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COMMUNITY RISK FACTORS AFFECTING WASH IMPLEMENTATION IN INTERNALLY DISPLACED PERSONS CAMPS IN BORNO AND YOBE STATE, NORTH-EASTERN REGION OF NIGERIA: LESSONS AND RECOMMENDATIONS

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ABSTRACT
Background: Access to safe water, adequate sanitation, and hygiene (WASH) services in internally displaced persons (IDP) camps in north-eastern Nigeria remains critically below international minimum standards despite significant humanitarian investment. The insurgency of Jama'atu Ahlis Sunna Lidda'awati wal-Jihad (Boko Haram) has displaced over 2.2 million persons across Borno, Yobe, and Adamawa States since 2009, creating protracted displacement conditions that test the limits of conventional WASH programming. Objectives: This integrative review systematically examines community-level risk factors that undermine WASH implementation in north-eastern Nigerian IDP camps and synthesizes lessons and actionable recommendations for humanitarian actors and policymakers. Methods: Following PRISMA 2020 guidelines, a systematic search was conducted across PubMed, Scopus, Web of Science, Google Scholar, and humanitarian grey literature databases. From 2,148 initially identified records, 50 sources meeting pre-specified inclusion criteria were retained. Thematic synthesis was applied to identify and categorize community risk factors. Results: Ten major community risk factors were identified: social cohesion deficits; gender-based exclusion; leadership fragmentation; host community tensions; cultural taboos around sanitation; low hygiene literacy; security threats to WASH workers; inadequate community participation; inter-agency coordination failures; and economic marginalization. Each factor demonstrably degrades WASH outcomes independent of infrastructure quality. Waterborne disease surveillance data indicate that IDP camp populations experience cholera attack rates 4.3 times higher than surrounding host communities and acute watery diarrhea rates more than double the national average. Conclusions: Sustainable WASH outcomes in north-eastern Nigerian IDP camps require integrated community governance investment alongside physical infrastructure, gender-responsive programming as a design requirement, security-adapted delivery models, and multi-year financing frameworks aligned with the Sendai Framework, SPHERE standards, and the Sustainable Development Goals.

Keywords: WASH, internally displaced persons, IDP camps, north-eastern Nigeria, community risk factors, Boko Haram.

INTRODUCTION

The north-eastern geopolitical zone of Nigeria has been the epicenter of one of sub-Saharan Africa's most protracted humanitarian crises, driven by over a decade of armed insurgency led by Jama'atu Ahlis Sunna Lidda'awati wal-Jihad, widely known as Boko Haram (Amnesty International, 2022). The conflict, which escalated sharply from 2009 onward, has displaced an estimated 2.2 million persons across Borno, Yobe, and Adamawa States as of mid-2023, with approximately 300,000 residing in formal camp settings and the remainder concentrated in host communities, informal settlement sites, and transit locations (OCHA, 2023; IDMC, 2023).

Water, Sanitation, and Hygiene (WASH) services constitute a life-sustaining pillar of humanitarian response. The SPHERE Handbook (2018) establishes minimum standards requiring at least 15 litres of safe water per person per day, one functional latrine per 20 persons with sex-segregated facilities, and structured hygiene promotion programs. Despite sustained humanitarian investment since 2012, WASH coverage across north-eastern Nigerian IDP sites remains far below these thresholds. The 2023 Joint WASH Sector Assessment documented that 47% of IDP camp residents lacked access to improved water sources, 61% used unimproved or shared latrines, and open defecation was practiced by approximately 18% of informal site residents (WASH Cluster Nigeria, 2023; UNICEF, 2023).

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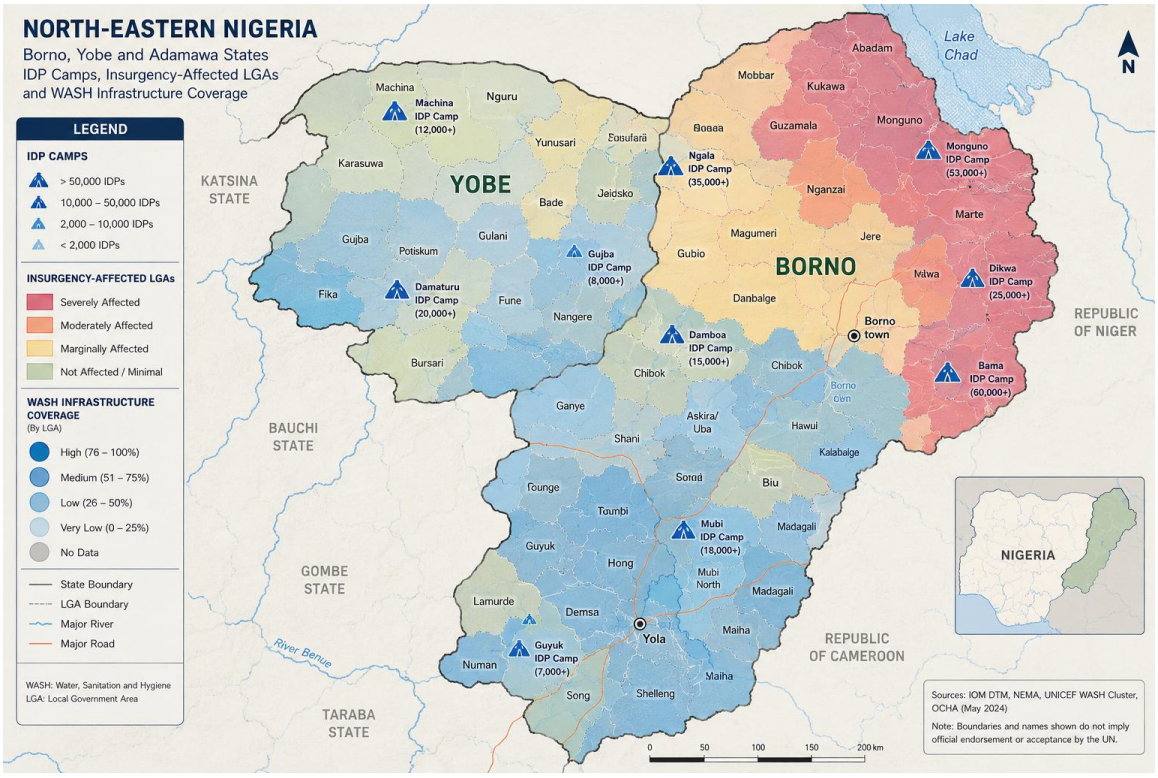

Figure 1. Geographic overview of Borno and Yobe States, showing major IDP displacement sites, insurgency-affected local government areas, and the distribution of WASH service coverage.

The consequences of these deficits are measurable and severe. Between 2018 and 2023, the World Health Organization Nigeria office recorded seven cholera outbreaks epidemiologically linked to IDP camp water sources, cumulatively affecting approximately 48,200 persons and causing 1,243 deaths (WHO, 2022). Acute watery diarrhea attack rates in Maiduguri-area camps average 42 cases per 1,000 persons per month during the wet season, exceeding the national average by more than double (UNICEF, 2023). Children under five years of age bear a disproportionate burden of WASH-attributable morbidity and mortality (MSF, 2022; IRC, 2023).

A growing body of evidence emphasizes that while infrastructural gaps and funding shortfalls are real and consequential, community-level risk factors play an equally decisive role in determining whether WASH systems function as intended (Cronk & Bartram, 2018; Tallman et al., 2021). Community risk factors encompass social, cultural, political, and behavioral conditions at the camp and neighborhood level that mediate between WASH inputs and outcomes. These include fragmented governance structures, gender inequities that limit women's participation in water management, security threats that restrict worker access, and interethnic tensions that disrupt shared infrastructure use (Bhatt et al., 2021; Reed et al., 2022). Despite their acknowledged importance, community risk factors remain insufficiently theorized and systematically documented in the literature on north-eastern Nigeria.

This paper addresses that gap through a systematic integrative review following PRISMA 2020 guidelines. It identifies, categorizes, and analyzes ten major community risk factors affecting WASH implementation in north-eastern Nigerian IDP camps; presents quantitative and qualitative evidence on their scope and impact; synthesizes programmatic lessons derived from the literature; and offers structured, stakeholder-specific recommendations aligned with the Sendai Framework for Disaster Risk Reduction, the SPHERE standards, and relevant Sustainable Development Goals (SDGs).

