



# Multisectoral intervention on food security in complex emergencies: a discourse on regional resilience praxis in Northeast Nigeria

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**Abstract** Sustainable livelihood as an enabler of food security can be constrained by climate variability and violent conflicts, with dire consequences in regions with crude adaptation practices. The effects of such ‘complex emergency crises’ on food production and livelihoods in Northeast Nigeria impair human security and resilience, particularly, in the Boko Haram ravaged Borno, Yobe and Adamawa states, and the adjoining Lake Chad region. This study examines the efficacy of multisectoral interventions on food security and resilience in Northeast Nigeria, using the Sustainable Livelihoods Approach. Its thematic analysis of qualitative data was supported by the Cadre Harmonisé (CH) regional report of acute food insecurity assessment in the Sahel. It reveals that due to less collaborative and disjointed implementation of multi-stakeholder interventions across critical sectors, the humanitarian, food, and livelihood interventions marginally improve food security and resilience in the region. It recommends that livelihood outcomes and sustainability of the regional resource base be prioritised through diversification of food production, development aid and a holistic regional stabilisation programme. The impact of these mechanisms on agribusiness transformation

and long-term food security in northeast Nigeria are significant for adaptation and sustainable livelihood in complex emergencies.

**Keywords** Boko Haram · Emergency · Food security · Intervention · Northeast Nigeria · Resilience

## Introduction

The contemporary challenges of ‘complex emergency crises’, i.e., a mix of climate variability and armed conflicts, or violent insurgencies, experienced across some regions or communities have produced acute food insecurity and livelihood impairment. Effects of these threats on human security and the resilience of societies have threatened global development with rising trends of food-insecure populations, particularly where crude adaptation practices exist, with limited or no support systems (Badewa, 2020). Growing food insecurity, hunger, and malnutrition, major challenges confronting the world, are becoming severe in Africa, particularly sub-Saharan Africa (SSA). The major drivers, such as climate variability and extremes, conflicts, and economic recessions have reversed the global strides toward achieving zero hunger by 2030 (Sustainable Development Goal-2). The increased frequency and intensity of these drivers are aggravated by the underlying causes of poverty and

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rising inequality (Food and Agriculture Organisation et al., 2021).

Again, these are further worsened by the COVID-19 pandemic and its containment measures. The rise in global food insecurity from 23% in 2014 to 30% in 2020, indicated that one in three persons experienced constrained access to food in 2020 (FAO et al., 2021). Most African countries, in the Global Food Security Index (GFSI), ranked between middle and lower food security levels, representing seventy percent among the global worst performers in the 2012–2021 GFSI scores (Economist Impact, 2021). Indeed, among 113 countries on the GFSI (2021), Nigeria was ranked 97th, and 20th in Africa, with an overall score of 41.3 percent. Nevertheless, Nigeria scored 28.3 (serious category) on the 2021 Global Hunger Index (GHI) report, ranking 103rd among 116 countries (von Grebmer et al., 2021). The country's decline in the GFSI's year-on-year trends from 2.1 to 0.1 between 2012 and 2021, and its GHI's drop from 39.5 to 28.3 between 2000 and 2021 presage its grim trends of rising hunger and food insecurity situations.

North–East Nigeria, a geopolitical zone comprising Adamawa, Bauchi, Borno, Gombe, Taraba and Yobe states, is significant to the country's food security. This is region is renowned for the cultivation of crops (mostly millet, beans, wheat, sorghum, maize, rice etc.) livestock (cattle, sheep, goats etc.) and freshwater fishes. Like other tropical regions, Northeast Nigeria is affected by environmental change, with average precipitation below 500 mm (20 inches), and a temperature varying from 58°F to 106°F—rarely below 52°F or above 110°F annually. Amidst unimaginable droughts, desertification and climate-related challenges, the dreadful Boko Haram crisis engulfed the region since 2009. The escalation of insecurity from 2013 occasioned the displacement of over 2.5 million inhabitants, hindrance of access to farmlands and loss of assets, with a dire humanitarian crisis across the Lake Chad region (PCNI, 2016; FAO, 2017).

The human security threats exacerbated by the emergencies include conflicts over shared resources, forced migration, destitution, and illegal trafficking of humans and commodities etc. (Badewa, 2020). The effects on regional food security and livelihoods amplify the demands for strengthening regional resilience and support for its vulnerable population. Resilience is a set of adaptive practices or techniques that

enable an individual(s), households, or community to cope and recover from adversity or emergencies. Hence, this became the thrust of *The Buhari Plan* (2016)—Nigeria's Muhammadu Buhari administration (inaugurated in 2015) for Northeast Nigeria. It was premised on Emergency Humanitarian Assistance, Social Stabilization and Protection, and Early Recovery programmes for the long-term development of the region (PCNI, 2016). Accordingly, this work examines the vulnerability of the population of Northeast Nigeria to food insecurity amid complex emergencies, and the significance of multisectoral intervention to regional resilience as a pathway to sustainable livelihoods.

Multisectoral Intervention is a deliberate strategy or collaboration among various stakeholders and sectors with common objectives and vision for achieving a targeted outcome. Such an approach or technique underscores how a phenomenon, for instance, food and nutrition security, can be integrated with sectors such as agriculture, health, education, WASH (Water, Sanitation, and Hygiene) and social protection etc., to address critical public and humanitarian challenges (UNICEF, 2015). Multisectoral intervention is pertinent to food security in complex emergencies toward situational preparedness and responses, and resilience-building. According to the World Food Summit (2009) “food security exists when people at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life”. This can be measured along four dimensions of food security—availability, access, utilisation, and stability (FAO, 2008). The above is also encapsulated in the SDGs-Goal 2 “achieving zero hunger, food security, improved nutrition, and sustainable agriculture by 2030”. Hence, the agricultural sector is critical to achieving this goal, owing to its capacity for investment, food security and sustainable livelihood.

Agriculture in Nigeria is responsible for the employment of nearly two-thirds of the labour force, 88 percent of non-oil national income, and 42.2 percent of national GDP in 2007 (World Bank, 2008: 12). Since the restoration of democracy in 1999, agricultural policies in Nigeria have sought to enhance food security and combat poverty and extreme hunger (Ojo & Adebayo, 2012). The National Economic Empowerment and Development Strategy (NEEDS)—2003, was complemented by the New Agricultural Policy

(NAP) and the National Programme for Food Security (NPFS)—in its two phases, 2002–2006 and 2007–2012. These initiatives promoted agricultural development and investment in the rural areas (Taiwo & Omifolaji, 2015), through land reforms, commercial agriculture, irrigation development, institutional support and market stabilisation etc. (Ugwu & Kanu, 2012). Unfortunately, major constraints to agricultural production such as inconsistent rainfalls, frequent drought in the North and floods along major rivers and the Delta region have induced food crisis in Nigeria. Declining food sufficiency, rising food imports, and agricultural trade deficit have increased poverty and food insecurity in the last 25 years, leading to rising food imports, and currency devaluation in Nigeria (Oyaniran, 2020).

Human security studies characterise the right to adequate food and freedom from hunger as a fundamental human right (Biederlack & Rivers, 2009; von Grebmer et al., 2021). The United Nations' Universal Declaration of Human Rights (UDHR) attributes food security as the most fundamental human need, a significant indicator of well-being and absolute poverty (Alfredsson & Eide, 1999: 2). The challenges posed by climate variability, however, enhance the decline of food production, particularly in the developing regions, already constrained by inadequate technology and low Gross Domestic Product (GDP) per capita (Devereaux & Edwards, 2004). Thus, expanding irrigation facilities is critical to food security and mitigating the challenges of climate change (Jamala et al., 2011; Oriola, 2008, 2012). Given the rising threats of climate change to socio-economic development in the Global South, multi-level approaches to food security reflect on the diversification of agricultural inputs as a critical leap toward improving the population's capabilities and sustainable livelihood, particularly in rural societies (Ojo & Adebayo, 2012; Otekunrin, 2022; Taiwo & Omifolaji, 2015).

