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Household Coping Strategies in a Coastal Water Crisis Zone: A Coping-Strategy-Index Analysis of Akwa Ibom State, Nigeria

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Abstract

Coastal households confronted with unsafe or unreliable drinking water rarely wait passively for infrastructural remedies; they adapt, often at considerable social, economic and health cost. This study quantifies the severity of household adaptation to drinking-water insecurity in nine coastal communities of Akwa Ibom State, Nigeria, using a Coping Strategy Index (CSI) approach adapted from food-security research [20] rather than the descriptive tabulation typical of prior local assessments. Cross-sectional survey data from 314 households, complemented by 11 focus-group/interview sessions, were analysed by assigning severity weights (1 = low-distress/adaptive to 4 = high-distress/maladaptive) to six recurrent coping behaviours and computing frequency-weighted severity scores, relative-frequency rankings, and a composite household water-coping severity index. Results show that "using unsafe water for other household purposes" carries the highest severity-weighted burden (weighted score = 468; 37.3% prevalence), followed by reliance on costly private water vendors (408; 43.3%) and high-frequency but lower-severity storage behaviours (302; 48.1%). The composite coping severity index was 23.8 out of 100, indicating a moderate-to-high, chronic adaptation burden rather than episodic crisis response. Coping portfolios differed systematically by geo-ecological zone: Atlantic-shore households favoured reactive source-switching, coastal-island households relied on storage and paid private supply, and upland households were shaped more by time-cost (queuing) than by direct contamination avoidance. The findings extend the coping-strategies literature beyond the descriptive frequency counts common in Niger Delta water studies and demonstrate that severity-weighted indices better capture the health-relevant trade-offs embedded in household water behaviour. Community-based water-safety planning, subsidised low-cost treatment technologies, and zone-specific public communication are recommended.

Keywords: Coping Strategy Index; Water Insecurity; Coastal Households; Akwa Ibom State; Niger Delta; Adaptive Behaviour; Drinking Water

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Introduction

Roughly one-quarter of the world's population still lacks access to safely managed drinking water, and the burden is disproportionately carried by coastal, delta and small-island populations whose aquifers are simultaneously exposed to saline intrusion, industrial effluent, and inadequate sanitation infrastructure [23, 25]. Where formal supply fails, households do not stop consuming water — they substitute, ration, store, purchase, queue, or simply accept greater exposure to unsafe sources [2, 24]. These household-level adjustments are usually referred to as coping strategies, and a growing literature treats them not as a benign expression of resilience but as a measurable indicator of distress whose severity can be systematically scored [5, 10].

Most existing assessments of coping behaviour in the Niger Delta and similar Nigerian coastal contexts have been purely descriptive — a listing of strategies and their raw frequencies without an attempt to weight strategies by their relative health or welfare cost (see, for example, regional case studies from Bayelsa and Akwa Ibom States, and the community-perception-based contamination studies reviewed in Section 2). Yet a household that occasionally changes its water source when it notices discolouration is not adapting in the same way, or at the same cost, as one that knowingly uses contaminated water because no safe alternative exists. Distinguishing between these forms of adaptation requires a severity-weighted metric.

This paper addresses that gap by applying a Coping Strategy Index (CSI) — a tool originally

developed for household food-security analysis [20] and increasingly adapted to water insecurity research [5, 21] to household water-coping data collected from coastal communities in Akwa Ibom State, Nigeria. The specific objectives are to: (i) document the range and relative frequency of coping strategies used by coastal households; (ii) construct a severity-weighted CSI to rank strategies by their welfare/health cost rather than their prevalence alone; (iii) examine whether coping portfolios vary systematically across the coastal-island, Atlantic-shore and upland geo-ecological zones that characterise this stretch of the Nigerian coast; and (iv) situate these empirical findings within a dedicated, structured review of related conceptual, theoretical and empirical literature, including the growing body of Akwa Ibom-focused scholarship on coastal water contamination and household experience.

The paper is organised as follows. Section 2 presents a review of related literature, comprising a conceptual review of water insecurity and coping, the theoretical framework underpinning the study, an empirical review organised from the local (Akwa Ibom/Niger Delta) to the global scale, a conceptual schema, and a summary identifying the specific gap this study fills. Section 3 describes the study area, data sources and analytical methods, including the construction of the Coping Strategy Index. Section 4 presents the results, Section 5 discusses their implications with explicit reference to the reviewed literature, and Section 6 concludes with policy recommendations.

