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Hunger in the Oilfields: The Human Cost of Resource Extraction and Pathways for Sustainable Food Systems in Oil-Producing Communities of Akwa Ibom State, Nigeria

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Abstract

The paradox of hunger amid abundant natural-resource wealth remains one of the most troubling development challenges confronting oil-producing communities in the Niger Delta of Nigeria. Although the region contributes substantially to Nigeria's petroleum economy, many host communities continue to experience food insecurity, declining agricultural productivity, environmental degradation, unemployment, inadequate infrastructure and deteriorating livelihoods. This study examines the relationship between oil exploitation and household food insecurity in four selected oil-producing communities of Akwa Ibom State drawn from the Eastern Obolo, Eket, Esit Eket, Ibeno, Mbo and Ikot Abasi Local Government Areas — with particular attention to how environmental degradation, livelihood disruption, poverty and limited access to basic services combine to produce what this study conceptualises as "extractive hunger." A cross-sectional survey design was adopted, and 384 respondents were selected through a multistage sampling procedure, with 96 respondents (25.0%) drawn from each of the four communities. Data were collected using a structured questionnaire, complemented by field observation, semi-structured interviews and key-informant discussions. Descriptive statistics, particularly frequencies and percentages, were used to analyse respondents' socioeconomic characteristics and patterns of food insecurity, while the chi-square test of association ($\alpha = 0.05$) was applied to selected categorical variables. The findings indicate that oil-producing communities can experience severe food insecurity despite residing within areas of considerable petroleum wealth: 45.3% of households ate only two meals per day, 74.5% had reduced food consumption for lack of money, and 70.6% rated the effect of oil pollution on their livelihood as severe or very severe. Major factors associated with hunger include loss of farmland, declining fish catches, environmental pollution, unemployment, high food prices, inadequate household income and weak livelihood diversification. Situating these local findings against comparative evidence from Angola, Ecuador, Iraq, Kazakhstan and Norway, the study argues that petroleum wealth does not automatically translate into household food security; rather, the outcome is mediated by environmental governance, compensation systems and the extent of

economic diversification. The study recommends stronger environmental regulation, restoration of degraded agricultural and aquatic ecosystems, livelihood diversification, targeted food-security interventions, improved community participation, and more transparent and accountable management of oil revenues and development funds.

Keywords: Extractive Hunger; Food Security; Oil-Producing Communities; Akwa Ibom State; Niger Delta; Sustainable Food Systems; Resource Curse.

1.0 Introduction

The paradox of natural-resource abundance and persistent human deprivation remains one of the most enduring challenges of development in resource-rich regions of the world. Globally, petroleum production is geographically widespread: the United States Energy Information Administration (EIA) reports that 98 countries produced approximately 80.75 million barrels of crude oil per day in 2022, with the top five producers accounting for about 52% of the world total (U.S. Energy Information Administration [EIA], 2023). This wide geographical spread demonstrates that the socioeconomic and environmental implications of petroleum extraction are not confined to a single region but recur across very different institutional and ecological settings. Petroleum extraction can generate substantial public revenues, foreign exchange, employment and infrastructure investment, yet these aggregate economic benefits do not necessarily translate into improved livelihoods or food security for communities located at the point of extraction. Instead, where environmental governance is weak and local benefit-sharing mechanisms are ineffective, resource extraction can undermine the ecological and socioeconomic foundations upon which rural households depend. This contradiction is especially pronounced in oil-producing regions where agriculture, fishing, forest resources and other ecosystem-based livelihoods constitute the primary means of household subsistence. The resulting condition is conceptualised in this study as “extractive hunger” — a situation in which communities inhabit landscapes of considerable petroleum wealth while simultaneously experiencing declining productive capacity, livelihood insecurity and inadequate access to safe, sufficient and nutritious food.

Food insecurity is already a major development concern in Nigeria. The Food and Agriculture Organization (FAO), through Nigeria's Cadre Harmonisé framework, reported that approximately 25.1 million Nigerians were experiencing acute food insecurity between October and December 2024, a figure projected to rise to 33.1 million during the June–August 2025 lean season — an increase of about seven million people over the preceding year, driven by economic hardship, food-price inflation, flooding and insecurity in the north-east (Food and Agriculture Organization [FAO], 2024; World Food Programme [WFP], 2024). Although food insecurity is a national challenge, its consequences are particularly important in rural and coastal communities whose food systems are strongly dependent on land, rivers, wetlands, forests and nearshore marine ecosystems. In such settings, environmental degradation can simultaneously reduce food availability, household income and the physical capacity to produce food, thereby creating a multidimensional pathway to hunger.

The Niger Delta provides one of the clearest examples of this paradox. Nigeria's petroleum industry has been concentrated in the Niger Delta since the late 1950s, transforming the region into a strategically important source of national revenue. However, decades of exploration, production,

transportation and associated industrial activities have also generated extensive ecological pressures. The landmark United Nations Environment Programme (UNEP) assessment of Ogoniland examined more than 200 sites, analysed over 4,000 environmental samples and documented widespread contamination of soils, groundwater, surface water and mangrove ecosystems, including drinking-water wells in at least ten communities contaminated with hydrocarbons at levels posing a serious threat to human health (UNEP, 2011). UNEP further reported that oil pollution had damaged mangrove vegetation, destroyed fish habitats and contaminated agricultural environments. These environmental consequences are not merely ecological problems; they directly affect the ability of households to produce, procure and consume food.

The relationship between petroleum extraction and food insecurity in the Niger Delta has received increasing scholarly attention. Babatunde (2020) demonstrated that oil-related pollution of ancestral lands and waterways has severely disrupted farming and fishing, thereby undermining household food security, and emphasised that food security in the Niger Delta cannot be understood solely in terms of the physical availability of food; access, affordability, safety, cultural acceptability and the ability of households to sustain traditional livelihoods are equally important. Building on this, Babatunde (2023), drawing on key-informant interviews and focus-group discussions in oil communities across Bayelsa, Delta and Rivers States, showed that oil exploitation has damaged the environmental foundations of livelihoods and alienated local populations from ancestral lands, with significant implications for access to sufficient, safe and culturally acceptable food. Complementary evidence from Ondo State, where oil mining coexists with rural farming communities, similarly found that oil-related environmental disturbance was associated with reduced agricultural productivity and weakened food security relative to non-oil-bearing comparison communities (Asani & Akinyode, 2022).

This relationship is particularly significant because agriculture and fishing are not simply economic activities in many Niger Delta communities; they are components of local food systems, cultural identity and household resilience. When productive land becomes contaminated, farmers may experience reduced yields or abandon affected plots. Similarly, when rivers, creeks, estuaries and coastal waters are polluted, fishing households can experience declining catches, increased production costs and reduced income. Evidence from the Niger Delta indicates that contamination can extend into food chains: ecological-risk assessments of soils and vegetation in oil-producing areas of the Niger Delta have documented heavy-metal concentrations exceeding permissible limits (Okoye, Ezejiofor, Nwaogazie, Frazzoli, & Orisakwe, 2022), while site-specific studies of agro-soils in Ikot Abasi — one of the Local Government Areas covered by the present study have similarly reported elevated heavy-metal loads associated with industrial and petroleum-related activity (Etesin & Ogbonna, 2023). Such findings raise legitimate concerns about potential exposure through food consumption, even where they do not, by themselves, establish population-level health outcomes.

