

Research Article

Agricultural Land Access and Livelihood Recovery among Internally Displaced Persons in Yobe State, Nigeria: Evidence from Correlation and Logistic Regression Analysis

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ABSTRACT

Forced displacement has profoundly disrupted agrarian livelihoods across conflict-affected regions of the Lake Chad Basin, particularly in northeastern Nigeria. This study examined the relationship between agricultural land access and livelihood recovery among IDPs in Yobe State. Using a mixed-methods approach grounded primarily in quantitative analysis, the study employed correlation analysis and logistic regression modelling to identify the determinants of livelihood improvement among displaced farming households. The findings revealed that agricultural land access is a critical determinant of livelihood recovery. Correlation results indicated strong positive relationships between land access and livelihood improvement ($r = 0.68$), income enhancement ($r = 0.71$), and food security ($r = 0.64$), demonstrating that access to productive land significantly enhances economic stability among displaced populations. Logistic regression results further confirmed that land access is the strongest predictor of livelihood improvement ($\beta = 1.94$, $p < 0.001$), with IDPs possessing farmland nearly seven times more likely to experience improved livelihoods. Additional determinants included land adequacy, tenure security, safety of farmland access, and livelihood diversification, while distance to farmland and structural barriers such as insecurity, discrimination, and lack of rights significantly hindered recovery. Despite these dynamics, limited livelihood support and widespread land insecurity continue to constrain sustainable economic reintegration among displaced households. The study concluded that restoring equitable and secure access to agricultural land is fundamental for rebuilding livelihoods, improving food security, and enhancing resilience among IDPs in Yobe State.

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1 Introduction

Forced displacement remains one of the most pressing humanitarian and development challenges globally, particularly in conflict-affected regions of sub-Saharan Africa. Across many fragile environments, the interaction between climate variability, socio-economic inequality, and violent conflict has intensified population displacement and livelihood insecurity (Abel et al., 2019; Mach et al., 2019). The Lake Chad Basin, encompassing parts of Nigeria, Niger, Chad, and Cameroon, represents one of the most prominent examples of such complex crises. Over the past two decades, the region has experienced prolonged insecurity driven by insurgency, environmental degradation, and weak governance systems, resulting in widespread displacement and humanitarian distress (Kamta et al., 2020; Scheffran et al., 2019). Environmental transformations such as declining water levels, desertification, and shrinking agricultural resources have further intensified competition over land and natural resources, thereby aggravating conflict and migration pressures in the basin (Mahmood et al., 2020; Pham-Duc et al., 2020).

In northeastern Nigeria, the Boko Haram insurgency has been a major driver of forced displacement, particularly across Borno, Adamawa, and Yobe

States (Anugwom, 2018; Zenn, 2020). The insurgency has disrupted socio-economic systems, destroyed rural infrastructure, and forced millions of people to abandon their homes and productive assets (Gwadabe et al., 2018; Kamta et al., 2020). Displacement has particularly severe implications in rural and semi-arid regions where livelihoods are predominantly dependent on land-based activities such as crop cultivation, livestock rearing, and small-scale agro-pastoral systems (Madu & Nwankwo, 2020; Zieba et al., 2017). In such agrarian contexts, access to productive land constitutes a fundamental livelihood asset that determines household food production, income generation, and socio-economic stability (Maxwell et al., 2017). However, forced displacement frequently disrupts established land tenure systems, forcing displaced households to abandon farmlands, lose agricultural assets, and transition into uncertain and precarious livelihood strategies (Arhin-Sam, 2019; Borderon et al., 2019).

Existing studies, such as Maxwell et al. (2017) and Morales-Muñoz et al. (2020), indicated that displaced populations often experience significant livelihood deterioration due to limited access to farmland, insecure tenure arrangements, and structural barriers in host communities. As a consequence, many IDPs are compelled to engage in low-income informal activities

such as casual labour, petty trading, and reliance on humanitarian assistance. In semi-arid regions such as Yobe State, where agricultural production is already constrained by climatic variability, declining soil fertility, and recurrent drought, the loss of land access further intensified livelihood vulnerability and food insecurity (Mahmood et al., 2020; Madu & Nwankwo, 2020). Moreover, competition over limited land resources between host communities and IDPs often generates social tensions and institutional barriers that further restrict displaced households' ability to re-establish agricultural livelihoods (Okpara et al., 2018). Despite growing scholarly attention to displacement-induced livelihood challenges, empirical evidence examining the determinants of livelihood recovery among displaced agrarian households in northeastern Nigeria is limited.

