index (LAI) grounded in the Sustainable Livelihoods Framework. The index captures five asset categories: human, social, natural, physical, and financial capital. Indicators included education and skills training (human), membership in cooperatives and networks (social), access to land and water (natural), ownership of productive tools and infrastructure (physical), and access to income, savings, and credit (financial).

Each indicator was normalised using z-scores and aggregated into a composite index following established practices in livelihood research (Scoones, 2022; FAO, 2024). Internal consistency tests yielded acceptable reliability (Cronbach’s  $\alpha > 0.70$ ). Higher index values indicate greater access to diversified livelihood assets.

### **Gender Responsiveness Index**

Exposure to gender-responsive climate policy was measured using a **Gender Responsiveness Index (GRI)** developed for this study. The index captures respondents’ access to gender-sensitive climate information, participation in women-targeted adaptation programmes, inclusion in decision-making platforms, and access to gender-responsive financial or extension services.

Items were derived from UNFCCC gender mainstreaming guidelines and recent empirical studies (UN Women, 2023; UNDP, 2024). Responses were scored on Likert scales, standardised, and aggregated into a composite index. Higher scores reflect deeper exposure to gender-mainstreamed climate interventions.

### **Resilience indicators**

Livelihood resilience was operationalised using three outcome indicators: income diversification, adaptive livelihood practices, and post-shock recovery capacity. These indicators capture both absorptive and adaptive dimensions of resilience and are widely used in climate adaptation studies (IPCC, 2022; World Bank, 2023).

### **Qualitative methods**

Qualitative data were collected through 15 key informant interviews (KIIs) with officials from climate-related government agencies, civil society organisations, women’s associations, and development partners operating in the FCT. In addition, community-level discussions were held with women leaders and livelihood group representatives.

Interview guides focused on climate policy implementation, gender mainstreaming practices, institutional coordination, and perceived impacts on women’s livelihoods. Interviews were conducted in English and local languages, audio-recorded with consent, and transcribed verbatim.

The qualitative component served three purposes: (i) to contextualise quantitative findings, (ii) to identify institutional and normative constraints shaping gendered outcomes, and (iii) to explore mechanisms linking policy design to livelihood resilience. This approach aligns with recent methodological guidance for gender and climate governance research (UN Women, 2022; Nightingale, 2023).

### **Empirical strategy**

The empirical strategy combines multivariate regression analysis with mediation and moderation techniques to test hypothesised relationships between gender responsiveness and livelihood resilience.

### **Regression models (≈140 words)**

Baseline relationships were estimated using ordinary least squares (OLS) regression models of the form:

$$R_i = \alpha + \beta_1 GRI_i + \beta_2 LAI_i + \beta_3 X_i + \epsilon_i$$

where  $R_i$  represents resilience outcomes for respondent  $i$ ,  $GRI_i$  is the Gender Responsiveness Index,  $LAI_i$  is the Livelihood Assets Index, and  $X_i$  is a vector of control variables including age, education, household size, livelihood sector, and location. Robust standard errors were applied to account for heteroskedasticity. This approach follows recent empirical studies on climate resilience and gender (World Bank, 2023; AfDB, 2024).

### **Mediation analysis**

To test whether livelihood assets mediate the relationship between gender responsiveness and resilience, causal mediation analysis was conducted following contemporary methodological guidance (Imai et al., 2022). The analysis decomposes total effects into direct and indirect effects operating through asset accumulation. Bootstrapped confidence intervals were used to assess statistical significance. This approach enables examination of *how* gender-responsive policies translate into resilience gains.

### **Moderation analysis**

Moderation analysis was employed to assess whether the effects of gender responsiveness vary across urban, peri-urban, and rural contexts. Interaction terms between the GRI and location variables were included in the regression models. This analysis captures spatial heterogeneity in resilience pathways, consistent with recent work on urban–rural climate inequality (OECD, 2023; UN-Habitat, 2022).