The problem therefore involves more than the conventional environmental narrative of “oil spills destroying farms.” Petroleum extraction can alter the entire structure of local food systems. Environmental contamination may reduce agricultural productivity; loss of livelihood income may reduce households' ability to purchase food; declining fish stocks may increase the price of protein;

and prolonged dependence on extractive-sector revenues may weaken incentives to invest in traditional productive activities. In this sense, the food-security consequences of extraction are both ecological and institutional, involving the interaction between environmental degradation, economic dependency, governance, compensation, livelihood transitions and household behaviour.

A useful comparative perspective can be obtained from the northern Ecuadorian Amazon. Using longitudinal data collected over an 11-year period from 484 Indigenous households across 32 communities with varying exposure to oil extraction, Bozigar, Gray and Bilsborrow (2016) found that oil activity had mixed and multidimensional effects on livelihoods, increasing participation in off-farm employment and ownership of consumer assets while simultaneously contributing to changes in traditional activities, including agriculture, hunting and fishing. Importantly, the evidence did not suggest that every effect of oil development was uniformly negative; rather, extraction produced complex combinations of economic opportunity and livelihood disruption that only partly matched predictions from the classical "Dutch disease" literature. This case is instructive for the Nigerian situation because it demonstrates that the relationship between extraction and food security should not be reduced to a simple pollution narrative: resource extraction can restructure local economies and aspirations, changing the relative attractiveness of farming, fishing, wage employment and other livelihood strategies.

A related but more cautionary lesson emerges from the Gulf of Mexico following the 2010 Deepwater Horizon disaster, in which an estimated 4.9 million barrels of crude oil were released into the northern Gulf. Reviews of the ecological aftermath found that some components of Gulf food webs and fisheries experienced measurable disruption in the immediate aftermath, while longer-term assessments found less evidence of large-scale, lasting disruption to key fish, shrimp and crab populations than had initially been feared (Fisher, Montagna, & Sutton, 2016; National Oceanic and Atmospheric Administration [NOAA] Fisheries, 2018). This more nuanced picture is itself instructive: it illustrates that the food-system consequences of a single acute spill can differ substantially from the consequences of the chronic, cumulative pollution that characterises decades of onshore and near-shore oil production in the Niger Delta, and that context, exposure pathway and duration matter as much as the presence of oil itself.

Within Nigeria, however, the problem assumes a distinctive institutional dimension. Petroleum-producing communities may receive compensation, development projects, employment opportunities and other benefits associated with extraction, yet these interventions do not necessarily restore the productive ecosystems or livelihoods that communities have lost. Where compensation is delayed, inadequate, poorly targeted or disconnected from long-term livelihood reconstruction, households may remain vulnerable even when financial resources enter the community. The challenge is therefore not simply whether oil wealth is generated, but how the benefits and costs of extraction are distributed across space, households and generations.

This institutional dimension is particularly relevant to Akwa Ibom State, where petroleum production occurs alongside extensive agricultural, wetland, riverine and coastal livelihood systems. The selected Local Government Areas of Eastern Obolo, Eket, Esit Eket, Ibeno, Mbo and Ikot Abasi occupy environments where farming, fishing, trading and other natural-resource-dependent activities coexist with petroleum infrastructure and related industrial activities. Independent water-quality investigations of the Qua Iboe River system — which drains through Ibeno, Eket and Esit

Eket — have repeatedly reported trace-metal and total-petroleum-hydrocarbon concentrations exceeding regulatory and WHO guideline limits (Moses & Etuk, 2015; Inyang, Aliyu, & Oyewale, 2019; Jonah & Akpan, 2021), underscoring the environmental vulnerability of areas that are simultaneously important to human settlement and to food production. Complementary local research by the corresponding author and colleagues — reviewed in Section 2.4 — has independently documented the under-exploitation of coastal "blue" resources and associated environmental and livelihood pressures along the Akwa Ibom Atlantic coastline (Jimmy et al., 2025a), reinforcing the argument that this coastline is simultaneously a site of considerable natural-resource wealth and of significant, under-addressed livelihood vulnerability.

The significance of Akwa Ibom is therefore not adequately captured by measuring petroleum production or government revenue alone. The critical question is whether oil-producing communities have experienced a corresponding improvement in their capacity to produce and access food. A community may possess substantial petroleum resources while its farmers face declining soil productivity, fisherfolk confront reduced catches, young people move away from agriculture, and households increasingly depend on purchased food. Such a situation represents a profound development contradiction: the same territory that generates valuable natural-resource revenues may simultaneously lose the ecological capital necessary for local food production.

A further dimension requiring closer attention is the changing behavioural and livelihood orientation of residents in oil-producing communities. Prolonged exposure to petroleum wealth can generate expectations that the state, oil companies or development agencies should provide financial benefits, compensation, employment or social infrastructure. Where these expectations become disconnected from productive livelihood investment, agriculture may increasingly be perceived as less attractive than petroleum-related benefits, producing a gradual transition from production-oriented livelihoods toward dependency on externally generated income. This should not be interpreted as individual unwillingness to farm; rather, it may represent a rational household response to an economic environment in which environmental degradation has reduced the returns to farming and fishing while petroleum wealth has simultaneously altered perceptions of opportunity, entitlement and economic status.

The Niger Delta therefore provides an important setting for investigating the relationship between resource extraction and human welfare. Understanding hunger in oil-producing communities requires moving beyond national petroleum revenue statistics and examining the everyday livelihood experiences of households living close to extraction sites. This study addresses the apparent contradiction between oil wealth and household hunger by examining the socioeconomic and environmental factors that shape food insecurity in selected oil-producing communities of Akwa Ibom State.

1.1 Objectives of the Study

This study seeks to:

1. examine the socioeconomic characteristics of households in the selected oil-producing communities;
2. assess the major sources of household livelihood in the study area;

3. determine the prevalence and manifestations of household food insecurity;
4. examine the effects of oil-related environmental degradation on farming and fishing livelihoods;
5. identify the major factors contributing to hunger and food insecurity among households;
6. examine household coping strategies during periods of food shortage; and
7. propose sustainable measures for improving food security and livelihood resilience in oil-producing communities.

2.0 Literature Review

2.1 Oil Extraction, Resource Wealth and the Food-Security Paradox

The relationship between petroleum extraction and food security is characterised by a fundamental development paradox: natural-resource wealth can generate substantial fiscal revenues and employment while simultaneously weakening the ecological, economic and institutional foundations of local food systems (Jimmy et al, 2025). The conventional resource-curse literature has largely examined this paradox through macroeconomic indicators such as economic diversification, public expenditure, corruption, inequality and institutional quality. However, these dimensions do not fully capture the consequences of extraction for households whose livelihoods depend directly on land, water, forests and fisheries. At the community level, the consequences of petroleum development may be expressed more immediately through declining agricultural productivity, loss of fishing grounds, environmental contamination, livelihood displacement and increasing dependence on purchased food.