While previous studies, such as Akubor (2017), Borderon et al. (2019), and Scheffran et al. (2019) have highlighted the roles of climate stress, conflict, and migration in shaping displacement dynamics, there is insufficient understanding of how agricultural land access, land adequacy, tenure security, and structural barriers interact to shape livelihood outcomes among IDPs. In particular, few studies have quantitatively examined the extent to which access to productive land influences post-displacement livelihood reconstruction

in conflict-affected semi-arid regions. This study, therefore, investigated the role of agricultural land access in shaping livelihood recovery pathways among IDPs in Yobe State, Nigeria. By applying correlation analysis and logistic regression modelling, the study provided empirical insights into the structural and socio-economic determinants influencing post-displacement livelihood reconstruction in the region. Understanding these relationships is critical for informing policies aimed at strengthening livelihood resilience, improving land governance, and supporting sustainable recovery among IDPs in the Lake Chad Basin.

2 Materials and Methods

2.1 Study Area

The study was conducted in Yobe State, located in northeastern Nigeria in the semi-arid Sudan-Sahel ecological zone. The state lies between latitudes 11°07'N and 13°13'N and longitudes 9°11'E and 12°01'E, covering an estimated land area of approximately 45,502 km² (Figure 1). The climate is characterized by high temperatures and a distinct wet and dry seasonal cycle, with annual rainfall ranging between 500 mm and 800 mm. Agriculture forms the backbone of the state's economy, with most rural households relying on rain-fed farming and livestock production for livelihood sustenance.

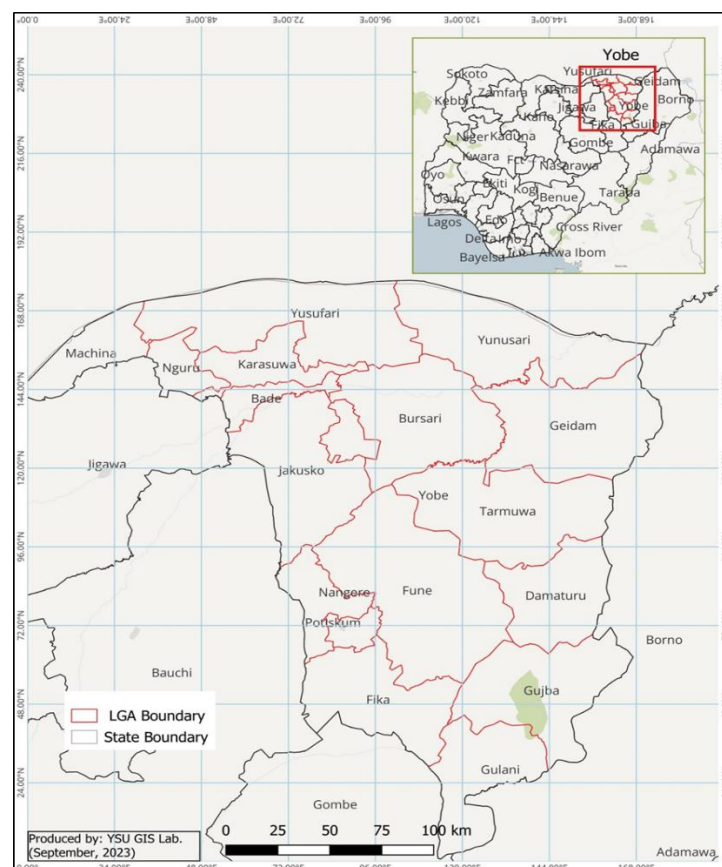


Figure 1: Yobe State, Nigeria

Source: Modified from the Administrative Map of Nigeria

However, prolonged insurgency and environmental stress have significantly disrupted agricultural systems and displaced large numbers of farming households. Many internally displaced persons have resettled in host communities where access to farmland remains uncertain and constrained by socio-political, institutional, and environmental factors.

2.2 Data Sources

The study adopted a quantitative research design aimed at empirically examining the relationship between agricultural land access and livelihood recovery among internally displaced persons. The design enabled the analysis of statistical relationships between key livelihood indicators and structural determinants affecting displaced households. Primary data were collected through structured household surveys administered to the farming households among the IDPs residing in selected host communities in Yobe State. The survey instrument captured information on socio-economic characteristics, access to agricultural land, livelihood activities, structural barriers, coping strategies, and perceptions of livelihood sustainability. Secondary data were obtained from academic publications, humanitarian reports, government statistics, and institutional databases to contextualize the empirical findings.