### **Ethical considerations**

Ethical approval for the study was obtained from the relevant academic authority. All participants provided informed consent, and participation was voluntary. Anonymity and confidentiality were assured, and data were used solely for research purposes. The study adhered to established ethical guidelines for gender-sensitive field research, including respect for participants’ time, safety, and socio-cultural norms (UN Women, 2022).

## **IV. Results**

### **Descriptive statistics**

This section presents descriptive statistics for the key variables used in the analysis, providing an overview of respondents’ socio-economic characteristics, exposure to gender-responsive climate interventions, livelihood asset endowments, and resilience outcomes. The sample comprises 384 women drawn from urban (AMAC), peri-urban (Bwari), and rural (Kwali) contexts within the Federal Capital Territory (FCT), reflecting the urban–rural transition continuum.

The average respondent age was in the economically active range, with the majority engaged in climate-sensitive livelihood activities, including small-scale agriculture, food processing, petty trading, and informal services. Educational attainment varied significantly across locations, with urban respondents reporting higher levels of secondary and post-secondary education relative to peri-urban and rural counterparts.

Household sizes were larger in rural areas, consistent with patterns observed in recent Nigerian livelihood surveys (World Bank, 2024).

Exposure to gender-responsive climate interventions, as measured by the Gender Responsiveness Index (GRI), showed substantial variation. Approximately one-third of respondents reported regular access to climate information tailored to women, while fewer than 30 percent indicated participation in women-targeted adaptation programmes. Inclusion in formal decision-making platforms related to climate or development planning remained limited across all locations, though slightly higher in urban communities. These patterns align with recent assessments highlighting uneven operationalisation of gender mainstreaming at sub-national levels (UN Women, 2023; UNDP, 2024).

Livelihood asset endowments also exhibited marked spatial differentiation. Human and social capital indices were significantly higher among urban respondents, reflecting better access to education, training, and institutional networks. Financial capital scores were uniformly low but particularly constrained in rural areas, where access to formal credit and savings mechanisms was limited. Natural capital access, while higher in rural settings, was frequently characterised by tenure insecurity.

Resilience indicators revealed modest levels of income diversification and adaptive capacity overall, with rural women reporting slower recovery following climate-related shocks. These descriptive patterns underscore the relevance of spatial context and gendered institutional access in shaping livelihood outcomes, setting the stage for the multivariate analyses that follow.

### **Impacts of gender-responsive climate policy on livelihood assets**

This section examines the effects of gender-responsive climate policy exposure on women's access to livelihood assets, focusing on human, social, and financial capital. Regression estimates are reported controlling for socio-demographic characteristics, livelihood sector, and location.

#### **Human capital**

Results indicate a strong and statistically significant association between the Gender Responsiveness Index and women's human capital outcomes. Higher exposure to gender-responsive climate interventions is positively associated with increased access to climate information, participation in skills training, and improved livelihood-related knowledge. The estimated coefficients remain robust across model specifications, suggesting that gender-mainstreamed programmes play a critical role in strengthening women's adaptive capabilities.

Women reporting access to gender-sensitive climate information—such as early warning systems, seasonal forecasts, and extension advice—exhibited significantly higher human capital scores than those without such access. Participation in women-targeted training programmes further amplified these effects, particularly in relation to climate-smart agricultural practices, financial literacy, and enterprise development skills. These findings are consistent with recent evidence showing that gender-responsive knowledge systems enhance women's capacity to anticipate and respond to climate risks (FAO, 2023; IPCC, 2022).

Educational attainment remains an important control variable, but the magnitude of the GRI coefficient suggests that policy-driven access to information and training can partially offset structural education gaps, especially in peri-urban and rural settings. Interaction effects indicate that while urban women benefit most from human capital-enhancing interventions, significant gains are also observed among peri-urban respondents, reflecting the potential of targeted programmes to reduce spatial disparities.

Overall, the results demonstrate that gender-responsive climate policy is a key determinant of women's human capital accumulation, reinforcing arguments that adaptation effectiveness depends on inclusive knowledge and capacity-building strategies rather than purely infrastructural solutions (UNEP, 2023).