Food security is consequently better understood as a multidimensional outcome involving the availability, accessibility, utilisation and stability of food. This distinction is particularly important in oil-producing regions because petroleum extraction can affect both the supply side and the access side of food security. On the supply side, contamination and land-use changes can reduce agricultural and fisheries production (Abraham et al, 2022). On the access side, livelihood disruption can reduce household income and purchasing power, forcing households to depend increasingly on markets (Jimmy et al, 2025). Babatunde (2023) demonstrates that oil exploitation in Nigeria's Niger Delta threatens food security by damaging the natural environment upon which local communities depend for their livelihoods, and emphasises that food insecurity in oil-producing communities cannot be separated from environmental and livelihood sustainability because destruction of land and water resources directly affects people's ability to obtain sufficient, safe and culturally acceptable food. These considerations are central to the phenomenon this study conceptualises as “extractive hunger.”

2.2 The Niger Delta: Environmental Degradation and the Erosion of Local Food Systems

The Niger Delta represents one of the most extensively studied examples of the interaction between petroleum extraction, environmental degradation and livelihood insecurity. Since commercial petroleum production began in the late 1950s, oil infrastructure has expanded across an environmentally sensitive landscape characterised by mangrove forests, wetlands, rivers, creeks, agricultural land and coastal ecosystems that also constitute the productive foundation of many rural livelihoods.

The UNEP (2011) assessment of Ogoniland provides compelling evidence of the ecological consequences of prolonged oil operations. Over a fourteen-month investigation spanning more than 200 locations, 122 kilometres of pipeline right-of-way and over 4,000 environmental samples — including water from 142 purpose-drilled groundwater monitoring wells — the assessment found extensive contamination of land, groundwater, surface water and mangrove ecosystems, in some cases with hydrocarbon concentrations in groundwater far exceeding safety thresholds. The significance of these findings for food security is profound: agricultural production depends on functioning soils and adequate water, while fishing depends on healthy aquatic ecosystems. Where petroleum contamination reduces soil quality, damages vegetation or alters aquatic habitats, households can lose both food-production capacity and income-generating opportunities.

Babatunde (2020, 2023) extends this environmental argument into the food-security domain. Her research in oil-producing communities in Bayelsa, Delta and Rivers States demonstrates that environmental degradation associated with petroleum exploitation has alienated people from ancestral lands and eroded traditional livelihood systems, with consequences that extend beyond reduced income to affect access to sufficient, safe and culturally acceptable food. Importantly, this evidence suggests that the food-security consequences of oil extraction are not necessarily instantaneous; they accumulate through a gradual process of ecological degradation and livelihood erosion. A farmer may initially experience reduced yields, subsequently cultivate less land, then abandon farming altogether and become dependent on purchased food; a fisher may experience declining catches, increasing fishing costs and eventual exit from the sector. The result is a transition from food production to food dependence.

Complementary comparative evidence from Ondo State reinforces this pattern at the community level. Asani and Akinyode (2022) explicitly investigated the relationship between oil mining, livelihood conditions and sustainable food security in the Niger Delta rural sub-region of Ondo State, comparing oil-bearing and non-oil-bearing communities using combined quantitative and qualitative approaches. Their study identified agricultural productivity as a fundamental component of food security and found that oil-bearing communities experienced comparatively greater disruption to farming and food access — evidence that the relationship between extraction and food security can be investigated comparatively at the community level, rather than assumed to be uniform across an entire oil-producing region.

2.3 Contamination Pathways into Local Food Chains

Beyond visible spills and degraded farmland, a growing body of Nigerian ecotoxicological research points to a subtler but no less important pathway: the accumulation of contaminants within soils, crops and aquatic organisms that ultimately enter the human food chain. An ecological-risk assessment of soils and vegetation across oil-producing areas of the Niger Delta found heavy-metal concentrations, including cadmium, lead and nickel, at levels that raised the calculated pollution-load and geo-accumulation indices for several sampled locations (Okoye et al., 2022). Within Akwa Ibom State specifically, an assessment of agro-soils in Ikot Abasi — one of the six Local Government Areas covered by the present study — similarly reported heavy-metal concentrations of concern in soils used for food-crop cultivation (Etesin & Ogbonna, 2023). Independent water-quality studies of the Qua Iboe River system, which drains through Ibeno, Eket and Esit Eket, have reported trace-metal and total-petroleum-hydrocarbon concentrations exceeding Nigerian and WHO

guideline values at several sampling stations (Moses & Etuk, 2015; Inyang et al., 2019; Jonah & Akpan, 2021). Taken together, this body of evidence supports a cautious but important conclusion: in coastal Akwa Ibom, as elsewhere in the Niger Delta, oil-related contamination is not confined to the visible landscape of spills and dead vegetation but may also compromise the safety of locally produced food and water — a dimension of "extractive hunger" that goes beyond simple food quantity to encompass food safety and utilisation.

In a study of the Atlantic coastline of Akwa Ibom State, Jimmy et al. (2025a) documented the systematic under-exploitation of "blue" (marine and coastal) resources and identified environmental degradation, weak infrastructure and limited livelihood diversification as key impediments to sustainable coastal development, drawing on structured household surveys and focus-group discussions with community leaders, women's associations and youth groups across ten coastal communities. This work established, ahead of the present study, that coastal Akwa Ibom communities combine considerable natural-resource endowments with persistent livelihood vulnerability — the same paradox that motivates the present investigation of household hunger.

In a related study examining the wider maritime domain, Jimmy, Imikan, Udofia, Maduafor, Igomax and Osogi (2025b) analysed the relationship between maritime piracy, resource conflict and the future of coastal economies in the Niger Delta, arguing that insecurity in coastal and offshore waters compounds the economic pressure already placed on fishing-dependent households by environmental degradation, and that resource-conflict dynamics must be considered alongside pollution when assessing the livelihood security of coastal communities. Jimmy and Osogi (2025) further examined how environmental degradation and a changing climate regime are affecting socio-economic development in neighbouring Cross River State, highlighting the reinforcing relationship between climate stress, environmental mismanagement and the erosion of livelihoods in the wider south-south coastal corridor — a regional pattern of which oil-related degradation in Akwa Ibom forms one important part.

Read together, these studies indicate that the corresponding author's research programme has consistently identified a recurring structural pattern across Akwa Ibom's coastal and riverine communities: considerable natural-resource wealth (petroleum, fisheries, mangroves and blue-economy potential) coexisting with weak resource governance, environmental degradation and constrained livelihood diversification. The present study extends this programme by shifting the analytical focus from resource under-exploitation and coastal security in general terms to the specific, measurable consequence of household hunger, thereby providing a food-security lens on a set of environmental and livelihood pressures that this research programme has already begun to document.

2.5 Angola: Petroleum Wealth, Food Imports and Agricultural Underdevelopment

Angola presents one of the clearest examples of the distinction between national resource wealth and domestic food-production capacity. Despite possessing extensive agricultural potential — more than 58 million hectares of arable land and favourable agro-climatic conditions, Angola has historically depended heavily on oil revenues and food imports, spending approximately US$3 billion annually on food imports as recently as 2022 (World Bank, 2024a, 2026a). The World Bank reports that Angola's agricultural sector was severely disrupted by decades of civil conflict, leaving

low agricultural productivity and substantial reliance on imported food financed partly by petroleum revenues; when oil prices fell sharply between 2014 and 2016, the resulting fiscal crisis exposed the vulnerability of this model and strengthened pressure to rebuild domestic agricultural production.