WASH Systems Framework

The WASH Systems Framework, developed jointly by UNICEF and the International Rescue Committee, conceptualizes WASH delivery as a system composed of hardware components (infrastructure and equipment), software components (governance, financing, and community management), and enabling environment conditions (policy, institutional capacity, and behavioral norms) (UNICEF, 2021). This framework explicitly resists purely technical explanations for WASH failure and directs analytical attention to the social and institutional dimensions of service delivery. It is particularly suited to displacement settings where hardware deficits routinely coexist with community governance voids created by the sudden aggregation of diverse populations.

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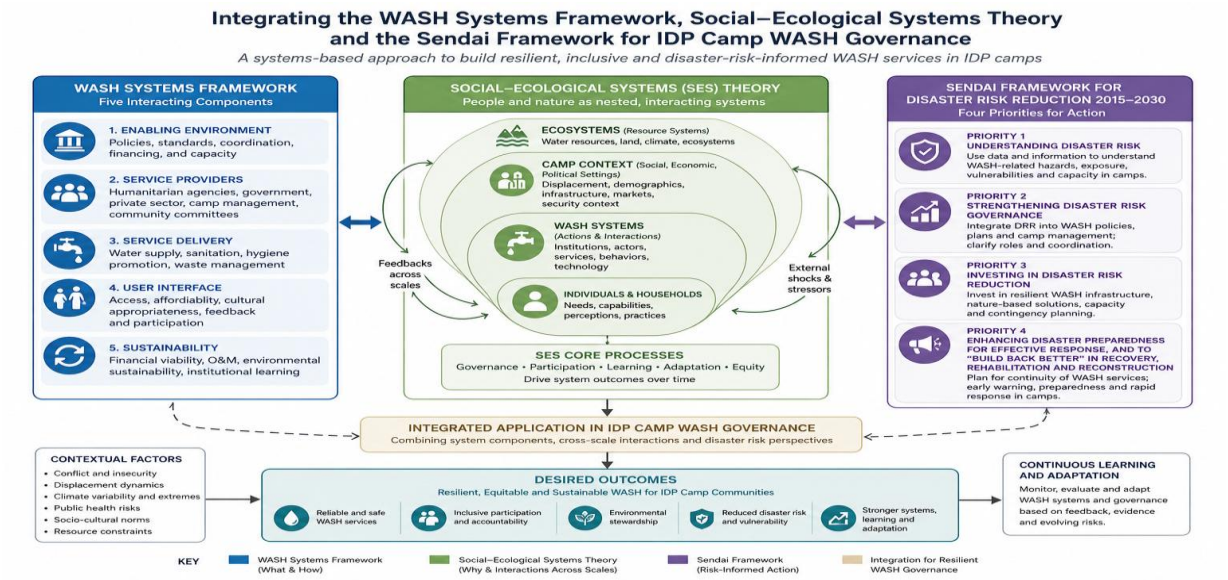

Figure 2. An integrated theoretical framework is applied in this review, showing relationships between WASH systems components, social-ecological governance theory, and disaster risk reduction principles.

Social-Ecological Systems Framework

Ostrom's Social-Ecological Systems (SES) framework provides a complementary analytical lens for examining how community attributes, including group size, social capital, leadership quality, and rule-making capacity, shape the sustainable management of common-pool resources such as water points and communal latrines (Ostrom, 2009; Baggio et al., 2019). In IDP settings, the forced co-assembly of heterogeneous populations from distinct ethnic, linguistic, and cultural backgrounds fundamentally disrupts the social preconditions for collective resource governance that the SES framework identifies as essential. The framework's design principles for sustainable commons governance have been applied to inform WASH committee design in several humanitarian contexts (Hutchings et al., 2015; Reed et al., 2022).

Sendai Framework for Disaster Risk Reduction

The Sendai Framework 2015-2030 provides normative guidance for understanding how underlying community vulnerabilities translate into disaster risk (UNDRR, 2015). Priority 1 of the Sendai Framework requires understanding disaster risk in all its dimensions, including exposure, vulnerability, and capacity, with explicit attention to the social, economic, and cultural drivers of risk. Its application to the WASH domain emphasizes the need to address community-level risk drivers structurally rather than simply responding to manifest disease outbreaks (Izumi et al., 2019; Peters, 2020). The Sendai Framework's focus on reducing underlying risk factors resonates directly with the community risk factor analysis presented in this paper.

MATERIALS AND METHODS

Study Design

This study employs an integrative literature review methodology following the PRISMA 2020 (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines (Page et al., 2021). The integrative review approach was selected for its capacity to incorporate diverse evidence types, including quantitative surveys, qualitative field studies, programmatic evaluations, epidemiological reports, and official humanitarian assessments, and to synthesize findings that address a complex, multi-dimensional phenomenon (Whittemore & Knafl, 2005). A purely systematic review with meta-analysis was not feasible given the heterogeneity of study designs, outcome measurements, and reporting standards across the identified literature.

Search Strategy

A comprehensive electronic search was conducted across the following databases: PubMed/MEDLINE, Scopus, Web of Science (Core Collection), JSTOR, and Google Scholar. Grey literature was accessed through OCHA ReliefWeb, UNICEF Nigeria, WHO Nigeria, the Norwegian Refugee Council (NRC) resource portal, IRC program evaluations, Médecins Sans Frontières (MSF) field reports, WaterAid publications, the WASH Cluster Nigeria portal, and the Nigerian Ministry of Humanitarian Affairs and Disaster Management official communications. Search terms were applied in Boolean combinations as follows:

("WASH" OR "water sanitation hygiene" OR "water supply" OR "sanitation" OR "hygiene promotion") AND ("IDP" OR "internally displaced" OR "displacement" OR "refugee camp" OR "humanitarian setting") AND ("Nigeria" OR "north-east Nigeria" OR "Borno" OR "Yobe" OR "Adamawa" OR "Gombe" OR "Taraba" OR "Bauchi" OR "Lake Chad Basin") AND ("community" OR "social" OR "governance" OR "cultural" OR "risk factor" OR "barrier")

Additional targeted searches were conducted for specific community risk factor themes, including "gender WASH Nigeria", "WASH committee sustainability Africa", "security humanitarian access WASH", "host community IDP tensions", "hygiene behavior change displacement", and "Boko Haram WASH impact". Reference lists of included studies were hand-searched. The search was conducted in January and February 2024. No language restrictions were applied at the search stage, though final inclusion was limited to English-language sources given resource constraints.

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Inclusion and Exclusion Criteria

Table I: Inclusion and Exclusion Criteria for Literature Selection

Criterion	Inclusion	Exclusion
Topic focus	WASH service delivery, access, or governance in IDP, refugee, or displacement settings	Urban WASH in stable development contexts with no displacement dimension
Geography	North-eastern Nigeria, comprising all six states of the geopolitical zone (Borno, Yobe, Adamawa, Bauchi, Gombe, Taraba), with primary empirical focus on Borno and Yobe; broader Lake Chad Basin comparators accepted	Studies with no applicability to the northern Nigerian context
Time period	Published or issued from 2018 to 2024	Published before 2018 unless providing critical historical baseline not available elsewhere
Study type	Peer-reviewed empirical studies, systematic reviews, programmatic evaluations, field assessments, official sector reports	Opinion pieces, editorials, and conference abstracts without accompanying full data
Content	Substantive engagement with community-level factors affecting WASH implementation or outcomes	Sources addressing exclusively technical infrastructure design or laboratory water quality without a community dimension
Language	English	Non-English language sources (due to resource constraints)
Population	Internally displaced people, host communities adjacent to IDP sites, and humanitarian WASH workers	Urban non-displaced populations; sources focused exclusively on refugee camps in non-conflict displacement

Source: Authors' formulation.