Review of Related Literature

This section situates the present study within existing scholarship. It proceeds from concepts, to theory, to empirical evidence — moving from studies conducted in Akwa Ibom State and the wider Niger Delta (including the coastal water-contamination research programme led by Dr. Utibe Joseph Jimmy and collaborators at the University of Uyo) outward to comparable work elsewhere in Nigeria, Sub-Saharan Africa and other developing regions before presenting a conceptual schema and a summary of the identified literature gap.

Conceptual Review

Water insecurity: Water insecurity is generally understood as the inability of a household or individual to reliably access and use sufficient, safe, acceptable and affordable water for a healthy and dignified life [11, 24]. It is now recognised as a multidimensional construct encompassing availability, accessibility, quality, reliability and affordability, rather than a single binary state of "having" or "lacking" water. Coastal populations experience a particular configuration of water insecurity in which the underlying resource groundwater is itself compromised by saline intrusion and industrial contamination, so that the central problem is less an absence of water than a surplus of unsafe water, forcing households into an ongoing, largely invisible process of quality-based decision-making about which water to use for which purpose.

Coping strategies and coping behaviour: Coping strategies, in the water-security literature, denote the set of behavioural adjustments — substitution, rationing, storage, purchase, queuing, or tolerance of reduced quality that households deploy when their preferred water source is inadequate [2, 24]. A key conceptual distinction, foundational to this paper, is between coping as a benign expression of resilience and coping as a measurable indicator of distress. Early water-security literature tended toward the former reading, treating diverse household adjustments as evidence of adaptive capacity. More recent scholarship [5, 10] argues for the latter: that many so-called coping behaviours are in fact welfare losses — forgone income, foregone hygiene, or direct health exposure that should be scored by severity rather than simply enumerated.

The Coping Strategy Index (CSI) as an analytic device: The Coping Strategy Index originated in household food-security assessment [20] as a rapid, low-cost proxy for food-access difficulty, built by asking households how frequently they used a short list of locally relevant coping behaviours and then weighting each behaviour by a severity score derived from local expert consensus. Its central methodological insight that frequency and severity are conceptually distinct dimensions of hardship and must be multiplied together, not read separately has since been transplanted into water-insecurity research [5, 21], where it performs the same function: converting a list of things households "do" into a single, comparable index of how costly those things are. This conceptual transplantation is the methodological backbone of the present study.

Theoretical Framework

The analysis combines two complementary theoretical lenses, chosen deliberately over the generic stress-and-coping model that has dominated earlier local assessments.

The Sustainable Livelihoods Framework: The Sustainable Livelihoods Framework (SLF) [6] situates household water-coping decisions within the wider portfolio of assets — financial, social, physical, natural and human that a household can draw upon under stress. Within this framework, the choice of coping strategy is read as an asset-allocation decision: households with denser kinship networks (social capital) lean on neighbourly water-sharing arrangements, while those with liquid income (financial capital) rely on commercial vendors; households with physical assets such as storage drums adopt storage-based strategies, while those lacking such assets are pushed toward direct-use compromises. The SLF therefore answers a "what do households do, and why this and not that" question.

Coping-severity theory and the CSI continuum: Coping-severity theory, operationalised through the CSI, treats each strategy as occupying a position on a distress continuum: strategies that are reversible, low-cost and preserve health (e.g., budgeting, cooperative water-sharing arrangements) sit at the low end, while strategies that are health-compromising or economically corrosive (e.g., consumption of visibly unsafe water) sit at the high end [5, 20]. This lens answers a complementary "how costly is what they do" question. Lazarus and Folkman's (1984) generic transactional model of stress and coping which earlier coastal Nigerian assessments have generally relied upon in isolation usefully explains the cognitive appraisal process by which a household judges a water source "threatening" and selects a response, but it does not, on its own, generate a quantifiable severity metric that can be benchmarked, compared across zones, or tracked over time. Combining the SLF with CSI-based coping-severity theory therefore allows the same dataset to answer both the "what" and the "how costly" questions within a single analytic structure — a methodological pairing not previously used in earlier coastal Nigerian assessments of this kind.