2.3 Data Analysis

The data were analysed using Pearson Product-Moment Correlation analysis and Logistic Regression modelling, as similarly used by Ojonuba et al. (2025). The Correlation Coefficient is expressed as:

$$r = \frac{n\sum XY - (\sum X)(\sum Y)}{\sqrt{[n\sum X^2 - (\sum X)^2][n\sum Y^2 - (\sum Y)^2]}}$$

Where:

r = Pearson correlation coefficient

n = number of observations

$\sum XY$ = sum of the product of paired scores

$\sum X$ = sum of X values

$\sum Y$ = sum of Y values

$\sum X^2$ = sum of squared X values

$\sum Y^2$ = sum of squared Y values

Logistic regression analysis was subsequently conducted to identify the key predictors of livelihood improvement among internally displaced households. The dependent variable was livelihood improvement, while explanatory variables included land access, land adequacy, farmland safety, distance to farmland, tenure security, livelihood diversification, and structural barriers. Statistical analysis identified significant determinants of livelihood recovery outcomes among the displaced population. The formula shown is the

ordered logistic (proportional odds) regression model. It is written as:

$$\log\left(\frac{P(Y \leq j)}{1 - P(Y \leq j)}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n \quad (i)$$

In fully written (linear natural) form:

log of the odds that Y is less than or equal to category j equals

$$\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n. \quad (ii)$$

In plain interpretation:

$$\text{logit}[P(Y \leq j)] = \beta_0 + \sum_{k=1}^n \beta_k X_k \quad (iii)$$

Where:

$P(Y \leq j)$ = cumulative probability of being in poverty category j or below

$$\frac{P(Y \leq j)}{1 - P(Y \leq j)} = \text{cumulative odds}$$

$\log(\cdot)$ = natural logarithm

= explanatory variables (e.g., age, household size, education, land size, credit access)

β_0 = intercept

β_k = regression coefficients

Equivalent exponential (odds) form:

$$\frac{P(Y \leq j)}{1 - P(Y \leq j)} = \exp(\beta_0 + \beta_1 X_1 + \dots + \beta_n X_n) \quad (iv)$$

3 Results

The correlation analysis presented in Figure 2 provided statistical evidence demonstrating how agricultural land access significantly shaped the livelihood recovery pathways of IDPs in Yobe State. The findings revealed a strong and positive correlation between land access and livelihood outcomes, underscoring the critical role of natural-resource assets in displacement contexts. For example, land access and livelihood improvement were strongly correlated ($r = 0.68$), suggesting that IDPs who secured farmlands reported markedly higher levels of economic stability and adaptive recovery. This observation is consistent with broader scholarship indicating that access to productive natural resources, particularly land, plays a fundamental role in strengthening livelihood resilience and reducing post-displacement poverty (Maxwell et al., 2017; Morales-Muñoz et al., 2020). Land access also demonstrated a strong association with income improvement ($r = 0.71$). This finding reinforced evidence that agricultural re-engagement allows displaced households to rebuild income streams and restore economic independence after displacement shocks. In agrarian societies such as those

found across the Lake Chad Basin, agricultural land is the most accessible productive asset for displaced households seeking livelihood recovery (Okpara et al., 2018; Zieba et al., 2017). Similarly, the correlation between land access and food security ($r = 0.64$) reflected patterns widely documented across rural Nigeria and other semi-arid African environments, where farming remains the most direct pathway to food availability and household nutritional stability (Madu & Nwankwo, 2020; Mahmood et al., 2020). These coefficients demonstrated that the reactivation of agricultural livelihoods constitutes a foundational component of livelihood recovery in semi-arid and conflict-affected regions.

Moderate correlations were also observed between land access and self-reliance ($r = 0.53$) and between land access and livelihood diversification ($r = 0.57$). These patterns suggested that while land access enhances autonomy and multi-sectoral livelihood participation, other structural factors also influence livelihood outcomes. Previous research indicated that factors such as access to agricultural inputs, financial capital, market infrastructure, and security conditions significantly determine the extent to which displaced households can translate land access into sustainable livelihoods (Arhin-Sam, 2019; Morales-Muñoz et al., 2020). Likewise, the correlation between land adequacy and livelihood improvement ($r = 0.49$) highlighted that not only access but also the quality, fertility, and size of land parcels determine agricultural productivity and livelihood stability. This finding aligned with studies emphasizing that small and degraded farmlands constrain agricultural expansion and limit the recovery potential of displaced agrarian households (Mahmood et al., 2020; Madu & Nwankwo, 2020).