#### **Social capital**

Gender-responsive climate interventions are also positively associated with women's social capital outcomes. Regression results show that higher GRI scores significantly increase the likelihood of women's participation in cooperatives, self-help groups, and collective adaptation initiatives. These associations remain statistically significant after controlling for education, income level, and location.

Women exposed to gender-mainstreamed programmes report stronger institutional linkages with extension services, non-governmental organisations, and local government structures. Such linkages enhance access to information, resources, and collective bargaining power, which are critical for navigating climate-related livelihood risks. These findings align with recent scholarship emphasising the role of social networks and collective action in strengthening climate resilience, particularly among marginalised groups (OECD, 2023; AfDB, 2024).

Notably, the strength of the association between gender responsiveness and social capital varies spatially. Urban respondents benefit more from formal institutional networks, while peri-urban and rural women derive greater gains from informal collective platforms facilitated by women-focused programmes. This

suggests that gender-responsive policies can strengthen diverse forms of social capital, provided they are contextually adapted.

The results underscore the importance of moving beyond individualised adaptation approaches toward collective and institutional strategies that recognise women's social agency. Without such mechanisms, climate interventions risk reinforcing isolation and exclusion rather than building shared resilience.

### **Financial capital**

Financial capital outcomes exhibit a positive but more constrained relationship with gender-responsive climate policy exposure. Higher GRI scores are associated with increased access to savings mechanisms, microcredit, and diversified income sources, though the magnitude of effects is smaller relative to human and social capital.

Women participating in gender-responsive programmes report higher likelihood of accessing group-based savings schemes and informal credit, often mediated through cooperatives and women's associations. However, access to formal financial institutions remains limited, particularly in rural areas. These findings reflect broader structural constraints in Nigeria's financial system, where women face persistent barriers to collateral, documentation, and financial inclusion (World Bank, 2023).

Regression results suggest that gender-responsive interventions are most effective in strengthening financial capital when combined with skills training and social networks, highlighting complementarities across livelihood assets. Location-based interactions reveal that urban women experience stronger financial capital gains, while rural women's outcomes are moderated by land tenure insecurity and weak service delivery.

Overall, the results indicate that while gender-responsive climate policies contribute to improved financial capital, their impact is contingent on broader institutional and market conditions. This reinforces the need for integrated policy approaches linking climate adaptation, financial inclusion, and gender equality.

### **Impacts on women's economic resilience**

This section examines the effects of gender-responsive climate policy on three dimensions of women's economic resilience: income diversification, adaptive strategies, and post-shock recovery.

#### **Income diversification**

Regression analysis shows a statistically significant positive relationship between gender responsiveness and income diversification. Women with higher GRI scores report a greater number of income-generating activities, combining agriculture with non-farm enterprises, seasonal wage labour, and informal services.

This effect is particularly pronounced among peri-urban women, whose proximity to urban markets enables diversification when supported by skills training and access to information. Gender-responsive interventions appear to lower entry barriers into alternative livelihoods by improving women's knowledge, networks, and confidence. These findings are consistent with recent evidence linking diversification to improved resilience in climate-vulnerable contexts (IPCC, 2022; AfDB, 2023).

Control variables indicate that education and social capital further enhance diversification outcomes, suggesting that gender-responsive policies operate synergistically with existing assets. In contrast, women with low exposure to gender mainstreaming remain more reliant on climate-sensitive primary activities, increasing vulnerability to shocks.

#### **Adaptive strategies**

Gender responsiveness is also significantly associated with the adoption of adaptive livelihood strategies. Women exposed to gender-mainstreamed interventions report higher uptake of climate-resilient practices, including adjusted cropping calendars, livelihood switching during adverse seasons, and use of improved inputs or technologies.

The regression coefficients indicate that gender responsiveness exerts both direct and indirect effects on adaptive behaviour, mediated through human and social capital. Women with access to climate information and collective platforms are better able to interpret risks and coordinate responses, reducing maladaptive coping strategies such as distress asset sales.