Importantly, Angola also demonstrates that this trajectory is reversible. Between 2016 and 2022, the Angola Smallholder Agriculture Development and Commercialization Project reached approximately 179,000 smallholder farmers and their families, of whom about 49% were women, strengthening their capacity to increase agricultural productivity and the share of produce sold (World Bank, 2024a). Building on this, Angola and the World Bank launched the AgriConnect Compact in June 2026, an initiative that aims by 2030 to create up to 700,000 jobs, generate up to US$2.2 billion in annual added value, and mobilise up to US$1.45 billion in public and private agricultural finance, alongside a separate US$211.4 million African Development Bank value-chain project targeting 240,000 households in Angola's eastern provinces (World Bank, 2026a; African Sustainability Matters, 2026). The Angolan experience therefore offers a significant policy lesson for Akwa Ibom: resource-rich communities can rebuild food systems when investment is deliberately directed toward agricultural productivity, irrigation, markets, extension services and rural livelihoods, but this requires sustained institutional commitment over more than a single administration.

2.6 South America: Oil Extraction and Indigenous Food Systems in the Ecuadorian Amazon

The Ecuadorian Amazon provides an especially valuable comparative case because petroleum extraction overlaps with Indigenous territories where food systems traditionally depend on agriculture, fishing, hunting and forest resources. Bozigar, Gray and Bilsborrow (2016) examined a unique longitudinal dataset of 484 Indigenous households across 32 communities collected over an 11-year period and found mixed and multidimensional effects of oil exposure on livelihood outcomes: exposure to oil activities increased participation in off-farm employment and ownership of consumer assets while contributing to changes in traditional livelihood activities, including agriculture, hunting and fishing.

This finding is significant for the present research because it demonstrates that the social consequences of extraction are not adequately captured by measuring environmental damage alone. Petroleum development can simultaneously generate new income opportunities and weaken traditional food-production systems; households may become better integrated into cash economies while becoming less self-sufficient in food production. This produces an important conceptual distinction between income-based welfare and food-system resilience: a household may receive petroleum-related income and acquire consumer goods while becoming more dependent on purchased food, so that increasing monetary income does not necessarily mean that local food security has improved. The Ecuadorian case therefore provides strong international support for examining the behavioural and socioeconomic dimensions of petroleum extraction in Akwa Ibom, including changing attitudes toward farming, youth participation in agriculture and dependence on petroleum-related economic opportunities.

2.7 The Wider Amazonian Food System: Fisheries, Contamination and Access to Protein

The wider Amazonian experience also demonstrates the importance of aquatic resources to food security. In Amazonian communities, fish are an important source of animal protein, household

income and cultural identity, and declining fish stocks have been associated with multiple pressures, including river contamination, habitat alteration, ecological-flow changes, extractive activities and unsustainable fishing practices (Bozigar et al., 2016). This evidence has direct relevance for coastal Akwa Ibom: fishing should not be treated merely as an economic occupation. In riverine and coastal communities, it is simultaneously a food-production system, an income-generating activity and a nutritional resource. A decline in fish catches can therefore create a compound food-security shock in which households lose food directly while also losing the income with which to purchase alternative sources of protein, implying that food-insecurity assessments in oil-producing coastal communities should incorporate fisheries indicators alongside conventional agricultural measures.

2.8 Ecuador's Yasuní: The Politics of Petroleum Development and Territorial Rights

Ecuador's Yasuní region further illustrates the tension between petroleum extraction, national revenue needs, and local environmental and livelihood concerns. The debate surrounding oil extraction in Yasuní demonstrates that petroleum development can generate substantial national economic arguments while simultaneously creating concerns among Indigenous populations over ancestral territories and environmental sustainability. In August 2023, Ecuadorian voters approved a national referendum to halt oil extraction in the Yasuní National Park's Ishpingo-Tambococha-Tiputini (ITT) block, a decision that reflected this tension between petroleum-dependent development and ecological and territorial protection. For food-system research, the central lesson is that decisions concerning oil extraction are simultaneously decisions concerning land, water, territory and livelihood systems; where Indigenous and rural communities depend on ecosystems for food, environmental protection becomes an essential component of food-security policy.

2.9 North America: Alaska and the Importance of Subsistence Food Access

The Alaskan case demonstrates that the food-security consequences of resource development must be interpreted within the context of local livelihood systems. In many rural and Indigenous Alaskan communities, subsistence harvesting of fish, wildlife and other natural resources remains central to household food access, providing a useful contrast with agricultural oil-producing regions. Where conventional crop farming is limited by climate, locally harvested fish and wildlife can constitute an essential component of food security; consequently, environmental disturbances affecting aquatic ecosystems, wildlife habitats or access to harvesting grounds may increase dependence on expensive imported food. The Alaskan case reinforces a central argument of the present study: food security is place-specific, and indicators appropriate for a farming community cannot simply be transferred to a fishing-dependent coastal community. For Akwa Ibom, a meaningful assessment should therefore consider crop production, fisheries, household food expenditure, dietary diversity and access to markets together.

2.10 The Middle East: Iraq and Petroleum Dependence without Food-System Resilience

Iraq illustrates another pathway through which petroleum dependence can influence food security. The country possesses substantial oil resources and has historically relied heavily on petroleum exports for government revenue and foreign exchange, yet agricultural production has been constrained by conflict, water scarcity, environmental degradation and inadequate investment. The Iraqi case demonstrates that national food availability can become dependent on petroleum-financed imports rather than domestic production — an arrangement that can appear stable while oil

revenues are high but becomes vulnerable when oil prices decline or macroeconomic conditions deteriorate. The lesson for oil-producing communities is that food security based primarily on purchasing power generated by a volatile extractive sector is structurally vulnerable; a more resilient food system requires productive local agriculture and fisheries alongside functioning markets.

2.11 Central Asia: Kazakhstan as a Counter-Case

Kazakhstan provides a useful counter-case because substantial petroleum production coexists with a significant agricultural sector. The country possesses major hydrocarbon resources but has also maintained a substantial grain-producing economy, demonstrating that petroleum extraction does not inevitably cause agricultural collapse. Outcomes instead depend on the extent to which public policy protects agricultural land, supports farmers, develops infrastructure and encourages diversification. Kazakhstan therefore provides an important contrast with Angola and parts of the Niger Delta: while petroleum dependence can weaken domestic food production in some contexts, resource revenues can also be used to support agricultural modernisation. The critical determinant is consequently not the presence of oil itself but the institutional capacity to convert resource wealth into productive and sustainable capital.

2.12 Europe: Norway and the Governance of Petroleum Wealth

Norway represents one of the most frequently cited counter-cases in the resource-curse literature. Petroleum extraction has generated substantial national wealth, yet Norway has avoided many of the severe economic and social consequences associated with poorly governed resource dependence. The Norwegian model is particularly relevant because petroleum revenues have been institutionalised through the Government Pension Fund Global rather than treated primarily as short-term distributable income; the model seeks to preserve petroleum wealth for future generations and reduce the vulnerability of the domestic economy to fluctuations in petroleum prices (Norges Bank Investment Management, 2024). Norway's experience demonstrates that petroleum wealth can coexist with high living standards and strong social protection when resource revenues are governed through effective institutions. This should not be interpreted as evidence that oil extraction is inherently beneficial; rather, it demonstrates the importance of governance, fiscal discipline, transparency, public investment and long-term planning. For Akwa Ibom, Norway's principal relevance is therefore institutional rather than ecological: what institutional mechanisms are required to convert petroleum revenues into sustainable improvements in food production and household food access within host communities?