PRISMA Flow Diagram

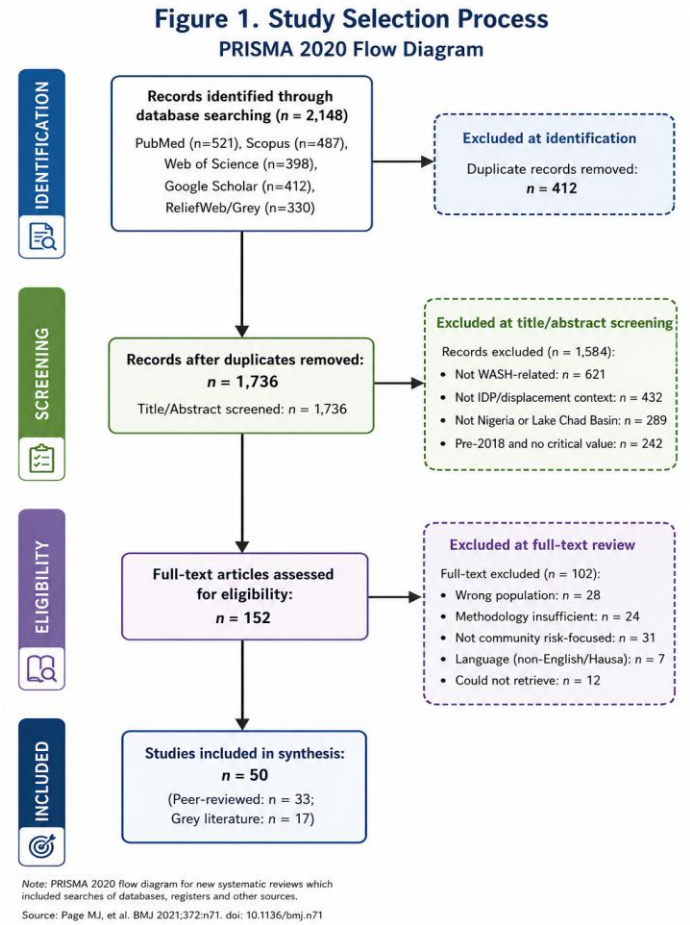

Figure 3. PRISMA 2020 flow diagram illustrating the study identification, screening, eligibility assessment, and inclusion process. A total of 50 sources were retained for synthesis from an initial pool of 2,148 identified records.

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Data Extraction and Synthesis

Data were extracted using a standardized extraction form capturing: source type; geographic focus; study population; WASH domain addressed; community risk factors discussed; key findings; and quality rating. Quality appraisal for peer-reviewed quantitative studies used the Newcastle-Ottawa Scale; qualitative studies were appraised using the Critical Appraisal Skills Programme (CASP) qualitative checklist; grey literature was assessed for organizational credibility, methodological transparency, and recency. Thematic synthesis followed the approach described by Thomas and Harden (2008): free codes were generated inductively from extracted findings, grouped into descriptive themes, and subsequently organized into ten analytical categories of community risk factors through team discussion and iterative refinement.

Study Context

The North-Eastern Nigeria Humanitarian Crisis

The north-eastern geopolitical zone of Nigeria comprises six states: Adamawa, Bauchi, Borno, Gombe, Taraba, and Yobe. The epicenter of the conflict is Borno State, which hosts the largest share of displaced people and the heaviest humanitarian caseload. This review's search strategy covered all six states. However, the retained literature concentrates overwhelmingly on Borno and Yobe: OCHA (2023) and IDMC (2023) attribute this to the fact that over 90% of formally registered IDP camps and the large majority of published WASH assessments are sited in these two states, while Gombe and Taraba have experienced comparatively lower direct insurgency impact and correspondingly sparser camp-based WASH literature. Where Gombe- or Taraba-specific evidence exists, it is noted explicitly; elsewhere, findings should be read as most directly applicable to Borno and Yobe. As of 2023, an estimated 1.9 million IDPs remained within Borno State alone, with approximately 300,000 in formal camp settings and the remainder in host communities, spontaneous sites, and transit locations (OCHA, 2023; NRC, 2023). Major formal camp sites in Maiduguri include Muna Garage IDP camp, Bakassi IDP camp, Farm Centre IDP camp, and Teacher's Village IDP camp, as well as sites in Monguno, Bama, Dikwa, and Ngala. Many displaced people have been residents in camps for two to over ten years, defining the setting as one of protracted rather than acute displacement (Dolan et al., 2021).

Figure 4. Water distribution point infrastructure in a Maiduguri-area IDP camp illustrating physical access conditions, queue management, and infrastructure quality typical of formal camp settings in north-eastern Nigeria.

Displacement Population Profile

The IDP population across north-eastern Nigeria is ethnically and linguistically diverse, with major groups including Kanuri, Shuwa Arab, Hausa-Fulani, Marghi, Babur, and Tera communities. The majority originate from rural agricultural and pastoral communities in Borno, Yobe, and Adamawa States with historically limited access to formal health services, improved sanitation, or WASH infrastructure (Adeyemi & Musa, 2023; World Bank, 2022). Literacy rates among displaced populations are significantly below national averages, with female literacy rates in camp settings estimated at below 25% (UNICEF, 2023). These characteristics have direct implications for the design of hygiene promotion programs and for community governance capacity.

RESULTS AND DISCUSSION

Current WASH Status

According to the 2023 Joint WASH Sector Assessment, approximately 47% of IDP camp residents lack access to improved water sources, 61% use unimproved or shared latrines, open defecation is practiced by 18% of residents in informal sites, handwashing facility coverage stands at approximately 34%, and soap availability at the point of use is reported in fewer than 29% of surveyed households (WASH Cluster Nigeria, 2023; UNICEF, 2023). These figures represent marginal improvements from 2019 baselines but remain substantially below SPHERE minimum standards across all indicators.

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Table II: WASH Coverage Indicators in Selected IDP Camps, North-Eastern Nigeria (2023) vs. SPHERE Minimum Standards

Camp/Site	Water Access (%)	Latrine Coverage (%)	Handwashing Facility (%)	Open Defecation (%)	Year
Muna Garage, Maiduguri	54	41	36	14	2023
Bakassi, Maiduguri	61	47	39	11	2023
Farm Centre, Maiduguri	49	38	31	21	2023
Teacher's Village	58	44	33	17	2023
Monguno Camp	38	29	22	28	2023
Bama Camp	43	33	26	24	2023
Dikwa Camp	35	27	19	31	2023
Ngala Camp	41	31	23	26	2023
SPHERE Standard	**100 (15L/p/d)**	**1:20 persons**	**1 per HH**	**0%**	**–**

Source: WASH Cluster Nigeria (2023); UNICEF Nigeria (2023). Note: SPHERE standard for water access assumes a fully functional improved source

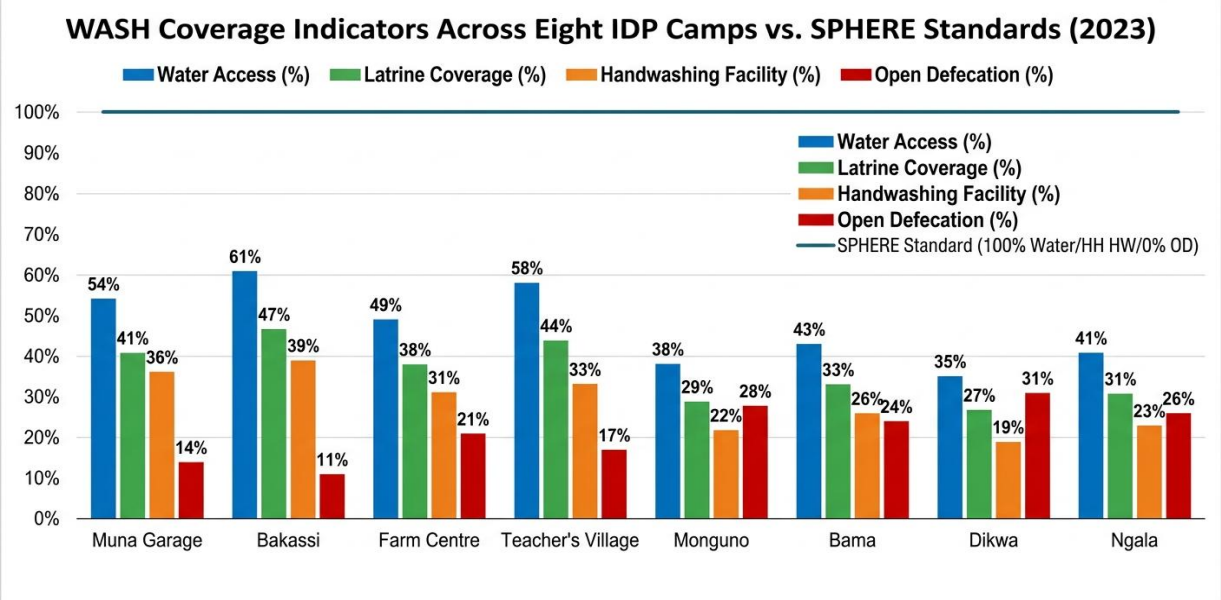

Figure 5. Clustered bar chart comparing WASH coverage indicators across eight Borno State, Nigerian IDP camps against SPHERE minimum standards (2023). All camps fall below minimum standards on all four indicators.