Violent extremism and criminality in under-governed spaces are rooted in human security challenges, with negative effects on food security and sustainable livelihoods in fragile communities (Agbibo, 2015; Smith, 2015). The above challenges, worsened by militant rebellions and geopolitics have negative implications for regional peace and development in Africa (D'Amato, 2018; Sambo et al., 2017; Walther & Leuprecht, 2015). Hence, the threats of development challenges *i.e.* environmental change, including

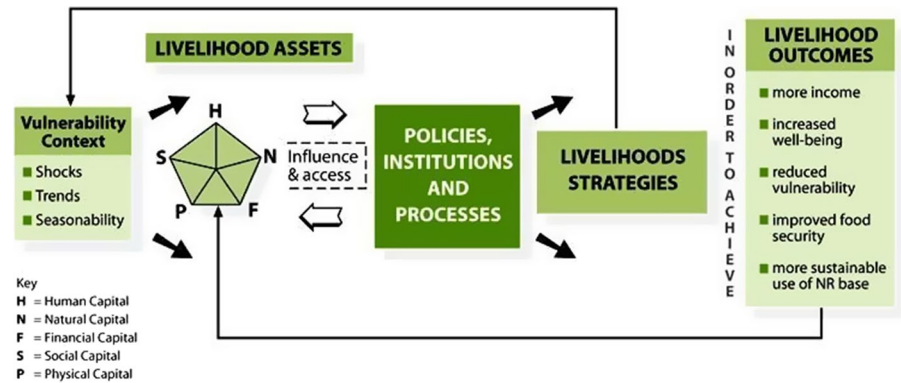
desertification, dysfunctional infrastructures and population explosion, further impair livelihoods and heighten conflicts among users of scarce resources (mostly arable lands and water) in primary resource-dependent milieus (Alao et al., 2012; Gusikit & Lar, 2014). While poverty and deprivation heighten human insecurity, protracted conflicts and terrorist activities in the region worsen food insecurity and socio-economic crises (Akinola, 2015; Okpara et al., 2015). The military approach to counterterrorism in Northeast Nigeria exacerbates livelihood disruption and food insecurity. Therefore, social justice, political inclusion and economic reforms are required for stability and development across Nigeria (Okoli & Iortyer, 2014; Omenma et al., 2020; Oyewole, 2013).

The trends of conflicts and climate stress in sub-Saharan Africa and their multiplying effects on livelihoods amplify the need to review strategies and interventions to enhance the resilience of vulnerable populations and communities in complex emergencies, such as Northeast Nigeria and elsewhere in the Third World (Badewa, 2020). This article addresses a gap in how livelihoods interventions work in complex emergency settings, with emphasis on the resilience of vulnerable populations and communities. The findings accentuate the challenges and constraints that contribute to increased levels of food insecurity and the impact of interventions on sustainable livelihoods and resilience capacities. Therefore, the discourse is clustered into five sections—the introduction, the Sustainable Livelihoods Approach (conceptual framework), the methodology, the findings and discussion, and finally the conclusion.

### **The sustainable livelihoods: a conceptual framework**

The Sustainable Livelihoods Approach (SLA) is a multidimensional technique for analysing and improving the lives of the population challenged by poverty or vulnerability to shocks or emergencies. The SLA is a participatory framework premised on the recognition of human capabilities and assets that should be supported through interventions to improve the quality of life (Chambers & Conway, 1992; Bebbington, 1999; Altarelli & Carloni, 2000). Its human-centred approach to livelihoods complexities identifies areas of intervention, with a specific focus on

**Fig. 1** Sustainable Livelihood Framework  
Source: Department for International Development (DFID), 2003



assets, strategies, and outcomes toward improving the quality of life. The SLA also integrates the goals of the United Nations Children’s Fund (UNICEF) Conceptual Framework on Nutrition for multiple sector intervention and accelerating national development actions to improve outcomes in agriculture, social protection, health and education etc. (UNICEF, 2015). Adapting this to food security underscores the relevance of institutions, policies, and socio-economic environments on individual/household livelihoods (Fig. 1). This enables the characterisation of livelihood experiences, and the perspectives on food insecurity and emergencies along the *Cadre Harmonisé* (CH)—Harmonised Framework for the Identification and Analysis of Areas at Risk of and Populations affected by Food and Nutrition Insecurity in the Sahel and West Africa. The CH tool embodies the regional level food crisis prevention and management framework developed by the Permanent Interstate Committee for Drought Control in the Sahel (CILSS) member states and partners (in 1999). It reflects on the regional and population adaptive techniques, and efficacies of interventions across sectors (CILSS, 2020).

The CH’s integrated approach classifies the nature and extent of acute food insecurity and critically assesses the current and projected food and nutrition security conditions in the region (CILSS, 2020). It employs technical consensus and data generated by information systems, household economy analysis, food and nutrition insecurity vulnerability survey, market monitoring, expert knowledge/reports etc. The CH’s assessment of food insecurity uses the SLA and UNICEF’s Nutrition framework in terms of the Risk (hazard, vulnerability); Sustainable Livelihoods progress and; Nutrition outcomes, based on the four

dimensions of food security. The assessment reflects the convergence of evidence from four indicators—(i) food consumption (ii) livelihood change (iii) nutritional status and (iv) mortality. It also adopted an action-research technique to enhance a coherent analysis and communication of situational review of food and nutrition insecurity. Its relevant procedure for situational analysis involves responses in four stages (Fig. 2)—intervention analysis; planning; implementation; and monitoring and evaluation continuum (CILSS, 2020).

The SLA illustrates the importance of the agricultural sector in improving food and nutrition security, where governments and multilateral agencies



**Fig. 2** The Cadre Harmonisé Situational Analysis Source: CILSS, (2020:5)



**Fig. 3** Map of Nigeria showing the six northeast states (conflict and non-conflict states) *Source:* (Dunn, 2018:2)

contribute to enhancing the poor and vulnerable population's livelihoods. The approach is action-oriented, with people seen as active agents in the making and execution of individual(s) choices and livelihood strategies. SLA also embrace a 'political economy' analysis, by examining how the broader structures of society—power, politics, institutions, and culture, of the population influence their choices and possibilities (Levine, 2014). However, the need to embrace the diversity and complexity of livelihoods by avoiding the macro-economic generalisations seems less relevant to the poor or conflict-affected communities. While the above appears to be a limitation of the SLA, most supporters of the approach accept the necessity to recognise and act upon the population's asset limitations, the risks confronted, and the institutional environment that either enhances or impedes pathways out of poverty (Hussein, 2002). Therefore, this makes the SLA integrated approach a significant framework to assess the interrelationship between food security and resilience, and livelihoods assets and strategies in relation to complex emergencies in Northeast Nigeria.

## Methodology

The study area was situated in Northeast Nigeria (Fig. 3), one of the country's six geo-political zones (others are Northwest, Northcentral, Southwest, Southeast and South-south). The region occupies a 272,395 km area, representing 29.45% of Nigeria's landmass – 923,770 km<sup>2</sup> (356,669 m<sup>2</sup>) (Dunn, 2018:2). The region is bordered to the north by the Republic of Niger, to the east by the Lake Chad basin and the Republic of Cameroon, and Nigeria's Northwest and Northcentral regions to the west and south respectively. Its estimated 30,847,790 inhabitants (Federal Ministry of Agriculture—Nigeria, 2022) represent nearly 13.5 percent of Nigeria's total population.