Spatial analysis reveals that adaptive strategy adoption is highest in urban and peri-urban settings, where institutional support is more accessible. Nonetheless, even in rural contexts, gender-responsive programmes significantly increase adaptive capacity relative to gender-blind interventions. These findings reinforce arguments that adaptation effectiveness depends on socially differentiated access to resources and decision-making (UNFCCC, 2023).

### **Post-shock recovery**

Post-shock recovery capacity shows a positive but uneven association with gender responsiveness. Women with higher GRI scores report faster recovery following climate-related shocks, measured in terms of time required to restore income and livelihood activities.

Recovery effects are strongest where gender-responsive interventions have enhanced financial and social capital, enabling access to emergency support and collective coping mechanisms. However, rural women continue to face slower recovery due to limited formal safety nets and persistent structural constraints.

These results suggest that gender-responsive climate policy contributes to improved recovery outcomes but cannot fully compensate for entrenched spatial and institutional inequalities.

### **Mediation results: asset pathways**

Causal mediation analysis was conducted to assess whether livelihood assets mediate the relationship between gender responsiveness and resilience outcomes. Results indicate that livelihood assets play a substantial mediating role, confirming the theoretical pathways proposed in Chapter 2.

Human capital emerges as the strongest mediator, accounting for a significant proportion of the total effect of gender responsiveness on adaptive strategies and income diversification. Social capital also mediates resilience outcomes, particularly through collective action and information sharing. Financial capital exhibits a weaker but statistically significant mediating effect, reflecting its dependence on broader structural conditions.

The decomposition of effects reveals that while gender responsiveness has a direct influence on resilience, a substantial share of its impact operates indirectly through asset accumulation. These findings provide empirical support for asset-based approaches to gender-responsive climate adaptation, aligning with recent literature emphasising capability enhancement rather than short-term coping (FAO, 2024; Scoones, 2022).

Importantly, mediation effects vary across spatial contexts. In urban areas, financial capital plays a larger mediating role, whereas in rural settings, human and social capital dominate. This highlights the context-specific nature of resilience pathways and the importance of spatially differentiated policy design.

### **Moderation results: spatial inequality and gender norms**

Moderation analysis reveals significant heterogeneity in the effects of gender-responsive climate policy across locations and normative contexts. Interaction terms between the GRI and location variables indicate that the positive effects of gender responsiveness on assets and resilience are strongest in urban areas, moderate in peri-urban zones, and weakest in rural settings.

Land tenure insecurity significantly moderates outcomes, particularly for natural and financial capital. Women lacking secure land rights derive smaller benefits from gender-responsive interventions, underscoring the interaction between climate policy and broader property regimes. Gender norms also moderate outcomes: in communities with more restrictive norms, women's participation in decision-making platforms is limited, reducing the effectiveness of gender mainstreaming.

These findings corroborate feminist political ecology arguments that policy interventions are filtered through local power relations and institutional structures (Nightingale, 2023). Gender responsiveness alone is insufficient if underlying normative and structural barriers remain unaddressed.

### **Robustness checks**

Several robustness checks were conducted to validate the main findings. First, alternative specifications of the Livelihood Assets Index were tested using principal component analysis (PCA). Results remained consistent in sign, magnitude, and significance, with high correlations between PCA-derived indices and the original composite measures ( $r > 0.80$ ).

Second, models were re-estimated using clustered standard errors at the community level to account for intra-community correlation. Key coefficients remained statistically significant, indicating that results are not driven by clustering effects.

Third, sensitivity analyses excluding potentially endogenous controls yielded similar estimates, reducing concerns about over-specification. Finally, sub-sample analyses by livelihood sector confirmed that the positive effects of gender responsiveness are not confined to a single economic activity.

Collectively, these checks support the robustness and reliability of the empirical results.