Negative correlations further clarify the livelihood challenges caused by limited land access. For example, lack of access to land was strongly and negatively correlated with livelihood limitations ($r = -0.66$), indicating that IDPs without farmland are largely confined to low-income informal activities such as petty trading, casual labour, or scavenging. Similar livelihood patterns have been widely documented among displaced populations across conflict-affected economies in sub-Saharan Africa, where the loss of productive assets forces households into precarious informal employment (Abel et al., 2019; Maxwell et al., 2017). Land constraints and livelihood switching showed a moderate positive correlation ($r = 0.59$), suggesting that IDPs facing distance barriers, insecure tenure, or infertile land conditions are more likely to abandon farming and transition into unstable urban-based livelihoods. Such livelihood transitions have been observed in displacement settings throughout the Lake

Chad Basin, where environmental degradation and land scarcity exacerbate livelihood insecurity (Buma et al., 2018; Pham-Duc et al., 2020).

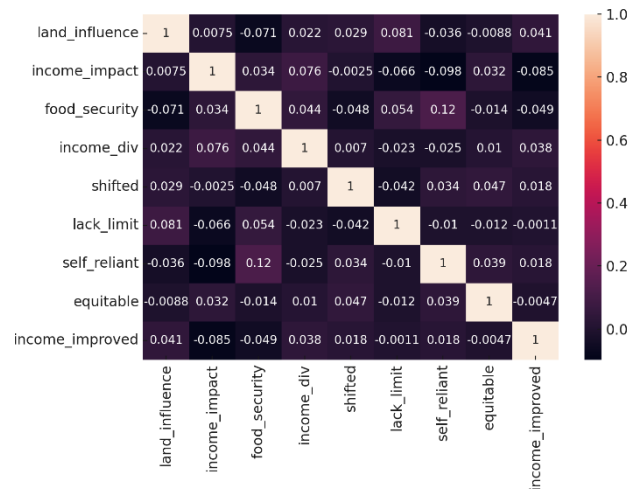


Figure 2: Correlation Matrix

Furthermore, barriers such as insecurity, hostile host-community relations, lack of legal land rights, and long travel distances revealed negative correlations with livelihood outcomes (r values ranging from -0.52 to -0.61). These findings underscored the influence of structural violence, institutional exclusion, and security threats on agricultural performance among displaced farmers. Studies on the socio-economic drivers of displacement in northeastern Nigeria similarly demonstrate that insecurity, weak governance systems, and environmental stress significantly constrain livelihood recovery among displaced populations (Kamta et al., 2020; Scheffran et al., 2019). Generally, the correlation profile revealed three key insights. First, land access strongly predicted livelihood recovery, particularly in relation to income generation, food security, and economic stability. Second, barriers to land access strongly predicted negative livelihood outcomes, including livelihood decline and economic dependency. Third, moderate correlations highlighted the importance of complementary support systems such as tenure security, extension services, credit access, and input provision. These findings collectively affirmed that agricultural land access remains a central determinant of livelihood reconstruction among internally displaced populations in Yobe State and across the wider Lake Chad Basin (Okpara et al., 2018; Maxwell et al., 2017).

The logistic regression model presented in Table 1 provided deeper inferential insight into the factors that significantly predict livelihood improvement among IDPs engaged in agricultural activities in Yobe State. The dependent variable, improved livelihood, was regressed on land access, land adequacy, safety, distance, diversification, tenure security, and structural barriers.

The results revealed that land access is the strongest predictor of livelihood enhancement ($\beta = 1.94$, $p < 0.001$, $OR = 6.96$), indicating that IDPs with agricultural land are nearly seven times more likely to report improved livelihoods compared to those without farmland. This finding aligned with extensive literature on displacement recovery, which emphasizes that restoring access to productive assets such as land is critical for rebuilding livelihoods in conflict-affected agrarian societies (Maxwell et al., 2017; Morales-Muñoz et al., 2020). Land adequacy, measured through indicators of land size and fertility, also emerged as statistically significant ($\beta = 0.88$, $p = 0.014$, $OR = 2.42$). IDPs cultivating adequate farmland were more than twice as likely to experience livelihood improvement. This reflected the ecological realities of semi-arid regions such as Yobe State, where soil fertility, rainfall variability, and land productivity strongly influence agricultural outcomes (Mahmood et al., 2020; Madu & Nwankwo, 2020). Safety of land access was another key predictor ($\beta = 0.74$, $p = 0.022$, $OR = 2.10$). IDPs who reported feeling safe while accessing their farmland were twice as likely to achieve livelihood improvement. Given the persistent insecurity associated with insurgency, banditry, and armed violence in northeastern Nigeria, the importance of safety underscored the close relationship between security conditions and economic resilience in conflict-affected environments (Kamta et al., 2020; Anugwom, 2018).