The study was qualitative and utilised the purposive sampling technique to collect secondary and primary data from January to March 2018. The areas covered were Maiduguri, Yola, and Damaturu in Borno, Adamawa and Yobe states' capitals respectively. This was augmented with an online data re-validation from participants in September 2020. The

**Table 1** Cadre Harmonisé (CH) description of food insecurity severity phases *Source* (CILSS, 2020: 9). (Color table online)

Phase	Description	Priority Response Objectives
<b>Phase 1: Minimal</b>	At least four in five households are able to meet their food and non-food needs without engaging in atypical coping strategies or relying on humanitarian assistance	Action required to build resilience and reduce disaster risk.
<b>Phase 2: Stressed</b>	Even with humanitarian assistance, at least one in five households in the area have the following or worse: reduced and minimally adequate food consumption but unable to afford some essential non-food expenditures without engaging in irreversible coping strategies.	Action required to reduce disaster risk and protect livelihoods.
<b>Phase 3: Crisis</b>	Even with humanitarian assistance, at least one in five households in the area have the following or worse: large food shortages and acute malnutrition at high or higher-than-normal rates; OR are marginally able to meet minimum food needs by depleting livelihood assets, which will lead to food consumption gaps.	Protect livelihoods, prevent malnutrition, and prevent deaths.
<b>Phase 4: Emergency</b>	Even with humanitarian assistance, at least one in five households in the area have the following or worse: extreme food consumption gaps resulting in very high acute malnutrition or excess mortality; OR extreme loss of livelihood assets that will lead to food consumption gaps in the short term.	Save lives and livelihoods.
<b>Phase 5: Famine</b>	Even with humanitarian assistance, at least one in five households in the area have total lack food and/or other basic needs and are clearly exposed to starvation, death and deprivation. (Note: Evidence for all three criteria of food consumption, wasting and CBR are required to classify Famine).	Prevent large-scale deaths and avoid total collapse of livelihoods.

primary data included 15 semi-structured interviews and four (4) focus group discussions (FGD) conducted among farmers, traders' associations, internally displaced persons (IDPs), government agencies, and non-governmental and inter-governmental organisations. The secondary data includes the documents review of specific national (ministries, departments, and agencies) and multilateral institutions (Lake Chad Basin Commission, United Nations agencies and NGOs). Data from these sources were corroborated with descriptive statistics adapted from the Cadre Harmonisé (CH)—assessment of the severity of food insecurity in the region (Table 1). The above was expedient largely because of the inaccessibility of most crisis-ravaged areas, and its time saving and cost-effectiveness. Borno is the epicentre of the crises and the regional headquarters of North-East Nigeria, where most government and non-governmental agencies are domiciled. This informed its higher representation in the data collection compared to other states.

Moreover, the data were analysed thematically using ATLAS.ti (version 8.0.43) in a six-stage iterative process of analysis—data familiarisation, coding, themes identification, review of themes and labelling, repetition of the process for clear overarching themes, and reporting (Clarke & Braun, 2013). The findings stemmed from the thematic

analysis of primary and secondary data. The thematic analysis underscored the Sustainable Livelihoods Approach thus (i) vulnerability context of North-East Nigeria (reflecting the CH assessment of food and nutrition security dimensions); (ii) Strategies and interventions—policies, institutions, and processes toward food security; and (iii) Livelihood outcomes on the wellbeing, income, food security of the population and the sustainability of regional resource base. Thus, the combination of data from different sources enabled a thorough investigation of the phenomenon and analysis of diverse opinions and intervention techniques. To protect informants' identities, interview and FGD participants were represented as P1- P15, and FGD 1–4 respectively (Tables 2 and 3) below. The questions posed to the respondents are in the Appendix.

By limitations, the study explored the events and interventions in Borno, Yobe and Adamawa, the most affected states by the Boko Haram conflict and environmental crisis in the region, vis-à-vis their implications for entire Northeast Nigeria. The starting point is 2015 when the Buhari Administration's counterinsurgency (2015) and rebuilding processes in North-east Nigeria were conceived. These did not preclude earlier sustainable development interventions, from 2009 to date, by regional and multilateral institutions,

**Table 2** Profile of interviewed key informants

Name Code	State	Institution	Position	Gender
Participant 1 (P1)	Borno	Local NGO	Project Coordinator	Female
Participant 2 (P2)	Borno	University Researcher	Silviculture Specialist in Arid zones	Male
Participant 3 (P3)	Borno	Chamber of Commerce, Industry, Mines and Agriculture	Director	Male
Participant 4 (P4)	Borno	Emergency Management Agency	Field Officer	Male
Participant 5 (P5)	Borno	Emergency Management Agency	Project Coordinator	Male
Participant 6 (P6)	Borno	University Researcher	Professor	Male
Participant 7 (P7)	Borno	River Basin Development Authority	Assistant Director	Male
Participant 8 (P8)	Borno	IGO—FAO	Project Coordinator	Male
Participant 9 (P9)	Borno	IGO—World Food Programme	Coordinator	Male
Participant 10 (P10)	Borno	IDP Camp	Assistant Coordinator	Female
Participant 11 (P11)	Yobe	State Emergency Management	Senior Admin Officer	Male
Participant 12 (P12)	Yobe	State Ministry of Agriculture	Administrative Officer	Female
Participant 13 (P13)	Yobe	University Researcher	Senior Lecturer	Male
Participant 14 (P14)	Adamawa	State Ministry of Agriculture	Project Coordinator	Male
Participant 15 (P15)	Adamawa	University Researcher	Senior Lecturer	Male

**Table 3** Summary of Focus Group Discussions

Group Code	Group Name	State	LGA	Participants
FGD 1	Farmers Association	Borno	Maiduguri	7
FGD 2	Livestock Breeders Association	Borno	Maiduguri	6
FGD 3	Fisheries Association	Borno	Maiduguri	8
FGD 4	Livestock Breeders Association	Adamawa	Yola	6

with remarkable implications for food security, livelihoods, and resilience in the region.

## Findings and discussions

Food security and livelihoods in Northeast Nigeria are vulnerable to climate and security conditions. Given the complexity of the components of food insecurity and the socio-political and economic challenges experienced by populations and households in the region, the diverse interventions are climatic and conflict-sensitive, as revealed by the Cadre Harmonisé evaluation. Using the SLA, a thematic analysis of the findings is presented along the following premises: human vulnerability and food insecurity in North-East Nigeria—CH assessment; Strategies and multisectoral interventions on food security in North-East Nigeria; Livelihood outcomes and sustainability

of regional resource base. This illustrates the various types of interventions by stakeholders and their impacts on food security in the region. The major impediments to sustainable interventions in the region and the imperative of strengthening the population's resilience are further highlighted.

### Vulnerability context and food insecurity in Northeast Nigeria—CH assessment

The loss of livelihoods, assets and vulnerability to shocks reflects the trends, severity and seasonality of food insecurity, in reference to human, natural, financial, social and physical capitals (Bebbington, 1999; Chambers & Conway, 1992). The Cadre Harmonisé classified the severity of food insecurity in northern Nigeria and the Sahel into five phases (Table 1 above)—Minimal, Stressed, Crises, Emergency and Famine (CILSS, 2020; Federal Ministry

**Table 4** Estimation of Population Per Phase of Food and Nutrition Insecurity (June 2018). (Color table online) *Source* Cadre Harmonisé—Federal Ministry of Agriculture—Nigeria, CILSS and FAO (2018: 5)

2nd Administrative Level-STATE	Total Population	Total population (Phase 1)	Total population (Phase 2)	Total population (Phase 3)	Total population (Phase 4)	Total population (Phase 5)	Total population (Phases 3-5)
ADAMAWA	4338783	2268686	1275465	654698	136242	3693	794633
BAUCHI	6830138	4760256	1936385	133497	-	-	133497
BORNO	5288332	1497685	1873293	1413113	499840	4401	1917354
GOMBE	3411813	2751945	608825	51043	-	-	51043
TARABA	3264757	3017009	215101	32648	-	-	32648
YOBE	4066415	1558420	1530580	806520	166453	4442	977415
Total	27200238	15854001	7439649	3091519	802535	12536	3906590

of Agriculture—Nigeria, 2022). Accordingly, food insecurity in Northeast Nigeria fluctuates between the ‘crisis’ and ‘stressed’ phases due to climate variability and challenges posed by the Boko Haram crisis (since 2009). Findings revealed that major livelihood activities in North-East Nigeria (farming, fisheries, and livestock breeding) are heavily affected by water level reduction and low rainfall, caused by environmental change. The region’s vulnerability to early rainfall cessation, dry spells, and predator invasions (insects, pests, locusts, and armyworms) not only impaired livelihoods but exposed its population to hazards and increased mortality rates (U5MR) (Federal Ministry of Agriculture—Nigeria, 2022). With negative effects on grazing lands, it impairs livestock production, induces change or loss of livelihoods and forces herdsmen migration (transhumance) further south in search of pastures (FGD 1–4). Indeed, security threats associated with this trend include periodic farmers-herdsmen conflicts in the Adamawa and Taraba axis in the Northeast, and north-central states of Benue and Plateau among others (Respondents P4 & P14). Hence, imminent communal conflicts strain individual/households’ access to food, water, and shelter, particularly among IDPs (Respondent P1).