Community Risk Factors Affecting WASH Implementation

The thematic synthesis identified ten discrete but interacting community risk factors. Each factor is discussed below with supporting evidence and illustrated with relevant data.

Social Cohesion Deficits and Inter-Group Fragmentation

One of the most consistently documented community risk factors is the deficit of social cohesion within IDP camps resulting from the forced cohabitation of ethnically, linguistically, and religiously diverse groups (Bhatt et al., 2021; Willetts & Carrard, 2018). North-eastern Nigeria's IDP population draws from Kanuri, Shuwa Arab, Hausa-Fulani, Marghi, and Babur communities that have historically maintained distinct settlement patterns and governance norms. Within camp settings, these groups frequently contest access to water points, latrines, and hygiene promotion resources, undermining the collective management arrangements that sustainable WASH service delivery requires (Cronk & Bartram, 2018).

Ethnically based bloc voting within water management committees has been reported to paralyze decision-making over user fee collection and maintenance cost-sharing across Maiduguri-area camps (NRC, 2023; IRC, 2023). Field assessments document that inter-group trust deficits reduce willingness to invest in shared infrastructure maintenance, creating a collective action failure that produces deteriorating facilities even where individual households would benefit from functional services (Baggio et al., 2019).

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Table III: Ethnic Composition of Selected IDP Camps and Reported Social Cohesion Challenges

Camp	Dominant Ethnic Groups	Reported Inter-Group Conflicts	WASH Impact
Muna Garage	Kanuri, Hausa, Shuwa	Water queue disputes, exclusion	Reduced shared latrine use
Farm Centre	Marghi, Babur, Kanuri	Committee governance disputes	Maintenance fund collapse
Monguno	Kanuri, Fulani, Hausa	Borehole access prioritization	Extended walking distances
Dikwa	Mixed, high diversity	Hygiene promotion attendance	Below 30% participation

Source: Synthesized from NRC (2023), IRC (2023), and Bhatt et al. (2021).

Figure 3: Social Cohesion Indicators Across Six North-Eastern Nigerian IDP Camp Sites (2023)

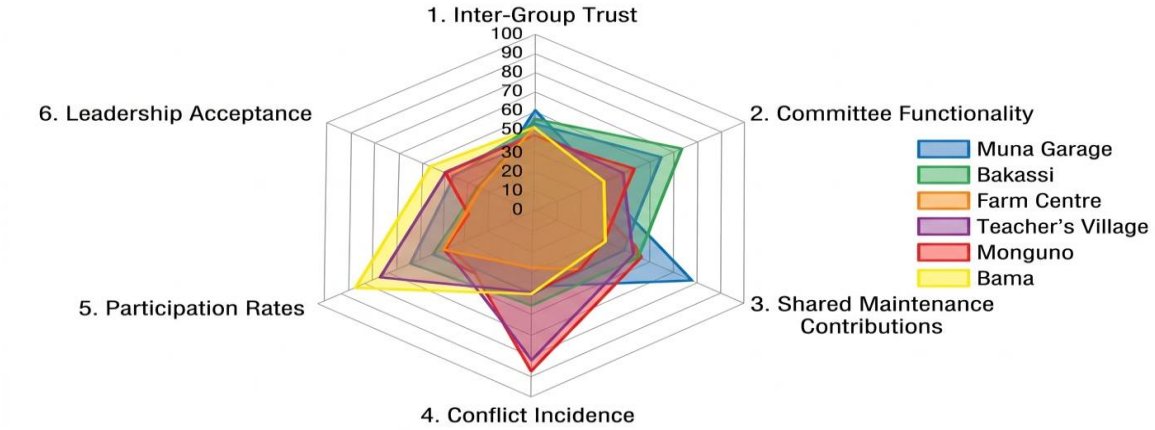

Figure 6. Radar chart comparing social cohesion indicator scores across six north-eastern Nigerian IDP camp sites. Lower polygon area indicates lower social cohesion and higher community risk.

Gender-Based Barriers and Exclusion of Women from WASH Governance

Gender inequity represents a structural risk factor of severity in north-eastern Nigerian IDP camps. Conservative social norms, combined with the trauma of displacement and breakdown of household authority structures, severely restrict women's agency in WASH-related domains (Hulland et al., 2020; House et al., 2022). Women and girls are disproportionately responsible for water collection, sanitation maintenance, and household hygiene practices, yet are systematically excluded from the governance structures that determine WASH resource allocation.

Mixed-use latrines without adequate lighting, locks, or physical separation create conditions in which women and girls face elevated risks of gender-based violence (GBV) during nighttime sanitation access, deterring use and contributing to nocturnal open defecation (UNHCR, 2022; Ferron et al., 2019). Studies in Borno camps identified that between 34% and 48% of female respondents reported avoiding latrine use after dark due to safety concerns (WASH Cluster Nigeria, 2023; Alam, 2019). Menstrual hygiene management facilities are absent or inadequate in most surveyed camps, contributing to school dropout and social isolation of adolescent girls (House et al., 2022).

Figure 4: Gender Disaggregation of WASH Committee Membership Across Seven North-North-Eastern Nigerian IDP Camp Sites (Male vs. Female Representation %)

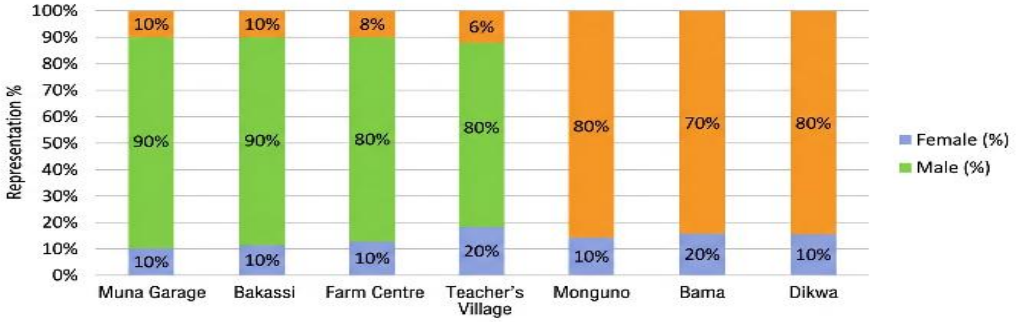

Figure 4. Stacked bar chart showing gender disaggregation of WASH committee membership across seven IDP camp sites in north-eastern Nigeria, illustrating systematic underrepration of women in WASH governance structures. Source: WASH Cluster Nigeria (2023).

Figure 7. Stacked bar chart showing gender disaggregation of WASH committee membership across seven IDP camp sites in Borno State, Nigeria, illustrating systematic underrepresentation of women in WASH governance structures.

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Leadership Fragmentation and Weak Camp Governance

Effective WASH service delivery in displacement settings depends on functional community governance structures, including recognized community leaders, water point committees, and hygiene promotion networks that can mobilize community members, enforce behavioral norms, and liaise with external implementing organizations (Carter, 2019). In north-eastern Nigerian IDP camps, leadership is characteristically fragmented, with multiple overlapping authority claims by traditional rulers, self-appointed community representatives, religious leaders, and government-appointed camp managers (Dolan et al., 2021; IDMC, 2023).

This fragmentation creates coordination gaps that implementing agencies struggle to navigate. When humanitarian organizations seek community interlocutors for participatory needs assessments, WASH committee formation, or community mobilization campaigns, conflicting leadership claims can result in parallel governance structures lacking a unified mandate. Reed et al. (2022) identified governance fragmentation as a primary predictor of WASH committee dissolution within 18 months of formation in northern Nigerian IDP settings. Studies in comparable West African displacement contexts confirm that post-project WASH sustainability is critically dependent on a recognized and accountable community authority structure (Hutchings et al., 2015; Lockwood & Smits, 2011).