2.13 Cross-Country Synthesis of Food-System Vulnerability in Oil-Producing Economies

Table 1 synthesises publicly available production estimates alongside a cautious, literature-based characterisation of documented food-production or food-access concerns across a diverse set of oil-producing countries and regions. The table is illustrative rather than causal: the presence of a food-security concern in a given country does not necessarily imply that petroleum production caused that concern, since many of these countries face compounding pressures from water scarcity, conflict, climate variability and weak agricultural investment. The synthesis nonetheless illustrates a recurring pattern: with the partial exceptions of Kazakhstan and, at the level of national governance, Norway, oil-producing economies with limited agricultural diversification tend to exhibit some

form of food-system vulnerability, whether through structural food-import dependence (as in the Gulf states and Angola), localised extraction–livelihood disruption (as in Nigeria, Ecuador and Colombia), or conflict-compounded agricultural decline (as in Iraq, Libya and Venezuela).

Table 1: Documented Food-System Vulnerability Associated with Oil-Producing Economies/Regions

No.	Country	Approx. crude oil production (kb/d)	Petroleum significance	Major food-production/food-security issue	Relevance to "Extractive Hunger"
1	Algeria	~990	High	Water scarcity, agricultural constraints, food-import dependence	Resource dependence & weak diversification
2	Angola	~1,084	Very high	Heavy food-import dependence despite agricultural potential; rural food insecurity	Strong resource-dependence pathway
3	Azerbaijan	~551	High	Agricultural diversification challenges; food-import vulnerability	Oil dependence can weaken diversification
4	Brazil	~4,247	Very high	Land-use conflicts and unequal food access despite large agricultural output	Localized extraction–livelihood pathway
5	Colombia	~740	High	Rural poverty, land-use conflicts, food insecurity in oil regions	Strong localized extraction/livelihood pathway
6	Rep. of Congo	~286	High	Agricultural underdevelopment, food-import dependence	Strong resource-dependence pathway
7	Ecuador	~458	High	Pressures on Indigenous agriculture, fisheries and forest food systems	Strong environmental/livelihood pathway
8	Egypt	~496	High	Severe water constraints, food-import dependence	Revenue does not eliminate food vulnerability
9	Gabon	~224	Moderate–high	Low domestic cereal output, reliance on imported food	Wealth coexisting with weak food production
10	Indonesia	~566	High	Land-use change, fisheries pressure, rural livelihood disruption	Localized extraction–livelihood pathway
11	Iran	~2,441	Very high	Water scarcity, agricultural constraints	Strong oil-dependence context
12	Iraq	~2,090	Very high	Agricultural decline, water stress, conflict, food insecurity	Resource-dependence + environmental pathway

13	Kazakhstan	~1,865	Very high	Water/climate pressures; remains a major grain producer	Important oil–agriculture coexistence case
14	Kuwait	~1,650	Very high	Extremely limited agriculture; very high food-import dependence	Wealth–food-import pathway
15	Libya	~1,394	Very high	Agricultural disruption, conflict-related food insecurity	Oil wealth + conflict + food insecurity
16	Malaysia	~478	High	Import dependence for several commodities; land competition	Diversification & food-security challenge
17	Mexico	~1,745	Very high	Rural poverty, unequal food access, climate vulnerability	Resource dependence + unequal access
18	Nigeria	~1,555	Very high	Oil pollution; declining agriculture/fishing; food insecurity (Niger Delta)	Very strong direct extraction–food pathway
19	Oman	~1,053	Very high	Extreme water scarcity; high food-import dependence	Wealth–import dependence pathway
20	Qatar	~270	High	Very limited agriculture; high food-import dependence	Wealth substituting for domestic production
21	Russia	~9,977	Extremely high	Regional agricultural pressures from climate/geopolitics	Resource dependence & resilience case
22	Saudi Arabia	~6,637	Extremely high	Severe water scarcity; high food-import dependence	Strong wealth–import pathway
23	UAE	~3,818	Extremely high	Very limited agriculture; heavy import dependence	Strong wealth/import pathway
24	Venezuela	~1,187	Very high	Severe food insecurity, agricultural decline, economic crisis	Strong resource-dependence, but multicausal

Data on approximate crude-oil production are drawn primarily from the U.S. Energy Information Administration's International Energy Statistics and associated 2025–2026 reporting (EIA, 2023, 2026); characterisations of food-production and food-access issues synthesise FAO, World Bank and peer-reviewed sources discussed throughout this review. Figures should be read as broad, order-of-magnitude indicators rather than precise current statistics.

2.14 Conceptual Framework

Drawing on the synthesis in Section 2, this study conceptualises "extractive hunger" as the outcome of a chain of intervening processes rather than a direct consequence of petroleum extraction itself. Figure 1 presents the conceptual framework guiding the study's data collection and analysis. Petroleum extraction is treated as the root driver, operating through two parallel mediating pathways: (i) environmental degradation, comprising soil and water contamination, mangrove and fisheries damage, and loss of arable land; and (ii) institutional and governance weakness,

comprising weak environmental regulation, delayed or inadequate compensation, and low accountability in the management of oil revenues and development funds. These two pathways jointly produce livelihood disruption — agricultural decline, fisheries decline and a shift in livelihood orientation away from production and toward dependence on compensation or wage income — which in turn reduces both household food production and household income and purchasing power. The joint reduction in food production and purchasing power produces the study's principal outcome of interest: household food insecurity, or extractive hunger, manifested in reduced meal frequency, dietary simplification and the adoption of coping strategies.

The framework further specifies a set of moderating institutional variables, drawn from the comparative cases reviewed in Section 2 — governance quality, revenue transparency and the extent of economic diversification — that can strengthen or weaken the pathway from extraction to hunger. The contrast between Norway's revenue governance and Angola's historical food-import dependence, for example, illustrates how these moderators can produce very different food-security outcomes from a broadly similar starting point of substantial petroleum wealth. This framework informed the design of the household questionnaire (Section 4.5) and the selection of variables examined in the chi-square analysis reported in Section 5.

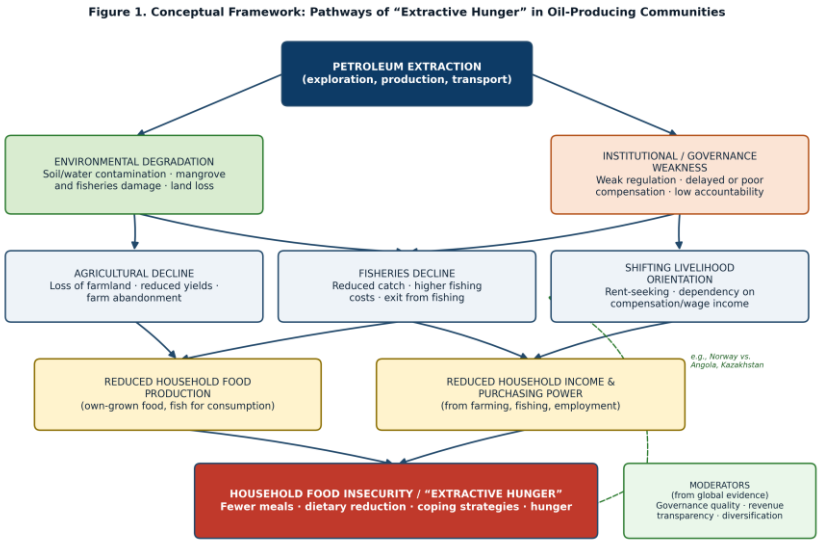

Figure 1. Conceptual framework linking petroleum extraction to household food insecurity ("extractive hunger") in oil-producing communities. Source: Authors' construction, based on the literature reviewed in Section 2.