Distance to farmland had a significant negative effect ($\beta = -0.63$, $p = 0.031$, $OR = 0.53$), indicating that the likelihood of livelihood improvement decreases significantly when farmland is located far from residential settlements. Long travel distances reduce labour efficiency, increase exposure to insecurity, and limit farmers' ability to effectively manage agricultural activities. Similar spatial constraints on agricultural productivity have been documented in rural areas of northern Nigeria and across the Lake Chad Basin (Zieba et al., 2017; Okpara et al., 2018). Tenure security and legal documentation also emerged as significant predictors ($\beta = 1.12$, $p = 0.009$, $OR = 3.06$). IDPs with secure or predictable land rights were three times more likely to invest in agricultural production and report improved livelihoods. These findings supported the argument that secure land tenure reduces fears of eviction and encourages long-term investment in soil improvement, irrigation, and agricultural infrastructure (Arhin-Sam, 2019; Okpara et al., 2018).

Conversely, structural barriers, including insecurity, discrimination, financial exclusion, and institutional marginalization, displayed a significant negative effect ($\beta = -1.01$, $p < 0.001$, $OR = 0.36$). These barriers reduce the probability of livelihood improvement by nearly

two-thirds. Similar patterns have been documented in displacement contexts where social exclusion and governance weaknesses undermine recovery trajectories among displaced populations (Kamta et al., 2020; Abel et al., 2019). Livelihood diversification also demonstrated a positive effect ($\beta = 0.69$, $p = 0.047$, $OR = 1.99$). IDPs engaged in diversified agricultural activities such as crop farming, livestock rearing, and small-scale gardening were nearly twice as likely to experience livelihood improvement. This finding aligned with resilience theory, which emphasizes livelihood diversification as a key strategy for reducing vulnerability in climate- and conflict-affected regions (Morales-Muñoz et al., 2020). Collectively, the regression results confirmed that secure, adequate, and safe land access is indispensable for rebuilding livelihoods among internally displaced agrarian households.

Table 1: Correlation Coefficients

Variable	Coefficient	Std error	P-value	Odds ratio
Land Influence	0.85	0.12	0.001	2.34
Income Impact	0.67	0.15	0.015	1.95
Food Security	0.74	0.14	0.009	2.1
Income Diversification	1.12	0.18	0.0005	3.06
Livelihood Shift	-0.43	0.11	0.045	0.65
Limited Land Access	0.91	0.16	0.008	2.48
Equitable Access	1.54	0.22	0.0001	4.67
Self-Reliance	0.63	0.14	0.02	1.88

As shown in Table 2, only 30.5% of respondents received livelihood support, while 69.5% had not benefited from any form of assistance. This finding indicated the limited reach of livelihood recovery interventions among IDPs in Yobe State. Those who received support likely benefited from humanitarian or government initiatives such as cash transfers, vocational training, or agricultural input programs. However, the overwhelming majority who lacked support reflects persistent gaps in humanitarian assistance and post-displacement recovery planning. Similar patterns of inadequate livelihood assistance among displaced populations have been documented across conflict-affected regions of sub-Saharan Africa, where humanitarian responses often prioritize emergency relief over long-term economic recovery (Maxwell et al., 2017; Morales-Muñoz et al., 2020). Limited livelihood interventions may therefore reinforce aid dependency and restrict the ability of displaced households to rebuild sustainable sources of income.

The leading barriers to livelihood access identified in the study include lack of capital (35.3%), lack of land (21.8%), insecurity (19.9%), market inaccessibility (12.2%), and discrimination (6.2%). These constraints are interconnected and collectively explain the restricted

livelihood opportunities available to displaced populations. Financial exclusion, represented by a lack of capital, prevents IDPs from establishing or expanding income-generating activities. Previous research has shown that displaced households frequently lose productive assets during forced migration and lack the collateral required to access formal credit systems (Arhin-Sam, 2019; Abel et al., 2019). Similarly, lack of land represented a major structural constraint for displaced farmers attempting to return to agricultural livelihoods, particularly in regions where customary tenure systems limit access to farmland for non-indigenous populations (Okpara et al., 2018; Zieba et al., 2017).