Empirical Review of Related Studies

A substantial and rapidly growing body of recent scholarship, much of it emerging from Nigeria has documented the coastal water-contamination context within which the present coping-behaviour analysis is situated. For instance, [15], in a study of drinking-water contamination sources and impacts in coastal Akwa Ibom State,

integrated community perception with field-based physicochemical evidence and found that residents' own sensory judgements of water safety — taste, odour, colour — broadly tracked, but did not perfectly match, laboratory contamination indicators, a finding directly relevant to the present paper's strategy of "changing water collection point upon perceived contamination," since it implies that perception-triggered coping is a partially, but not fully, reliable proxy for actual exposure risk. In a closely related paper, [16] documented the lived experiences of coastal households confronting contaminated drinking water, describing qualitative accounts of rationing, vendor reliance and reluctant use of visibly poor-quality water for secondary purposes essentially the same six-behaviour repertoire that this paper formally indexes by severity, but reported there in narrative rather than severity-weighted form.

In a recent study by [13], he examined "Environmental Defense" in coastal Akwa Ibom communities, took the community-perception thread further by explicitly reconciling indigenous sensory metrics of water quality with formal laboratory standards, arguing that coastal residents have developed locally valid, if informal, water-safety heuristics under conditions of chronic institutional neglect. This work strengthens the conceptual case, adopted in the present paper, for treating household coping behaviour as an informed — not merely desperate response to a genuinely degraded resource, consistent with the Sustainable Livelihoods Framework's emphasis on households as active managers of a constrained asset portfolio rather than passive victims of circumstance.

Beyond the immediate drinking-water contamination programme, Jimmy and collaborators have produced a wider body of coastal-resource and environmental-governance research in the same geographic zone that contextualises the structural drivers feeding into the coping-severity model developed here including studies by [14, 17, 18].

Earlier Akwa Ibom-focused scholarship provides important historical and institutional context. Akpabio (2011), in a widely cited study of water perception and management practice in Akwa Ibom State, showed that household knowledge of, and response to, water problems is deeply embedded in cultural belief systems and informal institutions rather than being a simple function of technical water-quality information a finding that anticipates, and helps explain, the zone-specific coping heterogeneity documented in the present study's results. Bassey and Ubi-Abai (2024), in the third instalment of a research series on the management of the Akwa Ibom Water Company, related staff perceptions of institutional performance to household experience, documenting a persistent institution–household disconnect that echoes this paper's finding that coping severity is only weakly, if at all, mitigated by formal supply institutions. Complementary physicochemical work — including comparative assessments of hand-dug wells and boreholes in Uyo [22] and hydrogeochemical–geophysical investigations of groundwater vulnerability in Akwa Ibom's northern local government areas [7, 8] — documents the underlying contamination pressures (industrial effluent, saline intrusion, weak sanitation regulation) that make household coping a rational, if costly, response rather than a matter of consumer preference.

Notwithstanding this rich and expanding body of Akwa Ibom-focused work, none of the studies reviewed here applies a formal, severity-weighted Coping Strategy Index to household water-coping data. This is precisely the methodological space the present paper occupies: it treats the same coastal Akwa Ibom water-crisis context documented qualitatively and perceptually by [15, 16], and quantifies the associated household coping behaviour using an index capable of distinguishing high-frequency/low-severity behaviour from low-frequency/high-severity behaviour.

Beyond Akwa Ibom, descriptive coping-behaviour studies from Bayelsa State and other Niger Delta locations have documented broadly similar behavioural repertoires — storage, vendor reliance, source-switching, queuing — but have, without exception, reported these as raw frequency tabulations rather than severity-weighted indices, leaving open the question this paper answers directly. Achore, Bisung and Kuusaana (2020), synthesising qualitative evidence on household-level water-insecurity coping across multiple Sub-Saharan African settings, identified a recurring behavioural taxonomy, rationing, source-switching, storage, social negotiation and outright tolerance of unsafe water — those maps closely onto the six strategies retained for indexing in this study, lending external validity to the strategy list used here.