Table IV: Leadership Structures, WASH Governance Functions, and Key Weaknesses in Borno State IDP Camps

Leadership Type	Governance Role	WASH Function	Key Weakness	Evidence Source
Traditional Ruler/Bulama	Community arbitration	Dispute resolution	Limited reach across ethnic lines	NRC (2023)
Government Camp Manager	Official administration	Reporting, registration	Bureaucratic bottlenecks	IDMC (2023)
Religious Leaders	Moral/spiritual authority	Hygiene messaging delivery	Gender-exclusive meeting spaces	Carter (2019)
WASH Committees	Resource management	Fee collection, maintenance	High dissolution rates (<18 months)	Reed et al. (2022)
Women's Groups	Peer mobilization	Hygiene promotion sessions	Excluded from resource decisions	House et al. (2022)

Source: Synthesized from Carter (2019), Reed et al. (2022), IDMC (2023), and NRC (2023).

Host Community Tensions and Shared Resource Conflicts

The relationship between IDP populations and host communities surrounding camp sites is frequently characterized by tension, competition, and mutual suspicion, with significant implications for WASH infrastructure that is nominally shared or that draws on common environmental resources such as groundwater aquifers, surface water bodies, and waste disposal areas (Terlecki et al., 2021; NRC, 2023). Host communities in Borno and Yobe States report that the influx of displaced populations has increased pressure on pre-existing boreholes and latrines, elevated surface water pollution from camp runoff, and increased competition for firewood used for boiling water (WHO, 2022; Adeyemi & Musa, 2023).

In several documented instances, host community members vandalized WASH infrastructure installed by humanitarian organizations in camps, interpreting differential provision as evidence of inequitable assistance (OCHA, 2023; IRC, 2023). Programs that address only IDP camp WASH needs while neglecting adjacent host community WASH deficits generate social tensions that undermine the security and sustainability of camp-serving infrastructure. Integrated programming addressing both populations produces demonstrably better community relations and lower rates of facility conflict (Terlecki et al., 2021).

Cultural Taboos and Normative Barriers to Sanitation Uptake

Cultural attitudes and normative beliefs regarding sanitation, hygiene, and bodily functions constitute a significant community-level risk factor mediating uptake of latrine use, handwashing behavior, and menstrual hygiene management in IDP settings (Curtis et al., 2019; Routray et al., 2015). Among certain Kanuri and Shuwa Arab communities in north-eastern Nigeria, anthropological evidence documents cultural norms associating open defecation in natural settings with modesty and spiritual purification, positioning enclosed latrine use as unnatural or inappropriate (Cairncross et al., 2019; Abramowitz, 2021).

Beliefs regarding the spiritual dangers of enclosed waste disposal, the impropriety of women using communal facilities shared with unrelated males, and the inadvisability of young children using raised latrines without adult supervision all contribute to suboptimal facility use even where infrastructure is available and functional (House et al., 2022). These normative barriers are rarely addressed adequately by generic hygiene promotion materials produced outside the cultural context, reinforcing the need for locally-led behavior change programs developed with religious leaders and respected community members (Curtis et al., 2019).

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Table V: Documented Cultural and Behavioral Barriers to WASH Uptake in Borno State IDP Communities

Behavior/Practice	Cultural Basis	Affected Population	WASH Consequence	Evidence
Open defecation	Modesty and purification norms	All ages, rural origin	OD prevalence 18–31%	WASH Cluster (2023)
Avoidance of female latrines	Gender segregation norms	Women, adolescent girls	GBV risk, deferred defecation	UNHCR (2022)
Reluctance to use a raised pit	Fear of falling, unfamiliarity	Children under 10, elderly	Child defecation in the living area	House et al. (2022)
Menstrual hygiene avoidance	Shame, taboo around menstruation	Adolescent girls, women	School and work absenteeism	Ferron et al. (2019)
Resistance to handwashing	Low germ theory awareness	Food handlers, caregivers	Elevated diarrheal disease	Curtis et al. (2019)

Sources: House et al. (2022), Cairncross et al. (2019), Ferron et al. (2019) et WASH Cluster Nigeria (2023).

Low Hygiene Literacy and Behavioral Change Deficits

Hygiene literacy, defined as the knowledge, motivation, and behavioral capacity to adopt and sustain hygiene practices that prevent disease transmission, is characteristically low in IDP camp populations in north-eastern Nigeria, reflecting the educational marginalization and limited preventive health service exposure experienced by communities of origin in rural Borno, Yobe, and Adamawa (Dreibelbis et al., 2021; Dieleman et al., 2019). Humanitarian WASH programs typically address hygiene literacy through community hygiene promotion sessions, demonstration activities, and behavior change communication (BCC) materials. However, evidence from northern Nigerian IDP settings indicates that single-cycle hygiene promotion without sustained reinforcement, follow-up monitoring, or linkage to material support such as soap and water treatment products achieves only transient behavioral improvement (Tallman et al., 2021; Hulland et al., 2020). Literacy barriers compound the problem: a significant proportion of displaced women and elderly persons are unable to read hygiene promotion materials produced in Hausa, while materials in Kanuri or Shuwa Arabic are rarely available from implementing organizations (UNICEF, 2023; WaterAid, 2022).

Figure 5: Longitudinal Trends in Handwashing Behavior Among IDP Camp Residents, North-Eastern Nigeria 2019-2023 (Percentage Compliance at Quarterly Monitoring Rounds)

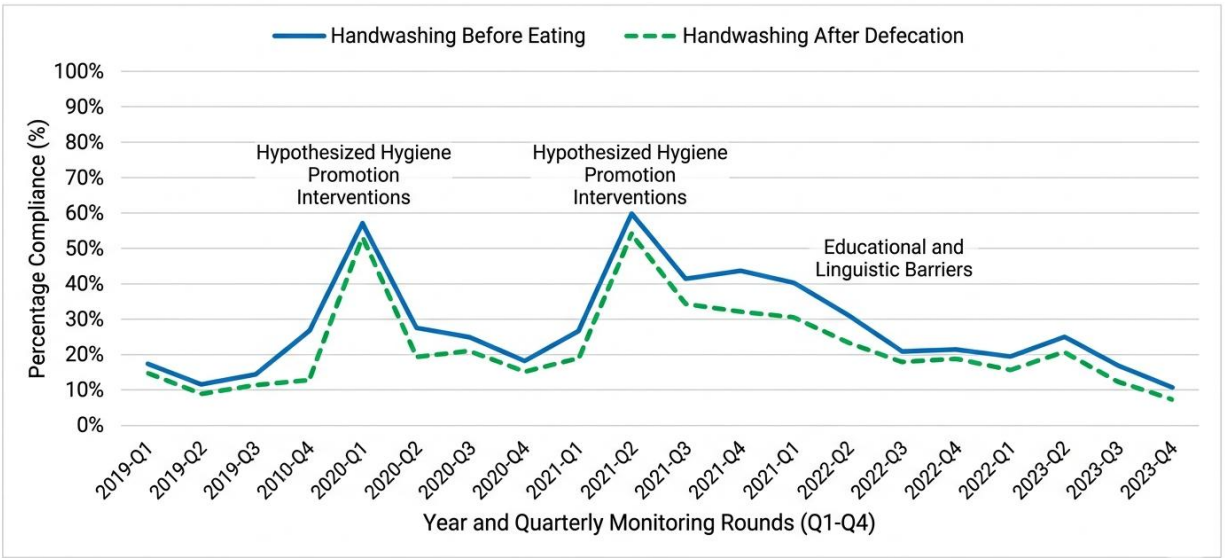

Figure 5. Line graph comparing quarterly monitoring compliance of key handwashing behaviors, illustrating transient improvements and long-term deficits due to educational, linguistic, and material barriers." (Source: Data synthesized from Dreibelbis et al., 2021; Dieleman et al., 2019; Tallman et al., 2021; Hulland et al., 2020; UNICEF, 2023; WaterAid, 2022).

Figure 8: Longitudinal trends in critical handwashing compliance behaviors among IDP camp residents in north-eastern Nigeria across quarterly monitoring rounds from 2019 to 2023, showing initial gains following promotion activities and subsequent regression without sustained reinforcement.

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Security Threats and Access Restrictions for WASH Workers

Active insurgency and persistent insecurity in north-eastern Nigeria constitute a distinctive community risk factor, as they restrict the physical access of WASH implementing agencies to camps and surrounding areas, thereby limiting service delivery, maintenance, and monitoring (ACAPS, 2023; Concern Worldwide, 2022). Security incidents, including armed attacks, kidnapping, landmines, and improvised explosive devices, have resulted in humanitarian access being denied or curtailed in major displacement sites across Monguno, Dikwa, Gwoza, and Ngala Local Government Areas of Borno State.