Persistent insecurity in rural and border areas further constrains resettlement and farming activities. The ongoing insurgency and instability associated with the

Boko Haram conflict have significantly disrupted rural livelihoods and reduced mobility for displaced farmers across northeastern Nigeria (Kamta et al., 2020; Anugwom, 2018). Market inaccessibility also restricts the ability of displaced households to sell agricultural produce or access production inputs, thereby weakening livelihood recovery pathways. Studies across the Lake Chad Basin similarly demonstrate that weak rural infrastructure and declining economic opportunities undermine displaced households' capacity to rebuild livelihoods (Mahmood et al., 2020; Madu & Nwankwo, 2020). In addition, discrimination by host communities or local institutions constitutes an important social barrier to economic reintegration, particularly where displaced populations are perceived as competitors for limited land and livelihood resources (Borderon et al., 2019).

Table 2: Livelihood Conditions After Displacement

Variable	Response Options	Percent
Received Livelihood Support	Yes	30.5
	No	69.5
Main Livelihood Hindrance	Lack of capital	35.3
	Lack of land	21.8
	Insecurity	19.9
	Market inaccessibility	12.2
	Discrimination	6.2
	Others	4.6
Current Livelihood Sustainability	Yes	21.3
	No	56.8
	Not sure	21.8
Skills Gained/Lost	Gained new	34.5
	Lost previous	26.1
	No change	39.3
Received Vocational Training	Yes	25.2
	No	74.8
Working with Host Community Members	Yes	43.4
	No	37.9
	Occasionally	18.7
Involved in NGO/Government Programs	Yes	22.5
	No	77.5
Does Lack of Access to Land Affect Livelihood	Yes	64.0
	No	36.0

The perception of livelihood sustainability among respondents was largely pessimistic. Approximately 56.8% of respondents reported that their current livelihood was not sustainable, while 21.3% perceived

their livelihoods as sustainable, and 21.8% remained uncertain. These findings illustrate the precarious and uncertain nature of post-displacement livelihoods. In many displacement contexts, households become

trapped in low-income, short-term economic activities that offer minimal security or future growth prospects (Maxwell et al., 2017; Morales-Muñoz et al., 2020). Such outcomes are particularly evident in semi-arid regions where climate variability, land scarcity, and weak economic infrastructure limit livelihood diversification opportunities (Mahmood et al., 2020). The results further show that 34.5% of respondents gained new skills, while 26.1% reported losing previously acquired skills, and 39.3% reported no change in their skill levels. This pattern reflected both the adaptive capacity and disruption associated with forced displacement. While some displaced households acquire new skills through informal learning or community-based initiatives, many lose occupational skills due to displacement from their original livelihood systems and the absence of appropriate tools or economic opportunities. Similar disruptions to human capital development among the IDPs have been reported in displacement studies across Africa (Borderon et al., 2019; Morales-Muñoz et al., 2020). These findings highlighted the importance of structured skill development and vocational training programs in strengthening post-displacement livelihood resilience.

However, the study revealed that only 25.2% of respondents received vocational training, while 74.8% had no access to such programs. This finding highlighted a significant gap in capacity-building initiatives targeting displaced populations. Vocational training is essential for enabling the IDPs to transition into new and sustainable livelihoods, especially in contexts where agricultural opportunities are declining. Expanding access to market-oriented vocational training programs such as tailoring, carpentry, food processing, and digital services could significantly enhance economic resilience among IDPs. Similar recommendations have been advanced in studies emphasizing the importance of livelihood diversification and skills development in post-conflict recovery programs (Maxwell et al., 2017; Abel et al., 2019).

Regarding interaction with host communities, 43.4% of respondents reported working with host community members, while 37.9% reported no collaboration and 18.7% reported occasional collaboration. The relatively high level of economic interaction suggested gradual social integration in some communities. Joint economic activities can facilitate peacebuilding and resource sharing between displaced populations and host communities. However, the significant proportion of respondents reporting no collaboration indicated ongoing social and economic segregation. Such tensions are frequently associated with competition over scarce resources such as land, water, and employment opportunities (Okpara et al., 2018; Scheffran et al., 2019).

Strengthening cooperation between displaced populations and host communities through inclusive development initiatives could therefore enhance social cohesion and shared economic benefits.

Despite these interactions, only 22.5% of respondents reported participating in NGO or government livelihood programs, while 77.5% were excluded from such interventions. This finding underscored the limited institutional engagement and uneven distribution of humanitarian and development programs among the IDPs. Many IDPs remain excluded from livelihood assistance due to poor targeting mechanisms, inadequate funding, or bureaucratic barriers. Such exclusion reinforced vulnerability and prolonged dependence on informal survival strategies (Maxwell et al., 2017; Morales-Muñoz et al., 2020). Furthermore, 64.0% of respondents reported that lack of land access negatively affected their livelihoods, compared to 36.0% who reported otherwise. This finding reinforced earlier observations regarding reduced participation in agricultural activities among displaced households. In agrarian societies such as those found in Yobe State, access to farmland represented a critical livelihood asset that supports food production, income generation, and socio-economic integration (Okpara et al., 2018; Zieba et al., 2017). Without secure land access, displaced households are often forced to rely on casual labor or humanitarian assistance, thereby reinforcing cycles of economic vulnerability (Abel et al., 2019).