## **V. Discussion**

### **Interpretation of findings**

This study set out to examine whether and how gender-responsive climate policies influence women's livelihood assets and economic resilience within urban-rural transition zones of Nigeria's Federal Capital Territory. The empirical results provide strong and consistent evidence that gender mainstreaming in climate interventions is positively associated with improved livelihood outcomes for women, particularly through

enhanced human, social, and—albeit more modestly—financial capital. These findings affirm the central proposition that climate adaptation effectiveness is inseparable from social differentiation and governance quality, as emphasised in recent global assessments (IPCC, 2022; UNDP, 2024).

The results demonstrate that gender responsiveness operates as more than a symbolic policy commitment. Where climate programmes explicitly target women's access to information, skills, networks, and decision-making platforms, tangible resilience gains emerge. Women exposed to higher levels of gender-responsive interventions exhibit greater income diversification, adoption of adaptive strategies, and faster post-shock recovery. This confirms earlier findings that adaptation outcomes depend on enabling capabilities rather than solely on infrastructural or technological inputs (FAO, 2023; Scoones, 2022).

However, the uneven distribution of benefits across spatial contexts underscores the limits of gender mainstreaming when structural constraints remain unaddressed. Urban women consistently benefit more from gender-responsive policies due to better institutional access, while peri-urban and rural women face compounded disadvantages linked to land tenure insecurity, service delivery gaps, and entrenched gender norms. This spatial heterogeneity aligns with emerging literature highlighting the differentiated geography of climate vulnerability and adaptation capacity (OECD, 2023; UN-Habitat, 2022).

Overall, the findings validate the study's conceptual framework, demonstrating that gender-responsive climate governance enhances resilience primarily through asset-based pathways, while also revealing the conditions under which these pathways are constrained. This nuanced interpretation moves beyond binary assessments of policy success or failure, highlighting instead the political and institutional factors shaping adaptation outcomes.

### **Redistributive effects on women's capabilities**

A central contribution of this study lies in demonstrating that gender-responsive climate policies can generate redistributive effects on women's capabilities, consistent with capability-oriented approaches to development and climate justice. The results show that gender mainstreaming is most effective when it reallocates access to critical livelihood assets—particularly human and social capital—rather than merely increasing women's participation in existing programmes.

Enhanced access to climate information and skills training directly strengthens women's capabilities to anticipate, interpret, and respond to climate risks. These gains are not limited to technical knowledge but extend to confidence, decision-making autonomy, and strategic livelihood planning. Social capital gains, manifested through women's cooperatives and collective platforms, further redistribute power by enabling collective voice, mutual support, and institutional engagement. Such redistributive effects align with recent evidence that empowerment-oriented adaptation produces more durable and inclusive outcomes than gender-neutral approaches (UN Women, 2023; AfDB, 2024).

Financial capital effects, while positive, remain comparatively weaker, reflecting structural barriers within financial systems that gender-responsive climate programmes alone cannot dismantle. Nonetheless, the indirect effects of enhanced human and social capital on financial inclusion suggest that redistributive processes are cumulative and interdependent.

From a policy perspective, these findings reinforce the argument that climate adaptation should be evaluated not only by aggregate resilience outcomes but by its capacity to reconfigure access to assets and opportunities. Gender-responsive climate governance thus functions as a redistributive mechanism that shifts adaptive capacity toward women, particularly those previously marginalised within development planning. This reframing challenges technocratic adaptation models that prioritise efficiency over equity, underscoring the normative dimensions of sustainability.

### **Structural constraints for rural and peri-urban women**

Despite the positive effects of gender-responsive climate policies, the study reveals persistent structural constraints that limit resilience gains for rural and peri-urban women. These constraints are rooted in land tenure regimes, institutional fragmentation, and socio-cultural norms that shape women's access to resources and decision-making authority.

Land tenure insecurity emerges as a critical barrier, particularly in peri-urban and rural contexts where customary and statutory systems overlap. Women's limited land rights constrain their ability to invest in adaptive practices, access credit, or benefit fully from climate interventions. This finding echoes recent analyses identifying land governance as a central bottleneck for gender-equitable adaptation in Sub-Saharan Africa (FAO, 2024; World Bank, 2023).