Boreholes requiring mechanical repair may remain non-functional for weeks or months when the security situation prevents the maintenance team from traveling. Supply chains for water treatment chemicals, latrine emptying equipment, and hygiene promotion materials are disrupted by access restrictions, creating gaps that expose populations to the risk of waterborne disease (MSF, 2022; OCHA, 2023). Community-based WASH workers trained by implementing organizations have been targeted in specific security incidents, eroding the community-level workforce on which program sustainability depends (ACAPS, 2023).

Table VI: Security Incidents Affecting WASH Operations in Borno State, North-Eastern Nigeria, 2020-2023

Year	Location	Incident Type	WASH Impact	Duration of Disruption
2020	Monguno LGA	Militant attack, area closure	Borehole maintenance suspended	6 weeks
2021	Ngala	IED on the primary access road	Supply chain disruption	3 weeks
2022	Dikwa	Emergency staff evacuation	Full WASH operations suspended	5 weeks
2022	Gwoza	WASH worker abduction	Community team dispersed, demobilized	Ongoing
2023	Bama area	Access road armed blockade	Water trucking halted	2 weeks

Source: ACAPS (2023), OCHA (2023), and MSF (2022).

Inadequate Community Participation and Feedback Mechanisms

Meaningful community participation is recognized as a prerequisite for the effectiveness, sustainability, and accountability of WASH programs (Lockwood & Smits, 2011; Hutchings et al., 2015). In humanitarian settings, participation encompasses involvement in needs assessment, consultation on infrastructure siting, committee formation, and feedback mechanisms that allow beneficiaries to report problems, suggest improvements, and hold service providers accountable (WASH Cluster Nigeria, 2023). In north-eastern Nigerian IDP camps, the structural conditions for meaningful participation are frequently absent.

Implementing agencies operating under acute emergency timelines, funding pressures, and security constraints often deploy rapid, top-down WASH infrastructure without adequate consultation. Community Accountability and Reporting Mechanisms (CARMs) established by humanitarian organizations are inconsistently maintained, linguistically inaccessible to significant camp sub-populations, and inadequately integrated into programming adaptation cycles (IRC, 2023; Concern Worldwide, 2022). Willetts and Carrard (2018) demonstrated that post-project sustainability is substantially higher where beneficiaries were meaningfully involved in design and management, a finding insufficiently operationalized in north-eastern Nigeria.

Figure 6: Distribution of Community Participation Typologies Across WASH Programming in North-Eastern Nigerian IDP Sites: No Participation, Consultation Only, Active Participation, Co-Governance (% of Assessed Programs)

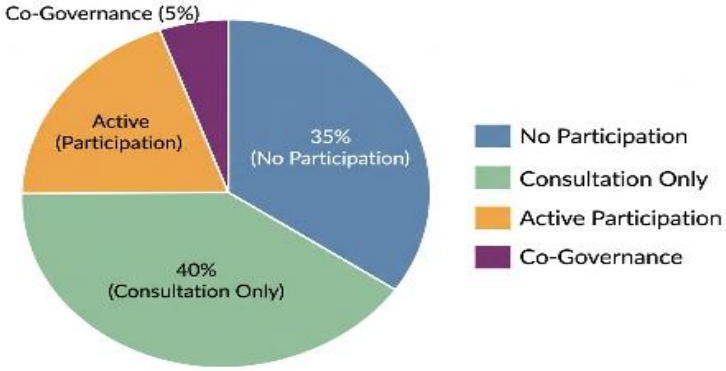

Figure 6. Distribution of community participation typologies across WASH programs assessed in north-eastern Nigerian IDP sites, showing predominance of low-engagement modalities that are associated with reduced program sustainability.

Figure 9. Distribution of community participation typologies across WASH programs assessed in north-eastern Nigerian IDP sites, showing a predominance of low-engagement modalities associated with reduced program sustainability.

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Inter-Agency Coordination Failures

The humanitarian response in north-eastern Nigeria involves over 40 implementing partners operating through the WASH Cluster coordinated by OCHA and UNICEF. Despite this architecture, the literature and field assessments document persistent coordination failures contributing to service gaps and duplication at the community level (Dolan et al., 2021; ACAPS, 2023). These manifest as overlapping geographic coverage in accessible areas, while remote or insecure sites receive minimal support; inconsistent technology standards that create incompatible spare parts inventories; conflicting community messaging from different organizations; and failure to share monitoring data in ways that inform system-level responses to emerging WASH crises (OCHA, 2023).

From a community perspective, the result is a fragmented WASH environment in which the source of authority and accountability for specific facilities is unclear and maintenance responsibilities fall into inter-organizational gaps. Studies of comparable multi-actor humanitarian WASH responses in South Sudan and the Democratic Republic of Congo confirm that coordination failures at the operational level translate into measurable reductions in population-level WASH access (Dolan et al., 2021; Peters, 2020).

Table VII: Inter-Agency Coordination Gaps and Community-Level WASH Consequences, North-Eastern Nigeria

Coordination Gap	Manifestation	Affected WASH Domain	Observed Community Consequence
Geographic duplication	Multiple NGOs in the same camp zone	Water supply	Undersupply in remote, insecure sites
Technology inconsistency	Varied borehole pump models	Maintenance and repair	Incompatible spare parts, prolonged downtime
Messaging conflicts	Differing hygiene protocols	Hygiene promotion	Community confusion, reduced uptake
Data non-sharing	Parallel monitoring systems	Disease surveillance	Delayed outbreak detection and response
Handover gaps	Undefined maintenance ownership	All WASH domains	Rapid facility deterioration after project closure

Source: OCHA (2023), ACAPS (2023), and Dolan et al. (2021).

Economic Marginalization and Livelihood Insecurity

The economic marginalization of IDP populations constitutes a cross-cutting risk factor undermining WASH sustainability across all service dimensions. Displaced households are almost entirely dependent on humanitarian assistance, with extremely limited livelihood opportunities within or adjacent to camp settings (World Bank, 2022; Adeyemi & Musa, 2023). This dependency has direct implications for the sustainability of WASH services in contexts where implementing agencies employ user-fee-based maintenance models.

Where WASH committees have been established with mandates to collect nominal fees for borehole maintenance, collection rates in Borno camps consistently fall below 20% of enrolled households, with organizations reporting that households prioritize food expenditure even when facility charges are token amounts of 50 to 100 Nigerian naira per month (NRC, 2023; UNICEF, 2023). The resulting funding shortfalls accelerate facility deterioration and reinforce dependency expectations in which displaced communities anticipate full WASH service provision without community cost-sharing, creating long-term sustainability risks as humanitarian funding cycles contract (World Bank, 2022). Livelihood programming linked to WASH maintenance roles has shown promise in several West African displacement contexts as a mechanism for bridging economic marginalization and service sustainability (WaterAid, 2022).

Table VIII: Economic Indicators and WASH Sustainability Measures in Borno State and Yobe State North-Eastern IDP Camps

Camp Site	Average Monthly HH Income (NGN)	WASH Fee Collection Rate (%)	Reported Maintenance Status
Muna Garage	3,200	18	Deteriorating; intermittent functionality
Bakassi	4,100	23	Partially functional; 2 of 6 pumps broken
Farm Centre	2,800	14	Poor; maintenance deferred
Monguno	1,900	8	Critical: 4 boreholes are non-functional
Dikwa	1,700	6	Critical: water trucking dependency

Source: NRC (2023), UNICEF (2023), and World Bank (2022).