Similarly, persistent Boko Haram violence against civilians and security forces, suicide bombing, attacks on food trucks, kidnapping, livestock rustling, and armed banditry have impaired livelihoods and food security in the region (Respondents P1, P5 & P11). By extension, the wanton destruction of infrastructures and farmlands has further disrupted trade, communication, and inter-community relations in the region (Respondent P3). The displacement of 2.5 million populations across the region (UNHCR &

The World Bank, 2016:13) exacerbates food insecurity in these areas, already pervaded by poverty and resource depletion, with negative impacts across Nigeria (Okoli & Iortyer, 2014; Okpara et al., 2015; Taub, 2017).

The current food consumption in North-East Nigeria reveals different results. The situational reports of food security in Bauchi, Gombe, and Taraba indicate *minimal* phase due to lesser effects of Boko Haram insurgency in the states. Adamawa and Yobe states are in *stress phases*, while Borno is in the *crisis* phase (Table 4 and 5). About 30.9 per cent of the household population in the Boko Haram ravaged Borno, Yobe and Adamawa (BYA) states resort to critical coping measures—dependence on food aid, subsistence farming and change of livelihood, to access food (Respondent P9). The scenario is worsened by insurgency and counter-insurgency operations as most parts of northern and eastern Borno (especially Marte, Guzamala, Abadam LGAs etc.), the most agriculturally productive areas on the shores of Lake Chad, remain largely inaccessible (Respondent P5, FGD 1&3). Aggregate opinion of respondents on the effect on livelihoods reveals that “households’ income accruing from cash crops cultivation in the relatively peaceful North-East states (Bauchi, Gombe and Taraba) is favourable, with marginal outcomes in Borno, Yobe, and Adamawa” (Respondent P4).

As illustrated above, the critical food insecure population (Phases 3–5) across North-East Nigeria in June 2018 was 3,906,590 estimates, of which 3,689,402 million (94.4 percent) were from the insurgent ravaged BYA states (Table 4). The total number has marginally decreased to 3,835,625 in March–May 2022. Similarly, the retreat of all



**Table 5** Estimation of Population Per Phase of Food and Nutrition Insecurity: Current Situation (March–May 2022). (Color table online) *Source* Cadre Harmonisé—Federal Ministry of Agriculture—Nigeria, CILSS & FAO (March 2022: 3)

2nd Administrative Level-STATE	Total Population	Total population (Phase 1)	Total population (Phase 2)	Total population (Phase 3)	Total population (Phase 4)	Total population (Phase 5)	Total population (Phases 3-5)
ADAMAWA	5125061	2482969	1852318	787598	2177	-	789775
BAUCHI	7683291	6192256	1204045	286991	-	-	286991
BORNO	6309889	2958984	1920917	1262216	167772	-	1429988
GOMBE	3545032	2929810	436187	188035	-	-	188035
TARABA	3570308	2750680	574135	245493	-	-	245493
YOBE	4614209	2355063	1363803	825388	69955	-	895343
Total	30847790	19669762	7351405	3595721	239904	-	3835625

Source: Cadre Harmonisé—Federal Ministry of Agriculture—Nigeria, CILSS & FAO (March 2022: 3)

12,536 population in the BYA states from catastrophe/famine (Phase 5) and the reduction of affected populations in phase 4 (from 802,535 to 239,904) between 2017 and 2022 shows remarkable progress (Tables 4 and 5). Unfortunately, increase in affected population in phase 1 (from 1,585,001 to 1,966,976) and phase 3 (from 3,091,519 to 3,595,721) between 2018 and 2022 respectively may be attributed to demographic change and the negative effects of COVID-19. However, this casts doubts on the sincerity and commitment of actors involved and the efficacies of interventions, counter-insurgency operations and resettlement of displaced populations across the region, in the last three years, given the enormity of resources expended (Badewa, 2020; Omenma et al., 2020). Considering the four dimensions of food and nutrition security, the population's vulnerability to environmental hazards and violent conflicts has further impaired regional resilience and livelihoods in Nigeria and neighbouring Lake Chad basin communities in Cameroon, Chad, and Niger (Respondents P3, P7 & P9).

In terms of availability, crops and staple food production between 2015 and 2020 particularly the 2017/2018 growing season rose above 5-year average levels in most parts of Northern Nigeria, with exceptions in Borno, Yobe, and Adamawa states, due to the Boko Haram crisis (Federal Ministry of Agriculture—Nigeria, 2022). Food availability in North-eastern states, like other parts of northern Nigeria declines drastically during the dry season (June—August). As studies reveal, the effects of climate variability—inconsistent rainfalls, frequent drought and flooding along major rivers, etc. exacerbate

food crisis across Nigeria (von Grebmer et al., 2021; IFPRI, 2016). To lessen these effects, respondents submitted that.

The “dry season farming” adaptation technique has enhanced subsistence farmers’ efforts in regional food production. Farmlands were irrigated through boreholes or shallow wells (dug at nearly knee-deep) to conserve water during the rainy season for use in the dry season. This enabled the harvest of crops grown in November within three months, usually in February (Respondents P1, P5 & FGD1).

Similarly, “the long period of dry season conservation of soil moisture by tillage, surface protection, and growing of drought-resistant crops enhances food and vegetable cultivations, including sorghum and seedlings in the region” (FGD1, P6, P7 & P9). In addition, “farmers along the shores of Lake Chad often irrigate through the rivers, dams, and boreholes. Following the rain season, they switch to dry season farming after harvesting their rain-fed produce and the cycle is repeated periodically” (FGD1). Unfortunately, these practices are impaired by insurgency and counter-insurgency operations (Akinola, 2015; Badewa, 2020). The inaccessibility of several farmlands and destruction of assets and communication facilities, curtailing regional food production, explain the vulnerability of the population and their livelihood assets to these emergencies (D’Amato, 2018; Okpara et al., 2015; Omenma et al., 2020).

Secondly, food access suggests the individual’s accessibility to the requisite resources and foods for a nutritious diet (FAO, 2008). High food prices

constrain households' access to food across north-east Nigeria, with prices of staple food going above average, thus, recurring rise in food prices varies from 30 to 170 percent (Respondents P1, P3 & 14). For instance, prices of cereals increased between 60 to 200 percent in 2017–2018 in the proportion of 5-years average; from 10 to 50 percent in comparison to the same period in 2016 (Federal Ministry of Agriculture—Nigeria, 2022; WFP, 2018). Likewise, the prices of legumes and tuber also rose by 36 and 87 percent respectively, above the 2016 and 5-year average (Federal Ministry of Agriculture—Nigeria, 2022; WFP, 2018)). Most household stocks are speculated to last about three months in the region while access to food remains difficult for households with meagre income earnings. Yet, lack of access to food affects most displaced persons and poor households, particularly in Borno, while Yobe and Adamawa states are heavily dependent on food and humanitarian support (Respondent P15). Petty traders and casual labour are common among IDPs in formal camps and informal settlements, particularly among the 650,000 persons approximately sheltered in Borno (Respondent P10), with limited or no access to land and farming opportunities (Federal Ministry of Agriculture—Nigeria, 2022; WFP, 2018). This phenomenon, multiplies the effects of climate change on the population's capabilities and livelihood, with negative consequences for food prices nationwide (Oyaniran, 2020; Taiwo & Omifolaji, 2015).