Outside West Africa, the CSI approach has been more fully developed as a water-insecurity metric. Bose et al. (2024), applying a coping-strategies framework to household water insecurity in rural Gambia, found that a small number of high-severity behaviours rather than the most prevalent behaviours — mediated the relationship between weather variability, water access and self-reported health, a "long tail of severe coping" pattern this paper replicates almost exactly in the Akwa Ibom data. Mushavi et al. (2020), in a mixed-methods, whole-population study of water insecurity and depression in rural Uganda, similarly demonstrated that behavioural coping costs, not mere sourcing inconvenience, were the strongest correlates of psychological distress, reinforcing the theoretical case for severity weighting over frequency counting. In coastal Bangladesh, Hossain and Li (2024) documented adaptive strategies to salinity-driven water insecurity that closely parallel the Atlantic-shore reactive source-switching pattern found in this study, while Ghosh and Ahmed (2022) showed that household rainwater-harvesting adoption in southwestern coastal Bangladesh was shaped by the same asset-availability logic (physical and financial capital) predicted by the Sustainable Livelihoods Framework. Venkataramanan et al.'s (2020) systematic review of coping strategies for water insecurity provides the broadest comparative backdrop, cataloguing a global taxonomy of coping behaviours within which the Akwa Ibom strategy list sits as a coastal, contamination-driven variant.

Figure 1 presents the conceptual schema that operationalises the theoretical framework of Section 2.2 for this study. Structural/contextual drivers (saline intrusion, weak WASH infrastructure, industrial effluent, and geo-ecological zone) interact with each household's asset portfolio (financial, social, physical, natural and human capital, per the Sustainable Livelihoods Framework) to produce a level of perceived or experienced household water insecurity. This, in turn, triggers one or more of the six coping behaviours retained for indexing (multi-container storage, private-vendor reliance, source-switching on perceived contamination, household-head dependence, early arrival/queuing, and use of unsafe water for secondary purposes). Each behaviour is then assigned a severity weight (1–4) and combined with its observed frequency to yield a weighted score, which is aggregated into the composite household water-coping severity index (CSI, 0–100). The CSI output feeds three downstream outcomes examined in this paper: zone-differentiated coping portfolios, the health/welfare cost of adaptation,

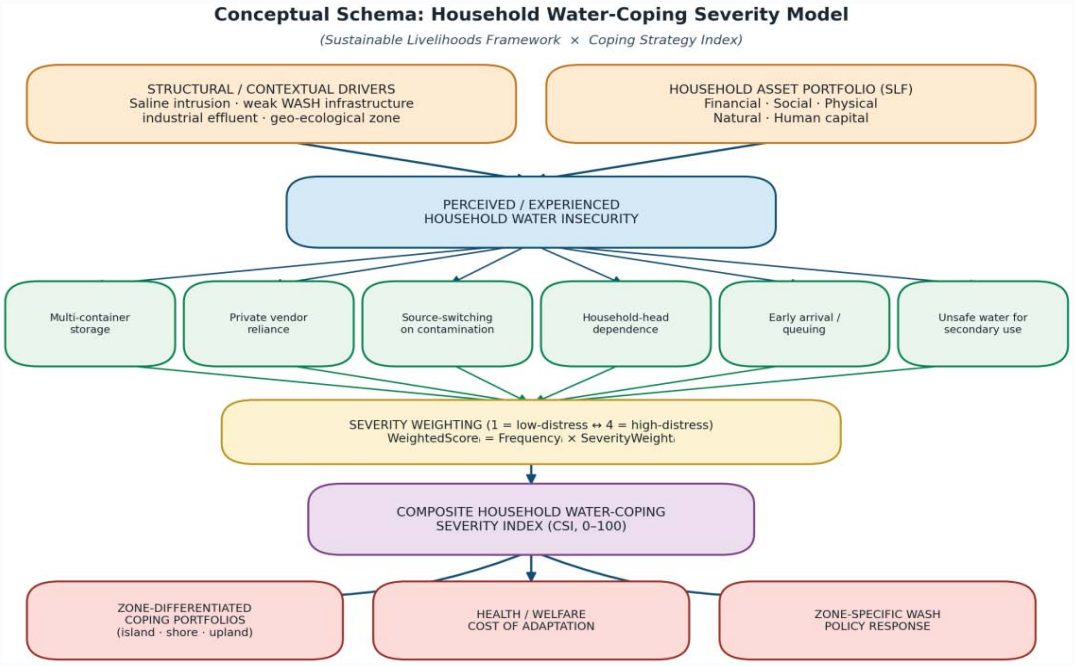


Figure 1: Conceptual schema of the household water-coping severity model, integrating the Sustainable Livelihoods Framework and the Coping Strategy Index.

and the case for zone-specific WASH policy response.