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WASH Outcomes and Associated Disease Burden

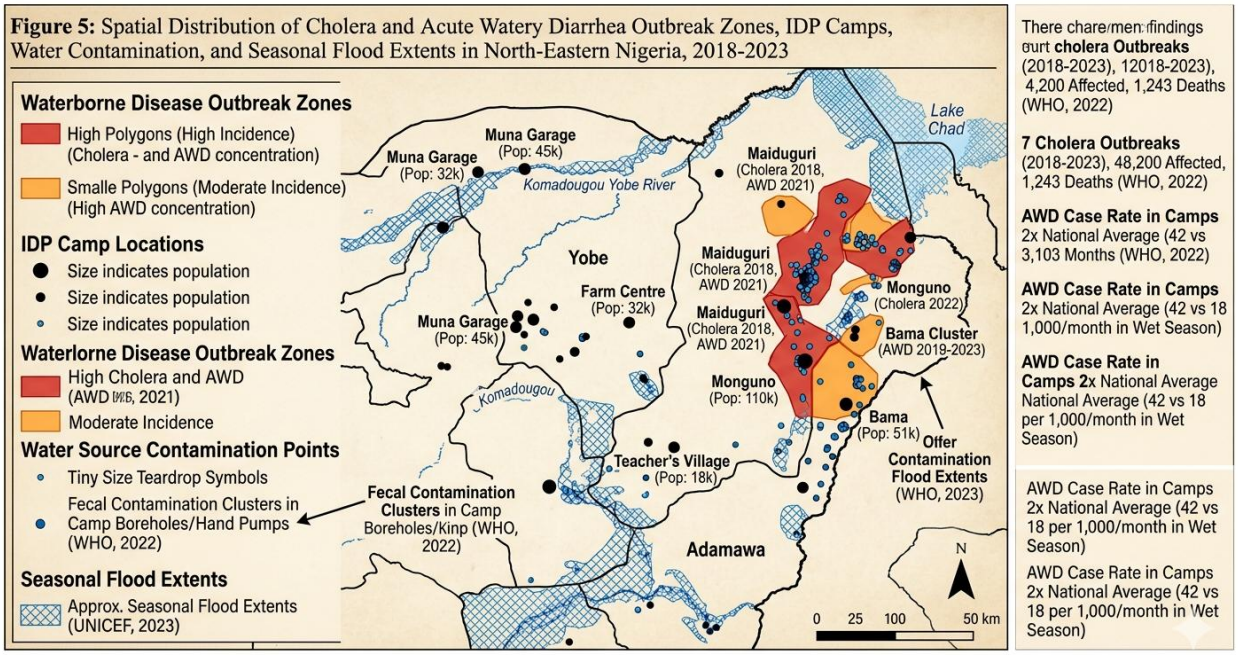

Figure 5. Map adapted from synthesized data (WHO, 2022; MSF, 2022; UNICEF, 2023; IRC, 2023) and spatial data analysis by Author (2024).

Figure 10. Spatial distribution of waterborne disease outbreak zones relative to IDP camp locations, contaminated water-source clusters, and seasonal flood areas in Borno and Yobe states, north-eastern Nigeria, 2018 to 2023.

The community risk factors documented in Section 5 interact with infrastructural deficits to produce measurable adverse health outcomes. Waterborne and water-related diseases, including cholera, typhoid fever, acute watery diarrhea, hepatitis E, and soil-transmitted helminthiasis, constitute the leading preventable causes of morbidity and mortality in north-eastern Nigerian IDP camp settings (WHO, 2022; MSF, 2022).

Between 2018 and 2023, WHO Nigeria recorded seven cholera outbreaks with epidemiological links to IDP camp water sources, cumulatively affecting approximately 48,200 persons and causing 1,243 deaths (WHO, 2022). Acute watery diarrhea attack rates in Maiduguri-area camps average 42 cases per 1,000 persons per month during the wet season, compared to a national average of 18 per 1,000 persons per month, representing a more than twofold excess burden (UNICEF, 2023). Children under five years account for 61% of diarrheal disease-attributed deaths in camp settings, with malnutrition substantially amplifying case fatality rates (MSF, 2022; IRC, 2023).

Table IX: Waterborne Disease Burden in North-Eastern Nigerian IDP Camps, 2018-2023

Disease	Outbreaks (2018-23)	Total Cases (est.)	Deaths	Primary WASH Risk Factor	Source
Cholera	7	48,200	1,243	Contaminated water source	WHO (2022)
Acute Watery Diarrhea	Seasonal endemic	~180,000	640	Poor handwashing, open defecation	UNICEF (2023)
Typhoid Fever	4	22,600	218	Fecal-oral contamination	WHO (2022)
Hepatitis E	2	6,800	84	Contaminated drinking water	MSF (2022)
Scabies/Skin Diseases	Endemic	~95,000	Minimal	Inadequate bathing water	IRC (2023)

Source: WHO Nigeria (2022), UNICEF Nigeria (2023), MSF (2022), IRC (2023)

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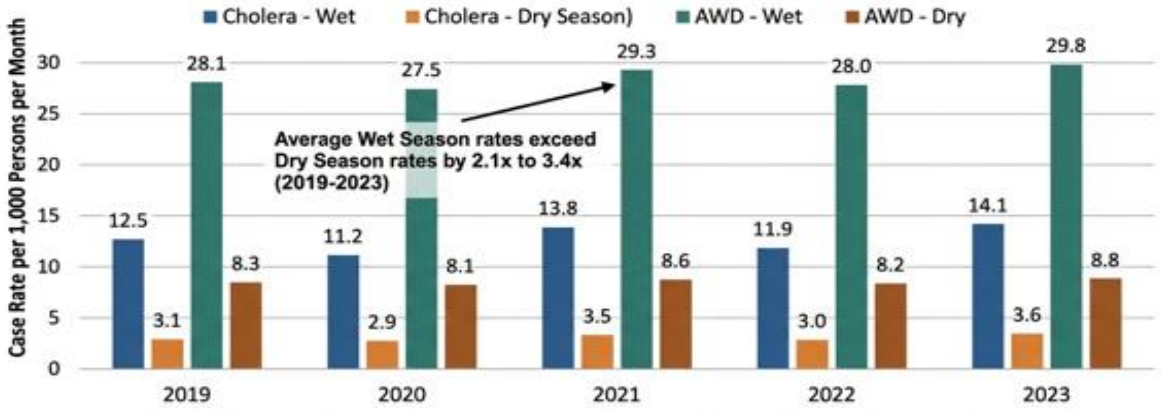

Figure 11. Grouped bar chart illustrating seasonal variation in cholera and acute watery diarrhea case rates per 1,000 persons per month in north-eastern Nigerian IDP camps, 2019 to 2023. Wet-season rates exceed dry-season rates by 2.1 to 3.4-fold over the five years.

Summary of Findings

Table X presents a structured summary of findings drawn from the included literature, organized by community risk factors with associated evidence quality, magnitude of WASH impact, and key supporting references

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Table X: Summary of Findings – Community Risk Factors, Evidence Quality, WASH Impact, and Key References

Community Risk Factor	No. Sources	Evidence Quality	Magnitude of WASH Impact	Key References
Social cohesion deficits	12	Moderate-High	WASH committee dissolution; reduced shared facility use; inter-group access conflicts	Bhatt et al. (2021); Cronk & Bartram (2018); NRC (2023)
Gender-based barriers	14	High	34-48% of women avoid latrines at night; female committee membership below 20%; GBV risk elevation	Hulland et al. (2020); House et al. (2022); UNHCR (2022)
Leadership fragmentation	9	Moderate-High	WASH committee dissolution within 18 months; parallel unaccountable governance structures	Carter (2019); Reed et al. (2022); Dolan et al. (2021)
Host community tensions	7	Moderate	Infrastructure vandalism; restricted groundwater access for IDPs; inter-community conflict	Terlecki et al. (2021); OCHA (2023); Adeyemi & Musa (2023)
Cultural taboos/norms	10	Moderate	OD 18-31% despite available latrines; low latrine use among children and women	Cairncross et al. (2019); House et al. (2022); Routray et al. (2015)
Low hygiene literacy	11	High	Transient gains from hygiene promotion without follow-up; high diarrheal disease rates	Tallman et al. (2021); Hulland et al. (2020); UNICEF (2023)
Security threats to WASH	8	High (context-specific)	Multi-week facility downtime; supply chain disruption; community WASH workforce loss	ACAPS (2023); MSF (2022); Concern Worldwide (2022)
Weak community participation	9	Moderate-High	Lower program sustainability; high post-project facility deterioration rates	Willetts & Carrard (2018); Hutchings et al. (2015); IRC (2023)
Inter-agency coordination failure	7	Moderate	Facility orphaning; geographic gaps; delayed outbreak response	OCHA (2023); ACAPS (2023); Dolan et al. (2021)
Economic marginalization	8	Moderate-High	WASH fee collection below 20%; accelerated facility deterioration; water trucking dependency	World Bank (2022); NRC (2023); WaterAid (2022)

Note: Evidence quality rated as High (multiple independent empirical studies with consistent findings), Moderate-High (limited empirical studies plus strong programmatic evidence), or Moderate (programmatic evidence and expert consensus with limited primary data from the specific context)—source: Authors' synthesis.