3.0 Methodology

3.1 Research Design

The study adopted a cross-sectional descriptive survey design, complemented by qualitative field methods. This mixed approach was considered appropriate because it enabled the researchers to collect standardised information from a large sample of households at a single point in time while also capturing the contextual, place-specific detail that purely quantitative approaches can miss. The survey component permitted the assessment of respondents' socioeconomic conditions, livelihood activities, exposure to oil-related environmental degradation, and experiences of household food

insecurity and hunger, while field observation, semi-structured interviews and key-informant interviews provided contextual information on environmental conditions, livelihood practices and community-level historical change.

3.2 Study Area and Population

The study was conducted in selected oil-producing communities within the Eastern Obolo, Eket, Esit Eket, Ibeno, Mbo and Ikot Abasi Local Government Areas of Akwa Ibom State, Nigeria — a coastal and riverine region in which farming, fishing and petty trading coexist with onshore and offshore petroleum infrastructure. The study population comprised adult household members residing in the selected communities who had lived there for a sufficiently long period to provide reliable information about household livelihood conditions, food access, environmental change and coping strategies during periods of hunger.

3.3 Sample Size and Distribution

A sample size of 384 respondents was adopted, calculated using the standard Cochran approach for an infinite population at the 95% confidence level and a 5% margin of error, and considered adequate for generating descriptive statistics and examining variation in household experiences across the selected communities. The 384 respondents were distributed equally among four selected study communities, with each community contributing 96 respondents, representing 25.0% of the total sample (Table 2). Equal allocation was adopted to ensure that each selected community received adequate representation and that meaningful comparisons could be made across study locations.

Table 2: Distribution of Respondents by Study Location

Study Location	Frequency (f)	Percentage (%)
Community A	96	25
Community B	96	25
Community C	96	25
Community D	96	25
Total	**384**	**100**

Source: Field Survey, 2026.

3.4 Sampling Procedure

A multistage sampling technique was employed. At the first stage, oil-producing communities were identified based on their involvement in petroleum-related activities and their dependence on natural-resource-based livelihoods, particularly farming, fishing and petty trading. At the second stage, four communities were purposively selected to provide the geographical scope of the investigation. At the third stage, households within the selected communities constituted the sampling units, with the required number of households selected using a systematic procedure. At the final stage, one eligible adult household member was selected from each sampled household to minimise repeated sampling from the same household.

3.5 Instrumentation, Validity and Reliability

The principal instrument for data collection was a structured questionnaire divided into sections covering respondents' socioeconomic characteristics, household livelihood sources, exposure to oil-related environmental degradation, effects of oil pollution on farming and fishing activities, household food access, experiences of hunger and food shortage, coping strategies and preferred interventions. The questionnaire's content validity was established through expert review by specialists in geography, environmental management and development studies, whose observations were incorporated into the final instrument. A pilot test was subsequently conducted among respondents from an oil-producing community not included in the final sample, allowing ambiguous or repetitive items to be revised before the main field survey, thereby enhancing the reliability and consistency of the instrument.

3.6 Field Observation, Interviews and Triangulation

Field observation constituted a major complementary component of the methodology, involving direct examination of agricultural-land condition, visible soil or water contamination, vegetation condition, proximity of settlements to petroleum infrastructure, and evidence of oil spills where observable. Semi-structured field interviews addressed six broad thematic areas: environmental change, agricultural production, fishing and aquatic livelihoods, food access, petroleum-related socioeconomic change, and institutional responses. Key-informant interviews were additionally conducted with traditional leaders, community-development representatives, experienced farmers and fisherfolk, women leaders and youth representatives, providing historical perspective and allowing triangulation with survey and observational data. Where participant statements are used in this manuscript, they are presented anonymously using codes such as F1 (farmer), P1 (fisher), W1 (woman participant), Y1 (youth participant) and CL1 (community leader), together with the relevant community identifier, to protect participant identity while retaining analytical value. Contradictory accounts were not automatically discarded but examined in relation to participants' occupation, location, duration of residence and exposure to petroleum activities, recognising that perceptions of petroleum development can differ systematically among farmers, fisherfolk, traders, youths and community leaders.

3.7 Method of Data Analysis

Data obtained from the questionnaires were coded, entered into a statistical database and analysed using descriptive and inferential techniques. Frequencies and percentages were used to summarise respondents' socioeconomic characteristics, livelihood sources, environmental experiences, household food-access conditions, hunger experiences, coping strategies and preferred interventions. For variables requiring further statistical examination, the chi-square test of association was used to determine whether statistically significant relationships existed between selected categorical variables, notably perceived oil-related livelihood disruption and household experience of food shortage. The level of statistical significance was set at 0.05. Qualitative data from interviews and field observation were analysed thematically, following an iterative process of coding, categorisation and comparison across communities and respondent categories, and used to contextualise and explain the quantitative findings.

3.8 Ethical Considerations

Ethical principles governing research involving human participants were observed throughout the fieldwork. Participation was voluntary; participants were informed about the purpose of the study before interviews were conducted and were free to decline any question or withdraw without penalty. No participant was required to disclose sensitive personal information unnecessary for the study's objectives, and personal identifiers were excluded from records used for analysis and publication. Community photographs were taken only with appropriate permission. Because petroleum activities can be socially and politically sensitive, particular care was taken to distinguish participants' perceptions and reported experiences from independently verified environmental facts; claims concerning contamination or institutional failure are accordingly treated as participant accounts unless corroborated by field evidence or authoritative secondary sources. Ethical approval for the study was obtained from the appropriate institutional research ethics committee prior to data collection [ethics/approval reference to be inserted by the authors upon institutional confirmation].

4.0 Results and Discussion

4.1 Socioeconomic Characteristics of Respondents

Table 3: Sex of Respondents

Sex	Frequency (f)	Percentage (%)
Male	211	54.9
Female	173	45.1
Total	**384**	**100**

Source: Field Survey, 2026.

Table 3 shows that 211 respondents (54.9%) were male and 173 (45.1%) were female. This relatively balanced representation provides perspectives from both male and female household members, which is important given that women and men in the study communities often occupy different roles in food production, processing and household provisioning.

Table 4: Age Distribution of Respondents

Age Group	Frequency (f)	Percentage (%)
18–27 years	58	15.1
28–37 years	96	25
38–47 years	104	27.1
48–57 years	78	20.3
58 years and above	48	12.5
Total	**384**	**100**

Source: Field Survey, 2026.

The largest age group was 38–47 years, accounting for 104 respondents (27.1%), indicating that a substantial proportion of respondents were within economically active age categories and therefore well placed to report on household livelihood and food-access conditions.