Utilisation as a dimension of food security emphasised the proper biological use of food, dietary requirements for adequate energy and essential nutrients, potable water, and appropriate sanitation. Effective food utilisation largely depends on the household's knowledge of food storage and processing methods, basic nutrition principles and proper childcare (IFPRI, 2016). Nutrition in northeast Nigeria is conditioned by climate impacts on water and sanitation, its negative effect on other dimensions of food security exacerbates health risks and diseases, including risks to maternal health, childcare and breastfeeding (FAO et al., 2021). As narrated by informants, “most rural dwellers in the region, particularly in Borno, travel a long distance to harvest water for domestic use due to the drying up of nearby rivers, pollution and inaccessibility warranted by Boko Haram or military blockades” (Respondents P4 & P5). Hence, “diseases such as cholera, diarrhea, and

malaria remain pervasive due to poor hygiene, inadequate access to potable water, malnutrition, and unsustainable livelihood in the region. The IDPs and the al-Majiri (destitute) children, mostly in Borno, are the worst hit in this regard” (Respondents P5, P9, P11 & P14). Hence, amid worsened insecurity, the well-being (including nutrition) and livelihood assets of the region's populations, mostly the poor and IDPs are impaired by combinations of socio-economic challenges and climate variability and extremes (Alao et al., 2012; Gusikit & Lar, 2014).

Moreover, violent conflicts and environmental changes, especially droughts, have triggered food instability across North-East Nigeria. Worsen climate variability during the rainy season adds to the volatility of the region's security. Respondents concluded that “vehicular movements are often restricted due to inadequate infrastructures” (Respondents P3, P5, P8 & FGD1). Security threats, such as the blast of Improvised Explosive Devices (IED) and Person-Borne Improvised Explosive Device (PBIEDS) in the northern and eastern Borno and pervasive attacks from Non-State Armed Groups (NSAG) attacks are recurring in the BYA states (Badewa, 2020). The spillover of conflicts into neighbouring Lake Chad basin communities along the borders of Cameroon, Chad, and Niger and the continuous tensions in Adamawa and Taraba States between herders and farmers exacerbate unstable food production, livelihoods disruption and population displacement in North-East Nigeria (Badewa, 2020; WFP, 2018) Other challenges including fluctuation of international Brent oil price, rising inflation and economic recession, and currency devaluation have had negative consequences on national food stability (Oyaniran, 2020).

Notwithstanding these trends, “availability and access to food and its relative stability in some parts of the region were consequences of the favourable growing season and enhancements of the dry season farming potentials in the region's relatively safe communities” (Respondents P5 & P7). Other notable threats to regional food stability “result from dysfunctional irrigation facilities and the recession of the Lake Chad” (Respondents P8 & P9). The impairment of the once-abundant food and essential crop from the North-East to other parts of Nigeria and elsewhere, has exacerbated a widespread food crisis across Nigeria. Thus, the vulnerability of the population and the region's livelihood assets require adequate

interventions and multisectoral collaborations. This validates Ugwu and Kanu's (2012) assertion that "land reforms, commercial agriculture, irrigation development, institutional support and market stabilisation etc." are the critical steps to enhance livelihoods and food security in Nigeria.

### Strategies and multisectoral intervention on food security in North-East Nigeria

Sustainable Livelihood's human-centred approach to addressing vulnerability and emergencies identifies areas of intervention, with a specific focus on assets, strategies and outcomes to improve the population's quality of life (Altarelli & Carloni, 2000; Chambers & Conway, 1992). Interventions against the threats of environmental change and Boko Haram insecurity in North-East Nigeria combine arrays of policies, institutions (actors) and multisectoral processes. The first strategy of reconstruction and peace restoration in the devastated areas is prioritised by the government (national and sub-national), including humanitarian support for the IDPs. These encompass food (65% of their needs), security, shelter, education, sanitation and health provisions (FAO, 2017). The second process includes interventions by multi-stakeholders (government, private sector, multilateral institutions, and civil society) across sectors (agriculture, health, environment, education) to enhance food security and strengthen resilience capacities in the region. The livelihood support or strategies are explored across three broad categories—national-level, sub-regional-level, and systemic-level interventions, as detailed below (Table 6).

The national-level interventions are facilitated through the Presidential Initiative for the North-East (PINE), inaugurated on 26 October 2016 and supervised by the Presidential Committee on the North-East Initiative (PCNI). The PINE, a blueprint for comprehensive humanitarian relief and socio-economic stabilisation of North-East Nigeria encompassed a 3-year needs assessment by the Nigerian Government and the World Bank. It harmonises stakeholders' activities toward peace, stability, socio-economic reconstruction and long-term development in the region (PCNI, 2016). Its multilateral stakeholders' collaboration features international development partners and donors, civil society organisations, the private sector, as well as government agencies

including states and LGAs on two key major interventions. The first was the *Food Security/Agricultural Livelihood Support Programme*, which provides agricultural inputs to enhance livestock production, fisheries (backyard fish farming) and agricultural extension services delivery. Its medium-long term job creation has impacted areas of agricultural revitalisation, health, infrastructure, and entrepreneurship in the region. The second intervention, the *Small-scale Entrepreneurship Support Programme* runs simultaneously with the food security and early recovery programme to support 1.8 million IDPs in 264, 688 households. The PCNI/PINE was replaced with the North-East Development Commission (NEDC) following the latter's inauguration on 8 May 2019 (NEDC, 2020; PCNI, 2016).

Importantly, the PINE/NEDC interventions are coordinated by national agencies such as the Ministry of Agriculture and Rural Development, Ministry of Water Resources, the National Emergency Management Agency (NEMA) and now the Ministry of Humanitarian Affairs, Disaster Management and Social Development (since 2019). Its multi-sector collaboration also includes an occasional partnership with counterparts at the sub-national levels (across the six Northeast states), with financial, logistics and monitoring supports from multilateral agencies such as the UNDP, FAO, WFP, and the United Nations Office for the Coordination of Humanitarian Affairs (UN-OCHA) etc. In addition, NGOs (local and international) play vital roles in implementing these programmes, through (formal and informal) engagements with associations of local farmers, fishermen, herders, and tradesmen. Despite huge financial commitments, a section of the local population maintained that.

The national-level interventions particularly the PINE-NEDC and NEMA have not achieved tangible results in food sustenance and livelihood support, mitigation of environmental shocks and population's vulnerability to extreme radicalism... These are due to paucity of funds, limited commitments from donors and misappropriation of resources by government officials (Respondents P3, P6 & FGD1).

The sub-regional interventions reflect two major activities of the Lake Chad Basin Commission (LCBC) aimed at preserving Lake Chad's resources

**Table 6** Summary of food security and sustainable livelihood interventions in northeast Nigeria *Source* Authors' compilation