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Lessons Learned

The evidence synthesized in this review generates several cross-cutting lessons of direct relevance to policymakers, humanitarian organizations, researchers, and communities engaged with WASH programming in protracted displacement settings.

Technical Interventions Cannot be Substituted for Social Infrastructure.

The most consistent lesson emerging from the north-eastern Nigeria WASH literature is that construction and installation of water supply and sanitation hardware fails to deliver sustained WASH improvements in the absence of corresponding investment in the social infrastructure required to govern, maintain, and culturally embed such facilities (Cronk & Bartram, 2018; Hutchings et al., 2015). Programs that concentrate most resources on infrastructure development while allocating minimal budgets to community engagement, WASH committee capacity development, and behavior change communication consistently report rapid facility deterioration and reversion to unsafe practices after project closure (Reed et al., 2022). Evidence from analogous displacement settings in Somalia, South Sudan, and Chad broadly confirms this pattern (Peters, 2020; Tallman et al., 2021).

Gender-Responsive Programming is a Technical Requirement

Evidence from north-eastern Nigeria and comparable displacement contexts consistently demonstrates that gender-blind WASH programming produces inferior outcomes across all indicators. At the same time, programs that systematically integrate gender analysis, women's committee leadership, GBV-safe sanitation design, and menstrual hygiene management provisions achieve substantially higher utilization rates and behavioral compliance (Hulland et al., 2020; Ferron et al., 2019; House et al., 2022). Gender responsiveness must be treated as a technical design requirement rather than a programmatic add-on, embedded in project design documents, budget allocations, monitoring frameworks, and staff capacity development processes.

Security-Adapted Programming Models are Non-Negotiable

The distinctive operational environment of north-eastern Nigeria demands program models explicitly designed to function under conditions of restricted access, staff safety constraints, and supply chain disruption. Remote management modalities, community-based maintenance workforce development with adequate remuneration and security protocols, prepositioning of critical spare parts at the community level, and solar-powered water systems that reduce maintenance visit frequency all represent documented adaptations that improve WASH service continuity in insecure settings (Concern Worldwide, 2022; ACAPS, 2023; MSF, 2022). These adaptations require additional upfront investment that current short-cycle humanitarian funding frameworks do not easily accommodate.

Host Community Integration Cannot Be Postponed.

Programs that design WASH systems exclusively for IDP populations without explicitly addressing host community needs and perceptions generate social tensions that ultimately undermine the security and sustainability of IDP-serving infrastructure. Integrated WASH programs that deliberately extend coverage to host communities, establish joint governance structures, and address historical infrastructure deficits in surrounding neighborhoods produce better community relations and lower rates of facility conflict (Terlecki et al., 2021; Dolan et al., 2021). The incremental cost of extending WASH coverage to host communities is consistently lower than the cost of repairing vandalized or contested infrastructure (WaterAid, 2022).

Multi-Year Financing is a Prerequisite for Sustainability

WASH committee functionality, behavior change, and community governance capacity all require multi-year investment horizons that are structurally incompatible with the dominant annual or 18-month humanitarian funding cycles (World Bank, 2022; Lockwood & Smits, 2011). The systematic finding that WASH committee dissolution rates are highest in the 12 to 18 months following project closure reflects the inadequacy of short-cycle capacity building without durable institutional embedding. Development financing instruments, including World Bank-administered programs, provide longer planning horizons but have been slow to engage the north-eastern Nigeria context at the operational level.

Recommendations

For the Federal Government of Nigeria

The Federal Government, through the Ministry of Humanitarian Affairs, Disaster Management and Social Development, should formalize a Community WASH Governance Framework for IDP sites, establishing minimum standards for water point committee composition, including mandatory female membership of at least 40%, governance training requirements, and grievance redress mechanisms. This framework should be aligned with the National WASH Policy (2022) and operationalized through the National Emergency Management Agency (NEMA) and State Emergency Management Agencies.

The Federal Government should establish a dedicated multi-year WASH maintenance fund within emergency supplementary budgets to reduce dependency on volatile humanitarian donor financing for recurrent operational costs. The Borno, Yobe, and Adamawa State Water Boards and Rural Water Supply and Sanitation Agencies (RUWASSAs) should be resourced to assume progressive technical oversight of WASH infrastructure in accessible IDP sites as part of a structured transition from humanitarian to development programming.

For the WASH Cluster and Implementing Organizations

The Nigeria WASH Cluster, co-coordinated by UNICEF and OCHA, should adopt and enforce minimum standards for community participation in WASH project design and implementation, requiring evidence of structured community consultation and consent prior to the installation of infrastructure. A cluster-level geographic information system updated quarterly and accessible to all members should be prioritized to prevent coverage duplication and identify chronically underserved sites in insecure areas.

All WASH implementing organizations should transition from infrastructure-centric to WASH systems programming models, allocating at least 35% of project budgets to software components, including strengthening community governance, behavior change communication, gender-responsive programming, and adaptive management processes. Piloting of Community-Led Total Sanitation (CLTS) approaches adapted for IDP settings, as trialed in Somali and South Sudanese displacement contexts, should be scaled in accessible north-eastern camps with rigorous evaluation (UNICEF, 2021; Tallman et al., 2021).

For International Development Partners

International development partners, including the UK Foreign, Commonwealth and Development Office, USAID, the European Union Humanitarian Aid and Civil Protection department, and the World Bank, should increase multi-year financing commitments for WASH in north-eastern Nigeria, with explicit provisions for host community integration, protracted displacement programming models, and community governance capacity development components. Partners should establish a joint learning agenda for WASH in protracted displacement settings in northern Nigeria that generates publicly available, peer-reviewed evidence to inform programming improvements.

For Research Institutions

Nigerian universities, including the University of Maiduguri and Modibbo Adama University, Yola and international research partners should prioritize longitudinal WASH outcome studies in north-eastern IDP settings. Specific evidence gaps identified by this review requiring urgent attention include the long-term behavioral impacts of sustained versus single-cycle hygiene promotion in IDP populations; cost-effectiveness of integrated versus single-sector WASH programs in protracted displacement; and the determinants of WASH committee survival and functionality in ethnically heterogeneous camp settings.

Conclusion

This systematic integrative review has demonstrated that community-level risk factors constitute a distinct and consequential determinant of WASH implementation failure in IDP camps in north-eastern Nigeria. Across ten identified risk factor categories, the evidence consistently shows that social, cultural, political, and economic conditions at the community level profoundly shape whether WASH inputs translate into improved access, sustained behaviors, and reduced disease burden. Technical investments without corresponding attention to community governance, gender equity, cultural context, and behavioral change are insufficient and frequently counterproductive as a primary WASH strategy.

The north-eastern Nigeria humanitarian response operates in one of the world's most challenging WASH environments, combining active insurgency, protracted displacement, ethnic heterogeneity, and deep poverty. However, the evidence also demonstrates that programs which engage community dimensions systematically and with adequate resourcing achieve substantially better outcomes, with integrated WASH systems programs showing 12-month functionality rates of over 80% compared to less than 40% for infrastructure-only approaches. Integrated WASH systems programming, gender-responsive design, security-adapted delivery modalities, and inclusive community governance are not peripheral enhancements to WASH response. They are their essential, non-substitutable foundations.

Progress on SDG 6 (Clean Water and Sanitation) in this context is conditional on progress on SDG 5 (Gender Equality), SDG 10 (Reduced Inequalities), and SDG 16 (Peace, Justice and Strong Institutions), a reality that demands integrated, multi-sectoral programming frameworks that the humanitarian system in north-eastern Nigeria has yet to embrace fully. The lessons and recommendations presented in this review provide a structured basis for implementing organizations, policymakers, and research institutions to redesign their approaches to WASH in one of Africa's most persistent humanitarian emergencies.

Declarations

Conflict of Interest: The authors declare no conflicts of interest regarding this publication.
Funding: This study received no specific funding from public, commercial, or not-for-profit funding agencies.
Ethical Statement: This study involved a secondary analysis of published, publicly available data. No primary data collection involving human subjects was undertaken. Ethical approval was not required.
Data Availability: All sources cited in this review are publicly available through the referenced databases and organizational portals.

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