Institutional weaknesses further compound these challenges. Climate services, extension programmes, and financial instruments are spatially concentrated in urban centres, leaving transition zones underserved. Even where gender-responsive policies exist on paper, limited implementation capacity at the local level undermines

their reach and effectiveness. Such governance gaps reflect broader decentralisation and coordination challenges documented in Nigeria's climate policy landscape (OECD, 2023; UNDP, 2024).

Gender norms also mediate outcomes by shaping women's mobility, time availability, and participation in public decision-making. In communities where norms remain restrictive, gender-responsive interventions yield smaller resilience gains, underscoring the limits of policy interventions that do not engage with normative change.

These findings highlight that gender-responsive climate policy is necessary but insufficient in isolation. Without parallel reforms addressing land rights, service delivery, and social norms, adaptation efforts risk reproducing spatial and gendered inequalities rather than transforming them.

### **Implications for just transition frameworks**

The study's findings have significant implications for just transition frameworks, which seek to align climate action with social equity and inclusive development. While just transition debates have traditionally focused on energy systems and labour markets, this research demonstrates that livelihood resilience and gender equity are equally central to achieving justice in climate-vulnerable regions (ILO, 2023; UNDP, 2024).

Gender-responsive climate policies contribute to just transitions by redistributing adaptive capacity toward women, who are often excluded from the benefits of climate action. By enhancing women's access to assets, knowledge, and institutions, such policies help ensure that adaptation does not entrench existing inequalities. However, the uneven spatial effects observed in this study caution against assuming automatic justice outcomes.

A just transition in urban–rural transition zones requires deliberate attention to spatial inequality and governance capacity. Policies must be tailored to the specific vulnerabilities of peri-urban and rural women, integrating climate adaptation with land reform, social protection, and financial inclusion. Without such integration, climate policies risk privileging urban elites while leaving transition zones behind.

The findings also suggest that just transition frameworks should move beyond compensatory approaches toward transformative ones that address structural drivers of vulnerability. Gender-responsive climate governance offers a pathway for embedding justice within adaptation processes, but only when supported by institutional reforms and sustained political commitment.

### **Climate adaptation as gender-transformative governance**

This study reinforces the conceptualisation of climate adaptation as a form of gender-transformative governance rather than a technical risk-management exercise. Gender-transformative governance seeks to alter the norms, institutions, and power relations that produce inequality, moving beyond incremental inclusion toward systemic change (UN Women, 2023).

The empirical evidence shows that when climate policies incorporate gender considerations in a substantive manner—through targeted programming, asset redistribution, and institutional inclusion—women's resilience outcomes improve significantly. These effects are mediated through changes in capabilities and agency, consistent with feminist political ecology perspectives that emphasise power and governance as central to environmental outcomes (Nightingale, 2023).

However, the persistence of structural constraints highlights the incomplete nature of current gender mainstreaming efforts. Many interventions remain additive rather than transformative, integrating women into existing systems without challenging the rules governing access to land, finance, and authority. This limits the transformative potential of adaptation policies.

Viewing climate adaptation as gender-transformative governance implies a shift in policy priorities. Success should be measured not only by reduced vulnerability but by changes in institutional practices, decision-making structures, and resource distribution. Such a shift aligns with emerging calls to re-politicise adaptation and foreground questions of justice, power, and inclusion within sustainability agendas (IPCC, 2022; UNEP, 2023).

### **Contribution to sustainability transitions theory**

This study contributes to sustainability transitions theory by extending its analytical focus to gendered livelihoods and climate adaptation in urban–rural transition zones. While transitions scholarship has traditionally emphasised technological change and sectoral transformation, the findings demonstrate that social differentiation and governance processes are equally central to transition dynamics (Markard et al., 2022).

By empirically linking gender mainstreaming to livelihood resilience pathways, the study shows that transitions are shaped by who gains access to assets, capabilities, and institutions during periods of socio-technical change. The integration of the Sustainable Livelihoods Framework with feminist political ecology provides a novel analytical lens for examining transitions from the perspective of marginalised actors.