Materials and Methods

Study area and design

The study was conducted in nine communities spanning three geo-ecological zones of coastal Akwa Ibom State, south-south Nigeria: coastal islands (Akpabom, Emeroke, Okomita), Atlantic-shore settlements (Ibaka, Enwang, Upenekang) and upland/riverine-transition settlements (Uquo, Etebi Idung Asan, Mbiabet — the last serving as an inland, less industrialised reference site). These communities lie within Esit Eket, Ini, Ibeno, Mbo and Eastern Obolo Local Government Areas, a stretch of coastline characterised by mangrove estuaries, tidal creeks, and proximity to oil and gas infrastructure, and subject to the same saline-intrusion and industrial-effluent pressures documented in the region's physicochemical literature [7, 14]. A concurrent mixed-methods, cross-sectional design was used, combining a structured household questionnaire (n = 314, drawn proportionally from each community's 2025 projected population) with 11 key-informant/focus-group sessions (30 participants) comprising health workers, local chiefs, youth leaders, water vendors and long-term residents.

Data source and originality statement

The household survey and qualitative data analysed here were collected as part of a broader doctoral field investigation into drinking-water contamination and public health in coastal Akwa Ibom State. The present paper is a methodologically distinct, stand-alone re-analysis of the household coping-behaviour component of that dataset: whereas the parent study reported strategy frequencies descriptively, this paper applies a severity-weighted Coping Strategy Index that was not part of the original analysis. Authors intending to submit this manuscript should disclose the parent thesis/report as the data source in the cover letter and, where journal policy requires it, in the manuscript itself, consistent with COPE guidance on redundant/overlapping publication.

Sample determination and survey instrumentation

The household sample (n = 314) was allocated proportionally across the nine study communities based on 2025 projected population figures derived from the most recent national census growth rate, using a Taro Yamane-type minimum-sample calculation at a 95% confidence level, and rounded upward within each community to ensure adequate cell sizes for zonal comparison. Within each community, households were selected using a systematic random sampling procedure applied to a compound-listing frame prepared during a reconnaissance visit, with one adult respondent (preferentially the person most responsible for household water sourcing) interviewed per selected household. The structured questionnaire comprised four sections: household demographic and socio-economic characteristics; primary and secondary water sources and reported quality perceptions; a coping-behaviour checklist covering the six strategies retained for CSI construction (with frequency reported on a recall scale of the preceding 30 days); and self-reported health and expenditure outcomes associated with water access. The instrument was piloted in a non-sampled community, revised for clarity, and content-validated by two independent public-health researchers; recall-based frequency items were cross-checked against the qualitative focus-group material during analysis to guard against social-desirability bias, particularly for the highest-severity item (use of unsafe water for secondary purposes).

Coping Strategy Index construction

Six coping behaviours recurring across the survey and qualitative transcripts were retained for indexing: (1) storing water in multiple containers, (2) reliance on a private/commercial water provider, (3) changing water collection point upon perceived contamination, (4) dependence on the household head to source water, (5) early arrival at communal water points to beat congestion, and (6) using water of known or suspected poor quality for non-drinking domestic purposes. Two panel-style consensus rounds (analogous to the expert-weighting stage of a conventional CSI) were used to assign a severity

weight to each strategy on a 1 (low distress, reversible, protective of health) to 4 (high distress, health-compromising or economically corrosive) scale, informed by the qualitative interview material and prior CSI applications (Maxwell & Caldwell, 2008; Bose et al., 2024). For each strategy i, a weighted score was computed as:

$$\text{Weighted Score}_i = \text{Frequency}_i \times \text{Severity Weight}_i$$

An aggregate household water-coping severity index (range 0–100) was then computed as the sum of weighted scores divided by the maximum theoretically possible score (N × 4 × number of strategies), multiplied by 100. To illustrate the computation with a worked example: if all 314 households reported the highest-severity behaviour (weight = 4) at maximum frequency, the theoretical ceiling for that single strategy would be 314 × 4 = 1,256; the observed weighted score of 468 for that behaviour therefore represents 37.3% of its own strategy-specific ceiling, a figure that, when pooled across all six strategies against the full six-strategy denominator, yields the reported composite index of 23.8.