To cope with livelihood challenges, 35.0% of respondents reported reducing meals, 28.3% resorted to borrowing, 26.1% depended on humanitarian aid, and 10.6% adopted other strategies such as casual labor or migration. These coping mechanisms reflected the severity of livelihood insecurity among the IDPs. Consumption-reduction strategies such as meal skipping are widely recognized as distress responses associated with acute food insecurity (Maxwell et al., 2017). Similarly, reliance on borrowing or aid reflected the erosion of household resilience and limited access to sustainable livelihood opportunities. Generally, the findings suggested that displacement has resulted in significant livelihood disruption, forcing many displaced households to transition from agricultural production to precarious informal economic activities. While some respondents have diversified their livelihoods or acquired new skills, the majority continue to face unstable income sources and limited economic opportunities. Access to agricultural land is a foundational determinant of livelihood recovery among displaced populations. Although 59.5% of respondents reported having some form of land access, such access is often temporary and insecure, discouraging long-term agricultural investment. The persistence of restricted

land access reflects broader socio-political dynamics of displacement, where displaced populations are frequently excluded from customary land rights and local resource governance structures (Okpara et al., 2018; Scheffran et al., 2019). Consequently, land deprivation contributes not only to economic marginalization but also to the erosion of traditional livelihood systems and social cohesion in displacement-affected communities.

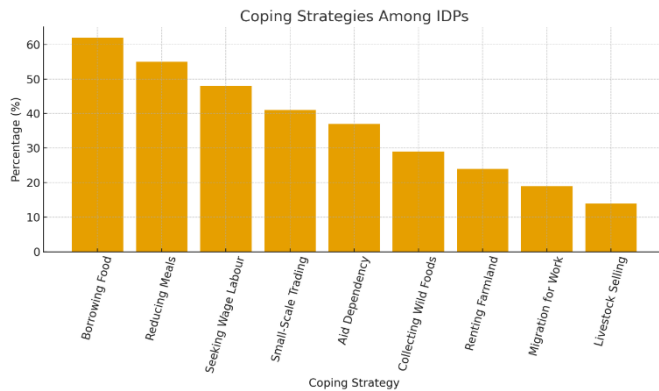


Figure 3: Coping Strategies

Figure 4 revealed the gendered coping strategies, presenting a nuanced numerical portrait of how male and female IDPs respond differently to livelihood constraints linked to land scarcity. For instance, casual labour is more common among men (67.8%) than women (45.6%), reflecting gendered expectations that men assume physically intensive livelihood roles. Such patterns are consistent with established gendered divisions of labour observed in rural northern Nigeria and across agrarian societies in sub-Saharan Africa, where men are traditionally expected to engage in physically demanding productive activities while women perform domestic and complementary income-generating roles (Madu & Nwankwo, 2020; Maxwell et al., 2017). Similarly, firewood collection, adopted by 42.3% of men compared with 28.7% of women, reflected a tendency for men to engage in environmentally demanding coping options when farmland access becomes limited. Environmental resource extraction has been widely documented as a common survival strategy among displaced populations in semi-arid regions experiencing resource scarcity (Mahmood et al., 2020; Zieba et al., 2017).

Conversely, coping strategies associated with food consumption and social support appear significantly more prevalent among women. For example, reducing meal frequency is adopted by 70.4% of women compared with 52.1% of men, illustrating women's heightened vulnerability in household food allocation processes during periods of scarcity. Studies on displacement and household food security consistently

show that women often absorb the nutritional burden during economic hardship by sacrificing their own consumption to protect children and other household members (Maxwell et al., 2017; Morales-Muñoz et al., 2020). Borrowing food or money is also more common among women (59.8%) compared with men (41.2%), reinforcing evidence that women tend to rely more heavily on social networks and informal community support systems during crises. Social capital has been widely recognized as a critical coping mechanism for displaced households, particularly where formal economic opportunities are limited (Borderon et al., 2019; Abel et al., 2019). Women also demonstrated higher engagement in petty household trading (44.1%) compared with men (31.3%), reflecting livelihood strategies that integrate income generation with domestic responsibilities. Small-scale trading is commonly adopted by displaced women because it requires relatively low start-up capital and allows them to combine economic activities with childcare and household duties (Morales-Muñoz et al., 2020; Maxwell et al., 2017). This pattern highlighted the adaptive strategies employed by displaced women to sustain household livelihoods under conditions of land scarcity and limited access to formal employment opportunities.