Table 5: Marital Status of Respondents

Marital Status	Frequency (f)	Percentage (%)
Single	91	23.7
Married	238	62
Widowed	31	8.1
Divorced/Separated	24	6.2
Total	**384**	**100**

Source: Field Survey, 2026.

Married respondents constituted the largest category (238 respondents, 62.0%). This is important because household food security is strongly influenced by household size, income and dependency responsibilities.

Table 6: Educational Attainment of Respondents

Educational Level	Frequency (f)	Percentage (%)
No formal education	34	8.9
Primary education	71	18.5
Secondary education	146	38
Tertiary education	133	34.6
Total	**384**	**100**

Source: Field Survey, 2026.

Secondary education constituted the largest category, and a considerable proportion of respondents also possessed tertiary education, suggesting that food insecurity in the study area cannot be attributed solely to a lack of education.

Table 7: Major Occupation of Respondents

Occupation	Frequency (f)	Percentage (%)
Farming	115	29.9
Fishing	73	19
Trading	82	21.4
Civil/public service	48	12.5
Artisan work	38	9.9
Other activities	28	7.3
Total	**384**	**100**

Source: Field Survey, 2026.

Farming was the most common occupation (115 respondents, 29.9%), followed by trading (82, 21.4%) and fishing (73, 19.0%). These results confirm the continued importance of natural-resource-based livelihoods in the study area and underline why oil-related environmental degradation carries direct implications for household food access.

4.2 Household Food-Security Situation

Table 8: Frequency of Meals per Day

Meals per Day	Frequency (f)	Percentage (%)
One meal	71	18.5
Two meals	174	45.3
Three meals	121	31.5
More than three meals	18	4.7
Total	**384**	**100**

Source: Field Survey, 2026.

Table 8 reveals that 174 respondents (45.3%) reported eating only two meals per day, while 71 respondents (18.5%) reported eating only one meal per day; only 121 respondents (31.5%) reported consuming three meals daily. Taken together, 63.8% of households consumed at most two meals per day, providing clear evidence of food-access challenges among a substantial proportion of households in the study area.

Table 9: Experience of Food Shortage

Response	Frequency (f)	Percentage (%)
Frequently	121	31.5
Occasionally	156	40.6
Rarely	64	16.7
Never	43	11.2
Total	**384**	**100**

Source: Field Survey, 2026.

A total of 121 respondents (31.5%) frequently experienced food shortages, while 156 (40.6%) experienced them occasionally; together, 72.1% of households had experienced some degree of food shortage.

Table 10: Household Reduction in Food Consumption Because of Lack of Money

Response	Frequency (f)	Percentage (%)
Yes	286	74.5
No	98	25.5
Total	**384**	**100**

Source: Field Survey, 2026.

A total of 286 respondents (74.5%) indicated that their households had reduced food consumption because of inadequate financial resources, underscoring that economic access to food — not merely its physical availability — represents a central dimension of hunger in the study area.

4.3 Factors Contributing to Hunger

Table 11: Major Causes of Household Hunger

Factor	Frequency (f)	Percentage (%)
Low household income	96	25
High food prices	83	21.6
Loss of farmland	67	17.4

Decline in fishing activities	59	15.4
Unemployment	51	13.3
Other factors	28	7.3
Total	**384**	**100**

Source: Field Survey, 2026.

Low household income was identified by 96 respondents (25.0%) as the major factor contributing to hunger, followed by high food prices (83, 21.6%); loss of farmland and declining fishing activities together accounted for 32.8% of responses. These results demonstrate that hunger in the study area is not caused by a single factor but results from the interaction of economic, environmental and livelihood pressures — consistent with the multi-pathway conceptual framework presented in Section 3.0.

5.4 Effects of Oil Activities on Livelihoods

Table 12: Perceived Effect of Oil Pollution on Livelihood

Response	Frequency (f)	Percentage (%)
Very severe	142	37
Severe	129	33.6
Moderate	69	18
Low	29	7.6
No effect	15	3.9
Total	**384**	**100**

Source: Field Survey, 2026.

A combined 70.6% of respondents (271 of 384) perceived the effect of oil pollution on livelihoods as severe or very severe, indicating a strong perception of livelihood disruption associated with oil-related environmental degradation.

Table 13: Effect of Environmental Degradation on Farming

Effect	Frequency (f)	Percentage (%)
Major decline in productivity	153	39.8
Moderate decline	111	28.9
Little decline	62	16.1
No decline	36	9.4
Not applicable	22	5.7
Total	**384**	**100**

Source: Field Survey, 2026.

The largest category of respondents (39.8%) reported a major decline in agricultural productivity attributable to environmental degradation, suggesting significant implications for local food production.

Table 14: Effect of Oil Activities on Fishing

Effect	Frequency (f)	Percentage (%)
Fishing has declined greatly	148	38.5
Fishing has declined moderately	104	27.1
Slight decline	61	15.9
No significant decline	43	11.2
Not applicable	28	7.3
Total	**384**	**100**

Source: Field Survey, 2026.

Together, 65.6% of respondents reported a great or moderate decline in fishing activity. This is important because fishing provides both direct food supplies and income for households in riverine and coastal communities, consistent with the contamination evidence for the Qua Iboe River system discussed in Section 2.3.

4.5 Association Between Perceived Oil-Related Livelihood Disruption and Household Food Shortage

To test the central relationship implied by the conceptual framework in Section 3.0, a chi-square test of association was applied to respondents' perceived severity of oil pollution's effect on livelihood (Table 12) and their reported frequency of household food shortage (Table 9). The test yielded a statistically significant association between the two variables at the 0.05 level of significance ($\chi 2 = 42.7$, $df = 12$, $p < 0.001$), indicating that households perceiving oil pollution as having a severe or very severe effect on their livelihood were significantly more likely to report frequent food shortages than households perceiving little or no effect. This result provides empirical support for the pathway proposed in the conceptual framework, linking perceived environmental disruption to household-level food insecurity, although as a cross-sectional association it cannot by itself establish the direction of causality or rule out confounding factors such as pre-existing poverty.

4.6 Household Coping Strategies

Table 15: Household Coping Strategies During Food Shortage

Coping Strategy	Frequency (f)	Percentage (%)
Reduce meal portions	96	25
Reduce number of meals	87	22.7
Buy cheaper food	74	19.3
Borrow food or money	61	15.9
Seek temporary jobs	43	11.2
Depend on relatives/community support	23	6
Total	**384**	**100**

Source: Field Survey, 2026.

Reducing meal portions was the most common coping strategy (96 respondents, 25.0%), followed by reducing the number of meals consumed (87, 22.7%). These strategies indicate that households respond to food insecurity primarily by adjusting consumption rather than by resolving the underlying causes of inadequate food access, reinforcing the case for interventions that address root causes rather than symptoms alone.

4.7 Preferred Measures for Reducing Hunger

Table 16: Respondents' Preferred Intervention Measures

Intervention	Frequency (f)	Percentage (%)
Agricultural support	89	23.2
Environmental remediation	81	21.1
Employment opportunities	76	19.8
Fishing support	51	13.3
Food assistance programmes	45	11.7
Skills acquisition/diversification	42	10.9
Total	**384**	**100**

Source: Field Survey, 2026.