Analytical procedure

Relative frequencies (%) were computed for each strategy against the full sample (N = 314; multiple responses permitted). Strategies were ranked by weighted score rather than raw frequency to separate prevalence from severity. Zone-level qualitative patterning (coastal island *vs* Atlantic shore vs upland) was derived from triangulating survey emphasis with focus-group transcripts for each zone. All computation was performed in Python 3 (pandas 2.x).

Ethical considerations

The parent field study received institutional health-ethics clearance prior to data collection. Verbal informed consent was obtained from all household respondents and focus-group participants after the study's purpose, voluntary nature and confidentiality provisions were explained in the local language where necessary; no personally identifying information was retained in the secondary dataset analysed here. This secondary, severity-weighted re-analysis used only de-identified, aggregate household-level data.

Results

Prevalence and severity ranking of coping strategies

Table 1 presents the frequency, relative prevalence, assigned severity weight and weighted severity score for each strategy.

The aggregate household water-coping severity index was 23.8 (of a possible 100). Although below the mid-point of the theoretical scale, this value is driven disproportionately by a minority of high-severity behaviours rather than distributed evenly, which is consistent with the "long tail of severe coping" pattern reported for rural Gambia [5] and rural Uganda [21], and is broadly consistent with the qualitative contamination-exposure narratives documented for the same coastal communities by [16].

Divergence between prevalence ranking and severity ranking

When strategies are instead ranked purely by prevalence, "storing water in many containers" (48.1%) and "changing water point" (46.5%) appear most important, while "using unsafe water for other household use" (37.3%) would rank fourth. The severity-weighted re-ranking inverts this picture, moving the health-compromising strategy to first place. This divergence illustrated in Figure 2 is the paper's central methodological contribution: prevalence-only reporting, as used in prior descriptive accounts of this same coastal system (and, implicitly, in the community-perception narratives of [15, 16], which document the behaviour but do not formally weight it), systematically under-represents the strategies of greatest public-health concern.

Table 1: Frequency, prevalence and severity-weighted ranking of household water-coping strategies (N = 314).

Rank (severity)	Coping strategy	Frequency (n)	Prevalence (%)	Severity weight (1–4)	Weighted score
1	Using unsafe water for other household use	117	37.3	4	468
2	Reliance on private water provider	136	43.3	3	408
3	Storing water in many containers	151	48.1	2	302
4	Changing water point when found contaminated	146	46.5	2	292
5	Early arrival to water points	96	30.6	2	192
6	Dependence on head of household	134	42.7	1	134

Zone-differentiated coping portfolios

Table 2 summarises the qualitatively dominant strategy combination per geo-ecological zone, drawn from triangulated survey and focus-group evidence.

Across all three zones, use of unsafe water for secondary domestic purposes (bathing, laundry, dishwashing) was reported as a near-universal fallback once the higher-cost strategies (vendor purchase, storage) were exhausted — corroborating the qualitative finding that "more than half of household earning goes into sourcing drinking water" in the most affected settlements, a pattern consistent with the household-expenditure burden documented by [17] in the neighbouring Cross River coastal context.

Discussion

The severity-weighted approach adopted here reframes a familiar empirical picture. Raw frequency counts, as reported in earlier descriptive accounts of this same coastal system, would suggest that storage and reactive source-switching are the "main" coping responses. The CSI shows instead that the costliest adaptation - deliberate use of unsafe water while less prevalent, imposes the largest aggregate distress burden on the population, echoing findings from rural Gambia and Uganda where water-use behavioural trade-offs (rather than mere sourcing behaviour) carried the greatest downstream health risk [5, 21]. The finding that private-vendor reliance is the second most severe strategy also aligns with evidence

Table 2: Dominant coping-strategy portfolios by geo-ecological zone.

Zone	Representative communities	Dominant strategy combination	Underlying driver
Coastal island	Akpabom, Emeroke, Okomita	Multi-container storage + paid private supply	Physical isolation; intermittent commercial boat-borne delivery
Atlantic shore	Ibaka, Enwang, Upenekang	Reactive source-switching on perceived contamination	Frequent, visible salinity/chemical-film episodes
Upland/transition	Uquo, Etebi Idung Asan, Mbiabet	Early arrival/ queuing; lower storage intensity	Competition for fewer functional points rather than contamination avoidance

from Ghanaian and Bangladeshi coastal contexts that commodified water access transfers a disproportionate financial burden onto the poorest households, entrenching water poverty rather than resolving it [9, 10].