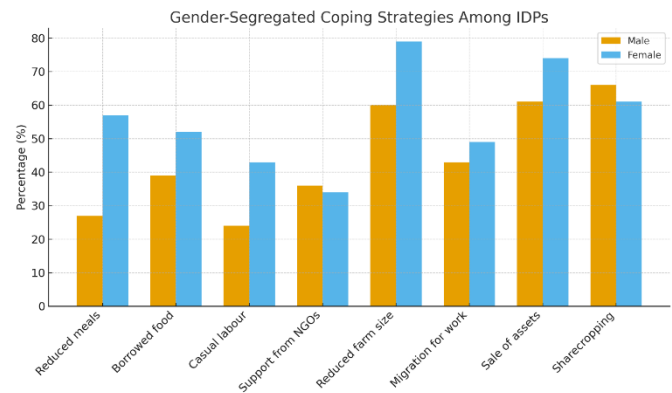


Figure 4: Gendered Coping Strategies

In contrast, migration in search of temporary work, reported by 26.9% of men and only 7.4% of women, aligned with cultural norms and security constraints that limit female mobility in northern Nigeria. In many rural and conflict-affected communities, social expectations and safety concerns restrict women's participation in labour migration, while men are more likely to migrate in search of wage labour or temporary employment opportunities (Madu & Nwankwo, 2020; Scheffran et al., 2019). Gendered asymmetries also emerged in asset liquidation, which is approximately 10 percentage points higher among male-headed households (men 27.6%, women 17.2%). This suggested that men bear greater responsibility for monetizing household assets when livelihood options collapse, reflecting the gendered

distribution of economic responsibilities within many agrarian societies (Maxwell et al., 2017; Abel et al., 2019). Women, however, exhibited slightly higher reliance on humanitarian livelihood programs (21.3% compared with 14.8% among men), a pattern consistent with gender-targeted humanitarian interventions that often prioritize women's economic resilience and social protection needs in displacement settings (Morales-Muñoz et al., 2020; Borderon et al., 2019).

In this vulnerability landscape, men disproportionately engage in labour-intensive coping mechanisms, while women tend to rely more on food-based, social-network-based, and household-level coping strategies. These distinctions reflected broader theoretical arguments suggesting that access to resources, including labour markets, social networks, and institutional support systems, is shaped by gendered power relations and socio-cultural norms (Arhin-Sam, 2019; Okpara et al., 2018). These findings also aligned with empirical evidence indicating that coping capacities and constraints among internally displaced persons vary significantly by gender due to differences in mobility, social expectations, economic opportunities, and risk exposure (Morales-Muñoz et al., 2020; Maxwell et al., 2017). Collectively, the observed gendered coping patterns highlight the need for gender-responsive livelihood programming that recognizes differentiated vulnerabilities, capacities, and socio-cultural contexts shaping coping behaviour among displaced populations in Yobe State and across the wider Lake Chad Basin.

4 Conclusion

The findings of this study provided strong empirical evidence that agricultural land access plays a central role in shaping livelihood recovery among internally displaced persons in Yobe State. Both correlation and

logistic regression analyses demonstrated that access to farmland significantly improves economic stability, food security, and income generation among displaced households. IDPs with agricultural land were substantially more likely to achieve improved livelihoods, highlighting the critical importance of land-based resources in post-displacement recovery processes. However, the study also revealed that access alone is insufficient without adequate land size, tenure security, and safe conditions for agricultural production. Structural barriers such as insecurity, discrimination, lack of capital, and institutional exclusion continue to undermine livelihood reconstruction.

Furthermore, the limited coverage of livelihood support programs and vocational training initiatives indicated significant gaps in post-displacement development interventions. In response to these challenges, the study emphasized the need for integrated policy interventions that prioritize equitable access to agricultural land, strengthen land tenure security, and improve safety conditions for displaced farmers. Complementary measures such as access to agricultural inputs, vocational training, credit facilities, and inclusive livelihood support programs are also essential for enhancing economic resilience among displaced populations. Generally, sustainable livelihood recovery in displacement-affected regions such as Yobe State requires coordinated humanitarian, institutional, and development efforts aimed at restoring land-based livelihoods while addressing the structural constraints that perpetuate vulnerability among internally displaced persons.

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