S/N	Category of intervention	Type of intervention	Sector	Actor	Period	Outcome	Challenges
1	National level intervention I (Nigeria)	<ul style="list-style-type: none"> <li>- Food Security Intervention</li> <li>- Agricultural Livelihood Support Programme</li> </ul>	<ul style="list-style-type: none"> <li>- Agriculture</li> </ul>	<ul style="list-style-type: none"> <li>- Federal Government of Nigeria</li> <li>- PINE/ PCNI/ NEDC</li> <li>-Subnational governments (Borno, Yobe and Adamawa states)</li> <li>- Multilateral agencies: UNDP, FAO, WFP</li> <li>-NGOs</li> </ul>	2017 to date	<ul style="list-style-type: none"> <li>- Provision of agricultural inputs.</li> <li>- Enhanced livestock production, fisheries (backyard fish farming).</li> <li>- Agricultural extension services delivery</li> <li>- Resilience, recovery, and resettlement of displaced persons</li> </ul>	<ul style="list-style-type: none"> <li>- Paucity of funds</li> <li>- Limited commitments from donors- Graft by public officials</li> <li>- Insecurity</li> </ul>
2	National level intervention II(Nigeria)	<ul style="list-style-type: none"> <li>- Small-scale Entrepreneurship Support</li> <li>- Early recovery programme</li> </ul>	<ul style="list-style-type: none"> <li>-Agriculture</li> <li>- Water Resources</li> <li>- National Emergency Management</li> <li>- Humanitarian, Disaster Management and Social Development</li> </ul>	<ul style="list-style-type: none"> <li>- Federal Government of Nigeria</li> <li>- PINE/PCNI/ NEDC</li> <li>-Subnational governments (Borno, Yobe and Adamawa states)</li> <li>- Multilateral agencies: UNDP, FAO, WFP</li> <li>-NGOs</li> </ul>	2017 to date	<ul style="list-style-type: none"> <li>- Medium-long term job creation</li> <li>- Financial support and start-ups capital to 1.8 million IDPs in 264, 688 households</li> <li>- Resilience, recovery, and resettlement of displaced persons</li> </ul>	<ul style="list-style-type: none"> <li>- Paucity of funds</li> <li>- Limited commitments from donors</li> <li>- Graft by public officials</li> <li>- Insecurity</li> </ul>
3	Sub-regional Level intervention I	<ul style="list-style-type: none"> <li>- Sustainable Development Programme of the Lake Chad Basin (PRODEBALT)</li> </ul>	<ul style="list-style-type: none"> <li>- Agriculture and rural development</li> <li>- Poverty reduction</li> <li>- Environment</li> <li>- Water resources</li> </ul>	<ul style="list-style-type: none"> <li>- Lake Chad Basin Commission (LCBC)</li> <li>-NGOs</li> </ul>	2009—2015	<ul style="list-style-type: none"> <li>- Enhancement of population's adaptation to climate change</li> <li>- Poverty reduction</li> <li>- Livelihood support</li> <li>- Rehabilitation and conservation of productive capacities of the ecosystems</li> </ul>	<ul style="list-style-type: none"> <li>- Poor funding</li> <li>- Limited political will</li> <li>- Insecurity</li> <li>- lack of manpower and technical know-how</li> </ul>
4	Sub-regional Level intervention II	<ul style="list-style-type: none"> <li>- Programme to Rehabilitate and Strengthen the Resilience of Lake Chad Basin Systems (PRESIBALT)</li> </ul>	<ul style="list-style-type: none"> <li>- Agriculture and rural development</li> <li>- Poverty reduction</li> <li>- Environment</li> <li>- Water resources</li> </ul>	<ul style="list-style-type: none"> <li>- Lake Chad Basin Commission (LCBC)</li> </ul>	2014 to date	<ul style="list-style-type: none"> <li>- Improved agricultural production</li> <li>- Enhanced resilience practices</li> <li>- Intra-regional trade in farm produce-</li> <li>- Conflicts reduction among environmental resource dependents</li> </ul>	<ul style="list-style-type: none"> <li>- Poor funding</li> <li>- Limited political will</li> <li>- Insecurity</li> <li>-lack of manpower and technical know-how</li> </ul>

Table 6 (continued)

S/N	Category of intervention	Type of intervention	Sector	Actor	Period	Outcome	Challenges
5	Systemic Level Intervention I	FAO regional food security interventions	<ul style="list-style-type: none"> <li>- Food and nutrition</li> <li>- Agriculture</li> <li>- Jobs creation</li> <li>- Disaster Risk Reduction</li> <li>- Emergency management</li> </ul>	<ul style="list-style-type: none"> <li>- FAO in collaboration with WHO, UNICEF and WFP</li> </ul>	<ul style="list-style-type: none"> <li>Three Phases 2013—2017</li> <li>2017—2019</li> <li>2019 to date</li> </ul>	<ul style="list-style-type: none"> <li>- Dietary diversification and consumption of safe and nutritious food</li> <li>- Livelihood improvement and decreased reliance on food assistance.</li> <li>- Income generation and employment for vulnerable population—women, youth and IDPs</li> <li>- Sustainable management of natural resources</li> </ul>	<ul style="list-style-type: none"> <li>- Climate change</li> <li>- Poor education among beneficiaries</li> <li>- Insecurity</li> <li>- Poor land tenure system- Lack of credit facilities</li> <li>- Inadequate local supply chain</li> </ul>
6	Systemic Level intervention II	<ul style="list-style-type: none"> <li>- WFP interventions on food &amp; nutrition, and sustainable livelihoods.</li> <li>- WFP-FADAMA livelihoodproject</li> </ul>	<ul style="list-style-type: none"> <li>- Agriculture</li> <li>- Foods, health, nutrition</li> <li>- Water Sanitation and Hygiene (WASH)</li> <li>- Disaster and emergency management</li> </ul>	<ul style="list-style-type: none"> <li>- WFP in collaboration with FAO, UNHCR and UNICEF</li> <li>- WFP in partnership with government agencies (national and states) and NGOs</li> </ul>	<ul style="list-style-type: none"> <li>2017 to date</li> </ul>	<ul style="list-style-type: none"> <li>- Short term food security</li> <li>- Improved local supply chain and increased retail food provision</li> </ul>	<ul style="list-style-type: none"> <li>- Climate change</li> <li>- Poor education among beneficiaries</li> <li>- Insecurity</li> <li>- Poor land tenure system</li> <li>- Lack of credit facilities</li> <li>- Inadequate local supply chain</li> </ul>

and improving its populations' livelihoods and their significance to North-East Nigeria. These are the *Sustainable Development Programme of the Lake Chad Basin* (PRODEBALT)—2009–2015, and the *Programme to Rehabilitate and Strengthen the Resilience of Lake Chad Basin Systems* (PRESIBALT) (2014 till date). While supporting the population's adaptation systems to climate change and poverty reduction, PRODEBALT committed 60.07 Million UA<sup>1</sup> or 41.84 Billion francs (CFA) to the rehabilitation and conservation of productive capacities of the Lake Chad Basin's ecosystems across five LCBC states—Cameroon, C.A.R., Chad, Niger, and Nigeria (LCBC, 2017). Above 60 percent of the fund was sourced from the African Development Fund (ADF), and others provided by the Islamic Development Bank, German Technical Cooperation (GTZ), German Institute of Geosciences and Natural Resources (BGR), European Union and World Bank. Moreover, PRODEBALT's specific projects on livelihood and food security in North-East Nigeria include the demarcation of 100 km stock routes, an agroforestry plantation (2,253 ha), afforestation of 723 ha community; construction of 370 ha of small-scale irrigated areas, construction of seven pastoral wells and the Maiduguri modern fish market. Other programmes include the acquisition and distribution of 240 chorkor ovens, 170 drying stage units, and 100 isotherm containers to rural dwellers mostly in Borno and Yobe states (LCBC, 2017).

Based on the LCBC's Five-Year Investment Plan—(2013–2017), PRESIBALT committed UA 71.23 million (of which UA 53.82 million was sourced from the ADF) to enhance the resilience of vulnerable populations in the Lake Chad basin (AfDB, 2014). It prioritises the development and preservation of water resources; ecological services and value chains; capacity building and programme management. As a result, the income and food security of 15.3 million inhabitants (52% women) within the Lake's impact areas was enhanced including access to basic social infrastructure (LCBC, 2017). The programme also stimulates local and regional consultation and

cooperation in (integrated) natural resources management through its support for the sustainable agricultural development projects of River Basin Development Authorities (RBDAs)—notably the Chad Basin Development Authority (CBDA) and Hadejia-Jama'are River Basin Authority. According to a respondent, “investments in landscaping projects and irrigation facilities by the LCBC and CBDA were conceived to revegetate the degrading soils, channel water to the plants and farmlands at intervals, particularly when rainfall is below average” (Respondent P7). The short-term assessment of this initiative reveals that improved agricultural production can enhance resilience practices, intra-regional trade in agricultural produce and reduces potential conflicts among environmental resource dependents in the region.