The zonal differentiation is a further contribution: coping research on the Niger Delta coast has tended to treat "coastal communities" as a homogeneous unit, yet this analysis shows that island, shoreline and upland settlements face materially different binding constraints — isolation and cost for islands, contamination perception and reactive switching for the shoreline, and time/competition costs for upland transition zones. This has direct implications for intervention design: a single, uniform WASH (Water, Sanitation and Hygiene) package is unlikely to be equally effective across the three zones.

This severity-weighted picture is broadly consistent with, but methodologically advances beyond, Jimmy, Abraham and Ansa's (2026a, 2026b) community-perception-based accounts of drinking-water contamination in the same coastal communities, which documented household narratives of contamination exposure and coping without formally weighting strategies by distress severity. Where Jimmy et al. (2026a) show that residents' sensory judgements of water safety imperfectly track laboratory contamination indicators, the present findings suggest a behavioural corollary: households continue to rely on perception-triggered source-switching (strategy 3, weighted score 292) even though the present analysis ranks it only fourth in severity, implying that some coping effort is being directed at a moderately, rather than maximally, severe behaviour — while the highest-severity behaviour (unsafe-water use for secondary purposes) proceeds largely without a corresponding perception-driven trigger. This is consistent with Jimmy's (2026) argument that indigenous sensory metrics, while locally valid, are an imperfect substitute for formal water-quality monitoring, and it strengthens the case for pairing community-perception research of the kind Jimmy and colleagues have pioneered with quantitative severity indices of the kind developed in this paper. The finding also extends Akpabio's (2011) earlier observation that Akwa Ibom household water behaviour is shaped by culturally embedded belief systems: the present zone-specific portfolios (Table 2) suggest that these cultural patterns interact with, rather than override, the physical geography of contamination exposure across the coastal-island, shoreline and upland zones.

Limitations

Severity weights were assigned through a structured expert-consensus process rather than a formal Delphi panel, and should be treated as indicative rather than universally generalisable; sensitivity analysis with alternative weighting schemes is recommended for future replication. The cross-sectional design also precludes causal inference about whether coping severity is rising or falling over time. Recall-based frequency reporting for the most sensitive item (use of unsafe water) may additionally be subject to social-desirability under-reporting, notwithstanding the qualitative cross-checking described in Section 3.3; future work could usefully combine the severity-weighted approach developed here with the indigenous-sensory-metric validation method proposed by Jimmy (2026) to further reduce this measurement risk.

Conclusion and Policy Implications

Applying a Coping Strategy Index to household water-adaptation data in coastal Akwa Ibom State reveals a moderate-to-high, chronic coping burden (CSI = 23.8/100) concentrated in a small number of high-severity behaviours, principally the deliberate use of unsafe water. Because this behaviour is comparatively low-visibility (it does not show up as strongly in simple frequency counts), it risks being under-prioritised by policymakers relying on descriptive reporting alone — including, potentially, the rich but largely qualitative contamination-experience literature that Jimmy and collaborators have developed for this same coastal system. We recommend: (i) zone-specific WASH interventions rather than a uniform coastal package; (ii) subsidised point-of-use treatment (e.g., low-cost filtration or chlorination kits) targeted at households currently substituting unsafe water for secondary use, since this is the highest-severity behaviour identified; (iii) regulation and price monitoring of private water vendors, given their high prevalence and severity ranking; (iv) routine application of severity-weighted (rather than purely descriptive) coping metrics in future WASH monitoring for the Niger Delta coast, to avoid under-estimating the health-relevant burden of household adaptation; and (v) integration of community-perception research of the kind pioneered locally by Jimmy and colleagues with quantitative severity-index monitoring, so that policy attention is directed by both lived experience and measurable distress.

Declarations

Data availability

Data were drawn from a household survey and interview dataset collected for a related field investigation; a data-sharing statement and reference to the parent dataset should be included at submission per journal policy.

Conflicts of interest

None declared.

Ethics

The parent field study received institutional health-ethics clearance; this secondary analysis used de-identified aggregate data only.

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