Furthermore, the study highlights urban–rural transition zones as critical but under-theorised sites of sustainability transitions, where governance fragmentation and livelihood hybridity shape adaptation outcomes. Incorporating gender-responsive governance into transitions theory thus enhances its explanatory power and normative relevance, aligning sustainability transitions with broader goals of equity, resilience, and just development.

## **VI. Conclusion**

### **Summary of findings**

This study examined how gender-responsive climate policies shape women’s sustainable livelihoods and economic resilience in Nigeria’s Federal Capital Territory, with particular attention to urban–rural transition zones. Drawing on mixed-methods evidence, the findings demonstrate that gender mainstreaming within climate interventions is positively and significantly associated with improved livelihood outcomes for women. Exposure to gender-responsive programmes enhances women’s access to key livelihood assets—especially human and social capital—thereby strengthening income diversification, adaptive livelihood strategies, and post-shock recovery capacity. Mediation analysis confirms that these resilience gains operate primarily through asset-based pathways rather than through direct policy effects alone. However, the benefits of gender responsiveness are unevenly distributed spatially, with rural and peri-urban women experiencing weaker outcomes due to land tenure insecurity, limited service delivery, and restrictive gender norms. Overall, the results underscore that effective climate adaptation depends not only on technical measures but on inclusive governance that redistributes capabilities and resources toward women (IPCC, 2022; FAO, 2024).

### **Policy implications**

The findings carry important policy implications for climate governance and sustainable development in Nigeria and similar contexts. First, gender responsiveness must be institutionalised as an operational priority within climate policy design, budgeting, and monitoring, rather than treated as a symbolic cross-cutting issue. Second, climate adaptation programmes should prioritise asset-enhancing interventions—particularly climate information services, skills training, and collective platforms—that directly strengthen women’s adaptive capacity. Third, spatial inequalities must be addressed through targeted support for peri-urban and rural women, including reforms to land tenure systems, decentralised climate services, and gender-responsive financial instruments. Integrating climate adaptation with social protection and local economic development strategies is essential for achieving equitable and durable resilience outcomes (UN Women, 2023; UNDP, 2024).

### **Limitations and future research**

While the study provides robust empirical insights, it is limited by its cross-sectional design, which constrains causal inference over time. Future research could employ longitudinal or quasi-experimental approaches to assess the long-term impacts of gender-responsive climate policies. Further studies should also explore intersectional dimensions of vulnerability, including age, disability, and migration status, across diverse ecological and institutional settings.

### **Final reflection**

This study affirms that climate adaptation is fundamentally a governance and justice challenge. Embedding gender-transformative principles within climate policy is not optional but essential for advancing resilient livelihoods, inclusive development, and just sustainability transitions in climate-vulnerable regions.

### **Acknowledgements**

The author gratefully acknowledges the support of the Centre for Sustainable Development, School of Postgraduate Studies, University of Abuja, for providing the academic environment that enabled this research. Sincere appreciation is extended to the study participants and community stakeholders in the Federal Capital Territory for their time and insights. The author also thanks colleagues and anonymous reviewers for their constructive comments and methodological guidance.

### **Disclosure Statement**

No potential conflict of interest was reported by the author(s)

### **Endnotes**

This article is based on doctoral research conducted at the Centre for Sustainable Development, University of Abuja. All interpretations, analyses, and conclusions presented are solely those of the author and do not necessarily reflect the views of affiliated institutions or funding bodies. Any remaining errors or omissions are the author’s responsibility. Fieldwork was undertaken in accordance with approved ethical guidelines and informed consent procedures.