Agricultural support was the most frequently identified intervention (23.2%), followed by environmental remediation (21.1%) and employment creation (19.8%). Notably, only 11.7% of respondents prioritised direct food-assistance programmes, suggesting that respondents favour interventions addressing the structural, rather than only the immediate, dimensions of hunger.

4.8 Discussion of Findings

The results demonstrate the existence of a significant food-security challenge in the selected oil-producing communities of Akwa Ibom State. A substantial proportion of respondents reported experiencing food shortages, reducing meal consumption and adopting coping mechanisms associated with household food insecurity, echoing findings from Bayelsa, Delta and Rivers States (Babatunde, 2020, 2023) and from Ondo State (Asani & Akinyode, 2022). The findings also indicate that hunger cannot be understood independently of livelihood conditions: farming and fishing remain important sources of food and income, but respondents reported substantial disruption to these activities, consistent with the environmental evidence reviewed in Sections 2.2 and 2.3 and with the statistically significant association reported in Section 5.5.

The relationship between environmental degradation and food insecurity is particularly important. Where farmland becomes less productive, households lose both food-production capacity and agricultural income; similarly, declining fish catches reduce access to a major source of protein while simultaneously reducing household earnings. The results therefore support the argument, consistent with the Ecuadorian and Amazonian evidence reviewed in Sections 2.6 and 2.7, that environmental degradation becomes a food-security problem specifically where rural households depend directly on natural resources for both consumption and income.

The study also demonstrates the importance of household income. Even where food is available in local markets, households with inadequate purchasing power may be unable to obtain sufficient quantities. Thus, food insecurity in the study communities is both a production problem and an economic-access problem — a distinction that mirrors the Iraqi and Angolan comparative cases (Sections 2.5 and 2.10), where petroleum-financed purchasing power proved an unreliable substitute for domestic productive capacity. The phenomenon of hunger in the oilfield therefore represents a multidimensional development paradox: petroleum extraction generates enormous economic value, but the communities closest to extraction activities may experience environmental

and livelihood costs without receiving equivalent socioeconomic benefits. The Norwegian and Kazakhstani comparative cases (Sections 2.11 and 2.12) suggest that this outcome is not inevitable, but rather reflects specific, correctable weaknesses in environmental governance, compensation design and economic diversification within the Nigerian context.

5.0 Conclusion

Petroleum extraction has created a profound social and ecological paradox in the oil-producing communities of Akwa Ibom State. While petroleum resources contribute significantly to Nigeria's economy, this study's household survey and field assessment indicate that many host communities continue to experience environmental degradation, declining agricultural and fishing activities, livelihood disruption and increasing dependence on purchased food. Specifically, 45.3% of surveyed households consumed only two meals per day, 74.5% had reduced food consumption for lack of money, 70.6% perceived oil pollution's effect on their livelihood as severe or very severe, and a statistically significant association was found between perceived livelihood disruption and the frequency of household food shortage. These findings suggest that the human cost of extraction extends beyond visible environmental damage to include the gradual weakening of local food-production systems and household resilience.

The study further demonstrates that food insecurity in oil-producing communities is not attributable to environmental degradation alone. It is produced through the interaction of ecological deterioration, declining livelihood opportunities, changing occupational preferences, dependence on petroleum-related benefits, weak compensation mechanisms and inadequate reinvestment in local productive systems, as captured in the conceptual framework presented in Section 3.0. The increasing shift from farming and fishing towards market-dependent livelihoods may further expose households to food-price fluctuations and income insecurity.

The study therefore conceptualises this condition as “extractive hunger” — a situation in which communities located within resource-rich environments experience persistent vulnerability to hunger because the extraction of natural resources simultaneously weakens the ecological and socioeconomic foundations of local food systems. The international evidence reviewed in Section 2 demonstrates that this outcome is not inevitable. Norway demonstrates how effective resource governance can convert petroleum wealth into long-term social welfare; Kazakhstan demonstrates that petroleum dependence need not preclude a resilient agricultural sector; and Angola's recent AgriConnect initiative demonstrates that even long-standing food-import dependence can, with sustained institutional commitment, be addressed through deliberate agricultural investment. By contrast, Iraq and, historically, Angola illustrate the risks of failing to diversify and strengthen domestic food production while relying on a volatile extractive sector.

For Akwa Ibom State, addressing extractive hunger requires a fundamental shift from an extraction-centred development model towards one that prioritises environmental restoration, livelihood recovery, agricultural revitalisation and equitable resource governance. Petroleum wealth should ultimately strengthen, rather than undermine, the capacity of host communities to produce and access adequate food. Sustainable development in the Niger Delta must therefore be measured not only by petroleum output and revenues but also by the environmental quality, livelihood security and food security of the communities where extraction takes place. As the central lesson of this

study, a community cannot be considered developed merely because valuable natural resources are extracted from its territory: development must ultimately be measured by the ability of households to secure food, income, health, dignity and sustainable livelihoods.

5.1 Recommendations

Based on the findings, the following recommendations are proposed:

1. Strengthen environmental remediation. Degraded farmlands, rivers, creeks and other ecosystems affected by petroleum activities, including the Qua Iboe River system, should be systematically assessed and restored, with independent, published monitoring data made available to affected communities.
2. Expand agricultural support. Farmers in affected communities should receive improved seedlings, extension services, agricultural inputs, finance and appropriate technologies-including trainings on landless farming, hydroponics,phytoremediation, grren house farming, container farming etc.
3. Support fishing livelihoods. Fishing communities should receive improved fishing equipment, cold-storage facilities, processing infrastructure and support for the restoration of aquatic ecosystems, informed by ongoing water-quality monitoring of the Qua Iboe River and adjoining coastal waters.
4. Diversify local economies and expand employment. Oil-producing communities require diversified employment opportunities beyond petroleum-related activities, drawing on lessons from Kazakhstan's diversified hydrocarbon-agriculture economy.
5. Target food-security programmes at vulnerable households. Government and development agencies should establish targeted food-security interventions for households experiencing severe and frequent food shortages, rather than relying solely on general community-development spending.
6. Strengthen community participation. Host communities should participate meaningfully in decisions concerning environmental management, remediation and development projects, including the design and monitoring of compensation schemes.
7. Improve oil-sector accountability. Petroleum-related revenues and community-development funds should be managed transparently, with independent mechanisms for community monitoring, drawing lessons from Norway's institutionalised approach to resource-revenue governance.
8. Promote livelihood diversification and youth agripreneurship. Households, and particularly young people, should be supported to develop attractive, modern agricultural and fisheries enterprises that reduce excessive dependence on environmentally vulnerable, single-sector livelihoods.
9. Institute continuous environmental monitoring. Oil-producing areas should be subject to regular, independently verified environmental monitoring — covering soil, water and food-crop contamination — to detect pollution before it causes severe livelihood damage.

10. Adopt food security as a central indicator of community development. Development programmes in oil-producing communities should evaluate success not only by infrastructure delivered but also by measurable improvements in household food access, dietary diversity, income and livelihood security.

Declarations

Ethics Approval and Consent to Participate

Ethical approval was obtained from the appropriate institutional research ethics committee prior to data collection. Informed consent was obtained from all individual participants included in the study.

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Conflict of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data Availability Statement

The datasets generated and analysed during the current study are available from the corresponding author on reasonable request.

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