The systemic-level interventions encompass multilateral support from UN subsidiaries. According to a development agent, “the FAO's interventions on food security in the region accentuate four strategic endeavours—the United Nations Development Framework (UNDEF) policy priorities for development in Nigeria, FAO Country Programming Framework (CPF), FAO support to the PCNI; and the FAO Lake Chad Basin Regional Strategy (2017–2019)” (Respondent P8). Accordingly, FAO's 5-year country programming cycle (2013–2017) for sustainable national food and nutrition security envisions to re-position agriculture for economic growth and employment generation in the region. FAO's five priority support areas—the National Food and Nutrition Security; Agricultural Policy and Regulatory Frameworks; Agricultural Transformation Agenda (ATA) for Priority Value Chains, decent employment for youth and women; Sustainable Natural Resources Management and; Disaster Risk Reduction and Emergency Management are central to attaining sustainable livelihood and addressing malnutrition in North-east Nigeria (FAO, 2014). The CPF's collaboration among government agencies (agriculture, education, health, water, and women's affairs) and development partners (WFP, WHO and UNICEF) is a significant multisectoral approach involving major stakeholders. Its capacity-building measure on food and nutrition security has promoted gender-responsive policies and programmes, as explained below.

The FAO's food-based approaches and nutrition-sensitive agriculture enhancement in parts of

<sup>1</sup> The UA or Unit of Account is a virtual currency used by the African Development Bank (AfDB) for accounting purposes in its dealings with states. One UAC, according to AfDB records was equivalent to US\$1.4 in February 2017.

North-East Nigeria include community livelihood supports and food-based dietary diversification, particularly the cultivation and consumption of safe and nutritious food. An informant revealed that.

The FAO and WFP supported dry season farming capacities through the cultivation of rice, millet, and vegetables by populations living around water bodies, underground water, or large-scale boreholes. Similarly, people with access to farms including IDPs, already resettled to their homes, benefitted from inputs such as food, livestock, fertilisers, and seeds to cultivate sorghum, groundnuts, and vegetables (okra, roselle and amaranthus/pigweed). These have strengthened these populations and communities' resilience, at least in the short-term (Respondent P8).

Similarly, "supports for IDPs' micro gardening activities to grow vegetables for consumption at their settlements' backyard or camps have targeted highly nourishing crops and enhanced nutritional needs" (Respondents P5 & P9). FAO's provision of cash support, productive assets and technical training, including its safe access to fuel and energy (SAFE) initiative, ecosystem approach to fisheries and value-chains have generated income and employment for vulnerable populations, mostly women, youth and IDPs (FAO, 2017). Beyond enhancing the livelihoods of its beneficiaries, these also reduce their dependence on food assistance.

Moreover, since 2016, the WFP interventions have focused on food and nutrition assistance, preventive nutrition, sustainable livelihood support and supply chain across the BYA states. The supports from WFP provided directly and in some cases in partnership with NGOs, IGOs—FAO, UNHCR and UNICEF, and government agencies (national and states), is typical of the desired multisectoral collaboration in the region. The food and nutrition assistance benefits to 1.2 million people (representing 95 percent of the plan) are 68 percent—in-kind distributions, and 32 percent cash-based transfers, mostly to IDPs in camps, host communities, and poor households in the BYA states (WFP, 2018). This impacts an additional 355,000 people (98 percent of the plan) supported with cash or vouchers in communities to run functioning markets. The preventive nutrition assistance in-kind or cash transfers provided to vulnerable

children and women have boosted nutrition among 158,000 children (6–23 months) and 98,000 pregnant and lactating women (PLW) in the region (WFP, 2018).

Special nutritious foods, health, nutrition and Water Sanitation and Hygiene (WASH) provisions, including periodic screening for malnutrition, also complement the WFP's feeding supports in the region. The WFP-FADAMA livelihood project, developed in 2017 by WFP and partners, enhances sustainable food and agricultural production. Its cash-based transfers to support livelihoods have been active since 2018 (WFP, 2018). As confirmed, "such interventions, particularly its e-vouchers, fixed agents' shops, and mobile agents' cash out to beneficiaries, have improved local supply chain and increased retail food provision (Respondent P3 & FGD 1). Against the backdrop of previous policy shortcomings and programme failures, these milestones can be evaluated in terms of their long-term impact on the population's capabilities and livelihood assets (Devereaux & Edwards, 2004; Taiwo & Omifolaji, 2015), given the complexity of the emergency crisis.

#### Livelihoods outcomes and sustainability of regional resource base

Livelihood Outcomes, according to the SLA, assesses the impacts of interventions on the population's income and wellbeing, and how improved livelihood reduces vulnerability (to food insecurity) or strengthens the region's natural resource base and sustainability (Altarelli & Carloni, 2000; Chambers & Conway, 1992). Amid challenges of policy summersaults and abysmal implementation of agricultural policies, worsened by environmental change and violent conflicts, Nigeria's food production rate (presently 3.7 percent) has declined below its food demand growth rate of 6.5 percent (IFPRI, 2016; Oyaniran, 2020). A net food importer with a huge agricultural trade deficit, Nigeria's food imports exceeds its exports by ₦689.7 billion (Naira)<sup>2</sup> in 2019 compared to ₦549.3 billion in

<sup>2</sup> *Naira* is the official currency of the Federal Republic of Nigeria. One Naira is equivalent of 100 *Kobo (Cent)*. In terms of convertibility, one (1) United States Dollar equals 360 Naira (2019 conversion rate).

2018 (Oyaniran, 2020: 6). The declining food sufficiency and rising food imports, among others, exponentially increased poverty over the past 25 years in Nigeria. Importantly, four major adaptation practices are peculiar to livelihoods in the North-East region. First is rain-fed agriculture, involving crop cultivation e.g., sorghum, rice, and cowpea during the rainy season (May–September), a practice vulnerable to erratic rainfall. Second is flood recession farming, mostly practised around October–January period when flooding recedes, and soils dry out. Crops such as prick-out sorghum and melon are cultivated, especially where rain-fed farming is inhibited. The other two, irrigation farming and catch crops system, are often practised to boost agricultural productivity, mostly in moisture deficient environments in Nigeria (Jamala et al., 2011; Oriola, 2008, 2012). Similarly, sedentary farmers often change their cropping sequence to grow varieties of cereal, to enable them in the short term to offer fodder to animals of passing nomads, both in their southward movement and return journey to the north (Badewa, 2020). This further reduces sedentary farmers—nomadic herders’ conflicts and enhances environmental sustainability.

Reflecting on the diverse interventions in North-East Nigeria and outcomes, findings reveal that multisectoral interventions superficially enhance regional resilience and ecosystem capacities in sustainable agriculture. Notwithstanding the progress in genetically diverse seeds, cultivated plants, and domesticated breeders (livestock), there is a lack of unified coordination and adequate monitoring by the various sectors and actors involved. This common aspect with past initiatives on agricultural development and investment in Nigeria’s rural areas (Otekinrin, 2022; Taiwo & Omifolaji, 2015), further undermines the goals of addressing malnutrition, unsustainable livelihoods, and vulnerability in the country. SDG-2 targets may not be attained in the region as extreme hunger looms, particularly among poor and vulnerable IDPs, destitute and infants. This contrasts with the views that national policies and interventions on agricultural production have promoted safe, nutritious, and adequate food for Nigeria’s teeming population (Ojo & Adebayo, 2012; Taiwo & Omifolaji, 2015). The manifestations of malnutrition, including stunting and mortality of under-five children increase as poor

diets among adolescent girls, aged persons and pregnant and lactating women, worsen daily across the region. Respondents maintained that,

Despite numerous interventions, the incomes of most small-scale food producers - households, women, and vulnerable youths, have depleted amid unequal access to lands, inputs, and other productive resources (credit facilities, requisite knowledge, market, and value-added provisions) ... Likewise, security operations are not often coordinated in conformity with the population’s resilience factors. These operations have not been sensitive to the four major regional adaptation strategies and disaster and risk management (Respondents P8, P9 & FGD3).

The short-term interventions in the region support the maintenance of food assistance to the vulnerable population purposely to secure and rebuild depleted livelihoods and assets in the ravaged communities. The interventions toward increasing and diversifying food production, in this regard have minimal impact on regional resilience due to lack of consistency, inadequate funding and structural challenges, including corruption among public officials. The long-term interventions support a holistic approach to peace and stability as a crucial step toward sustainable livelihood and food security. Unfortunately, escalating conflicts, forced migration by millions of starved populations across parts of the Lake Chad basin region and criminality by armed groups or bandits have further impaired the region’s sustainable livelihoods.