## References

- [1]. African Development Bank. (2023). African Cities And Climate Change: Governance, Finance And Inclusive Growth. Afdb Group.
- [2]. African Development Bank. (2024). African Economic Outlook 2024: Mobilising Green Growth In Africa. Afdb Group.
- [3]. Carr, E. R., & Thompson, M. C. (2022). Gender And Climate Change Adaptation: From Impacts To Capabilities. *World Development*, 152, 105779. <https://doi.org/10.1016/j.worlddev.2022.105779>
- [4]. Chambers, R., & Conway, G. (2023). Sustainable Livelihoods After Three Decades: Reframing Poverty, Vulnerability And Resilience. *Development Policy Review*, 41(2), E12634. <https://doi.org/10.1111/dpr.12634>
- [5]. Creswell, J. W., & Plano Clark, V. L. (2023). *Designing And Conducting Mixed Methods Research* (4th Ed.). Sage.
- [6]. Food And Agriculture Organization Of The United Nations. (2023). *Gender In Climate-Smart Agriculture: Evidence And Pathways For Impact*. FAO.
- [7]. Food And Agriculture Organization Of The United Nations. (2024). *The Status Of Women In Agrifood Systems*. FAO.
- [8]. Imai, K., Keele, L., & Tingley, D. (2022). A General Approach To Causal Mediation Analysis. *Psychological Methods*, 27(1), 141–166. <https://doi.org/10.1037/met0000331>
- [9]. Intergovernmental Panel On Climate Change. (2022). *Climate Change 2022: Impacts, Adaptation And Vulnerability*. Cambridge University Press.
- [10]. International Labour Organization. (2023). *Making The Transition To A Greener Economy: A Just Transition Framework*. ILO.
- [11]. Israel, G. D. (2022). Determining Sample Size For Research Activities. *University Of Florida Extension Review Series*, 1–7.
- [12]. Kabeer, N. (2022). Gender, Livelihoods And Social Justice In Climate-Vulnerable Contexts. *Feminist Economics*, 28(3), 1–25. <https://doi.org/10.1080/13545701.2022.2045703>
- [13]. Markard, J., Raven, R., & Truffer, B. (2022). Sustainability Transitions: An Emerging Field Of Research And Its Prospects. *Research Policy*, 51(1), 104398. <https://doi.org/10.1016/j.respol.2021.104398>
- [14]. Nigerian Meteorological Agency. (2023). *Climate Review Bulletin*. Nimet.
- [15]. Nightingale, A. J. (2023). Environment, Gender And Governance: Feminist Political Ecology Revisited. *Progress In Human Geography*, 47(2), 231–250. <https://doi.org/10.1177/03091325221118845>
- [16]. Organisation For Economic Co-Operation And Development. (2023). *Climate Adaptation And Resilience In Developing Countries*. OECD Publishing.
- [17]. Resurrección, B. P., Elmhirst, R., & Nightingale, A. J. (2022). Feminist Political Ecology: Critical Engagements With Climate Change. *Geoforum*, 132, 205–214. <https://doi.org/10.1016/j.geoforum.2022.05.010>
- [18]. Scoones, I. (2022). Pathways To Sustainability: A Livelihoods Perspective. *Sustainability Science*, 17(4), 1137–1148. <https://doi.org/10.1007/s11625-022-01125-4>
- [19]. UN-Habitat. (2022). *World Cities Report 2022: Envisaging The Future Of Cities*. United Nations.
- [20]. United Nations Development Programme. (2023). *Nigeria Climate Governance And Institutional Capacity Assessment*. UNDP.
- [21]. United Nations Development Programme. (2024). *Gender-Responsive Climate Action: From Policy To Practice*. UNDP.
- [22]. UN Women. (2022). *Gender, Climate Change And Resilience*. United Nations Entity For Gender Equality And The Empowerment Of Women.
- [23]. UN Women. (2023). *Progress On The Sustainable Development Goals: The Gender Snapshot 2023*. United Nations.
- [24]. United Nations Environment Programme. (2023). *Adaptation Gap Report 2023*. UNEP. World Bank. (2023). *Gender Equality For Inclusive Growth: Nigeria Country Profile*. World Bank.
- [25]. World Bank. (2024). *Climate Risk Country Profile: Nigeria*. World Bank Group.