Therefore, three preconditions are central to sustainable livelihoods in the short term. First, efforts to combat poverty should connect with building peaceful and sustainable communities, and counterterrorism operations (locally and regionally) pursued with renewed purpose. Secondly, food aid is unsustainable in the long run, hence development aid and training of the local communities in sustainable agriculture be prioritised, purposely to enhance smallholder farmers’ productivity and resilience. The views of local farmers uphold this argument that “farming as a business, instead of subsistence farming, needs to be enhanced through sustainable policies, institutions, and investments, with adequate reforms of customary tenure systems to consolidate farm plots for viable commercial agricultural practices” (FGD1). The third precondition is strengthening agricultural value



chains and agro-processing capacities toward regional sustainable livelihoods. Some NGOs and multilateral institutions maintained that “interventions to boost local fertiliser production, essential inputs including mechanisation and transport infrastructure should be expedited” (Respondents P1, P8 & P9). These concerns amplify the imperative of close cooperation between small farms and allied economic sectors, backed by private-sector development policies and economic reforms as the fulcrum of stability and development in North-east Nigeria (Okoli & Iortyer, 2014; Omenma et al., 2020; Oyewole, 2013).

Furthermore, sustaining the above requires long-term capacities to strengthen farming communities’ resilience against climate change. Major stakeholders in the region believed that “investments in weather forecast systems, efficient irrigation technology, drought-resistant crops, and insurance facilities will boost agricultural productivity amid growing environmental change” (Respondents P3, P7 & FGD1). Others maintained that “enhanced political will and funding are crucial to natural resources management, disaster risk reduction and regional capacities to recharge Lake Chad toward improving its ecosystem and populations’ livelihoods” (Respondents P7 & P14). The study argues for the integration of the Cadre Harmonisé’s (CH) analytical framework into the food and nutrition process in Northeast Nigeria toward sustainable livelihood and strengthening the region’s resource base. It is also pertinent for stakeholders in the region to take ownership and incorporate the CH into their policy apparatus. The priorities should include enhanced data collection mechanisms, financial support to strengthen the CH as a baseline reference for boosting regional food reserves, development research and mobilising technical and financial partners (TFPs). Altogether, periodic food security assessments, if properly entrenched, will enhance multisectoral capacities, policies and research in sustainable livelihood and food systems. This will enhance capacities to achieve SDG-2 and promote “sustainable solutions to hunger and food insecurity” in the region and beyond.

In comparison with findings in the literature, the study accentuates that increased poverty and deprivation heighten human insecurity and socio-economic crises in Northeast Nigeria, while conflicts and climate change are multipliers of food and nutrition insecurity (Akinola, 2015; Okpara et al., 2015).

It refutes the emphasis on a military-led military counterterrorism approach and disaster risk management that empowers the privileged public officials (D’Amato, 2018; Sambo et al., 2017; Walther & Leuprecht, 2015) in addressing complex emergencies. Going forward, multi-stakeholders solutions to diversify agriculture and livelihoods support to enhance rural population’s resilience and sustainable livelihoods (Ojo & Adebayo, 2012; Otekunrin, 2022; Taiwo & Omifolaji, 2015) is validated in the study’s findings. Such submission is reinforced by the demand for social justice, political inclusion and economic reforms as key drivers of development and rebuilding processes in Northeast Nigeria (Okoli & Iortyer, 2014; Omenma et al., 2020; Oyewole, 2013).

## Conclusion

Multi-sectoral interventions on food security in North-East Nigeria are premised on stakeholders’ responses to the immediate needs of vulnerable populations as a roadmap to implementing sustainable livelihoods. The objective is to alleviate the population’s sufferings and enhance regional resilience (i.e., adaptive practices or capacities to endure and recover from shocks or complex emergencies – climate change and protracted Boko Haram conflicts). The Sustainable Livelihoods Approach underpinned the study’s illustration of the multisectoral interventions and the lessons therefrom. Taking a cue from the Cadre Harmonisé (Framework for the Identification and Analysis of Areas at Risk and Populations affected by Food and Nutrition Insecurity in the Sahel and West Africa), the severity of the population’s vulnerability to food insecurity is explored, along the circumstances of the rural population’s livelihood and lived experiences. Consequently, the SLA expounds on critical actors’ contributions and the processes of multisectoral interventions, in the assessment of livelihoods outcomes, and possibilities for enhancing regional resource base and its sustainable utilisation.

Notable interventions from stakeholders (security and development) across sectors (agriculture and water resources, health, finance, education, disaster management and security) are implemented in parts of Northeast Nigeria. This effort has been reinforced with support from IGOs, development and regional institutions including some UN specialised

institutions—FAO, WFP, UNDP, UNFPA; the LCBC; the AfDB; World Bank; NGOs and donors. Although these interventions are implemented in a less collaborative and disjointed manner, they remain critical to the region's food security and stabilisation processes. Importantly, the interventions are also modular and often conflict-sensitive due to the region's fragility, hence its limited outcomes. As alternative pathways to food security, their impacts on regional resilience and sustainable livelihoods can be assessed in both the short and long terms. The short-term interventions incorporate food assistance to vulnerable populations with a focus on increasing and diversifying food production and sustainable livelihood. The long-term interventions' holistic approach to peace and stability is critical to boosting farming communities' resilience against climate change and strengthening the region's resource base. If harmonised, multisectoral interventions will positively strengthen adaptation capacities and address hunger, poverty, and unsustainable livelihoods, in the region. This would require adequate funding, improved political will, and monitoring to enhance natural resource management, disaster risk reduction and a human-centred security-development approach across the region.

## Data and material

(data transparency): Not Applicable (Semi-structured Interviews and Focus Group questions provided in the appendix).

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**Code availability** (software application or custom code): ATLAS.ti (version 8.0.43).

## Declarations

**Conflict of interest** The authors state that there is no conflict of interest.

**Consent to participate** (include appropriate statements): The Consent to participate was sought and granted by all participants.

**Consent for publication** (include appropriate statements): The authors consent to the publication of this manuscript.

**Ethical approval** (include appropriate approvals or waivers): Ethical Approval (reference number: HS17/10/33) issued by the University of the Western Cape, South Africa (07/12/2017).

## Appendix

### Interviews and focus group questions

The following questions were asked in the interviews and focus group discussions during the fieldwork. These have been distributed into three themes according to the Sustainable Livelihoods Approach (SLA).

- I. Vulnerability contexts: Environmental change and Boko Haram crises and food insecurity in northeast Nigeria
  1. What are the challenges of environmental change to livelihoods and food insecurity in North-East Nigeria?
  2. What are the effects of the Boko Haram crisis on livelihoods in Northeast Nigeria?
  3. How can the region's experience in terms of the four dimensions of food security be assessed?
    - a. availability of food?
    - b. Access to food
    - c. Utilisation of food and dietary requirements?
    - d. stability of food in the region

4. How have the complex emergencies affected the exploitation and sustainability of the region's vital resources?
  5. How has vulnerability to environmental stress and the Boko Haram crises affected resilience practices in the region?
- II. Strategies and multisectoral interventions on food security in northeast Nigeria.
1. How are the multi-stakeholders interventions implemented in northeast Nigeria?
  2. What are the policies and programmes on food security and sustainable livelihood in the region?
  3. How are the beneficiaries selected and supplied with relief materials?
  4. How is the security interventions affected the population's livelihoods?
  5. How can you assess the synergies or collaborations among the diverse agencies and operators in the region?
  6. What are the challenges to the multisectoral interventions in the region?
- III. Livelihood Outcomes - efficacies of the strategies and impacts on the population's income and wellbeing
1. How effective are the diverse interventions and strategies to address food insecurity and the loss of livelihoods in the region's affected population?
  2. How have these impacted the population's income and wellbeing?
  3. What are the effects of the military interventions on the livelihoods and wellbeing of the population in North-East Nigeria?
  4. What works among the diverse interventions in the region?
  5. How best can food security and the sustainability of northeast Nigeria's natural resource base be enhanced?

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