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COMPOUNDING VULNERABILITIES: AN ARCHITECTURAL STUDY OF THE SOCIO-SPATIAL, ECONOMIC, AND ENVIRONMENTAL CHARACTERISTICS OF MARGINALISED WATERFRONT COMMUNITIES IN PORT HARCOURT, NIGERIA, AND ITS IMPLICATIONS FOR SOCIAL WORK AND DEVELOPMENT PRACTICE

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ABSTRACT

This article reports architectural research that characterises the socio-spatial, economic, and environmental conditions of marginalised waterfront communities in Port Harcourt, Nigeria: Abonnema Wharf, Bundu Waterside, and Marine Base — and draws out their implications for social work and development practice. Conducted from within the discipline of architecture, the study treats the built environment not as a backdrop to social disadvantage but as an active agent in its production and its potential relief. Using a structured questionnaire administered to 364 respondents and semi-structured interviews with nine informal traders and community leaders, gathered as part of a broader architectural investigation of the colonial-era mercantile buildings these communities occupy, the study documents a population that is occupationally informal (41.5% traders, 24.5% artisans, against only 11.3% civil servants), gender-balanced (52.5% male, 47.5% female), and predominantly youthful (31.0% aged 25–34), with residency patterns spanning recent arrivals and multi-generational households. Environmentally, 75.3% of respondents reported that flooding disrupts waterfront economic activities, and qualitative testimony identifies twice-daily tidal inundation — distinct from episodic storm flooding — as the dominant and most economically corrosive environmental stressor, eroding trader capital through repeated small losses rather than single catastrophic events. Spatially, the disconnection between boat-landing points and trading areas imposes a hidden transaction-cost burden on every trade cycle. The article argues that these three dimensions — socio-demographic composition, environmental vulnerability, and spatial disorganisation — are mutually reinforcing rather than independent, and that any welfare, livelihood, or infrastructure intervention addressing only one dimension will fail to relieve the compounding pressure the other two continue to exert. The findings demonstrate how architectural evidence can inform the Sustainable Development Goals, gender-responsive social protection, and community-based social work practice in Nigeria, and make the case for interprofessional collaboration between built-environment researchers and social workers.

Keywords: urban marginality; architecture and social development; informal economy; social protection; tidal flooding; gender and livelihoods; waterfront communities

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1.0 INTRODUCTION

Marginalised waterfront communities in West African port cities are frequently characterised in policy discourse through a single deficit lens — as flood-prone, as informal, as unplanned — without an integrated empirical account of how these conditions interact (Watson, 2009). For social work and development practice, this fragmentation matters: welfare interventions designed around one dimension of disadvantage routinely fail because the remaining, unaddressed dimensions continue to erode household resilience. This article provides an integrated account for three waterfront communities in Port Harcourt: Abonnema Wharf, Bundu Waterside, and Marine Base, selected because they contain the highest concentrations of colonial-era mercantile buildings and represent a cross-section of the population densities and economic activities characterising the city's waterfront belt.

Existing socio-economic scholarship on these communities (Obinna et al., 2010; Ogbonna et al., 2021) has documented their vitality and vulnerability separately and in granular detail, but has not always integrated demographic composition, environmental exposure, and spatial organisation into a single empirical account capable of showing how these dimensions compound one another. This article addresses that integration directly, drawing on quantitative survey data and interview testimony collected concurrently across all three communities.

The study is architectural in origin and orientation. It forms part of a broader mixed-methods investigation, conducted from the Department of Architecture at Rivers State University, into the adaptive reuse potential of the colonial-era mercantile warehouses that physically anchor these three settlements. That disciplinary position shapes the contribution offered here: where social science accounts of waterfront poverty typically treat the built environment as inert context, an architectural reading treats buildings, landing points, circulation routes, and flood levels as active variables — measurable, mappable, and, crucially, designable. Presenting this evidence in a social work and development studies journal is a deliberate act of disciplinary bridge-building: the vulnerabilities documented below are produced at the intersection of social structure and physical space, and their relief will require social workers and built-environment professionals to read the same evidence base. This article offers that shared evidence base, written from the architectural side of the bridge toward the social work readership on the other.

The analysis is framed against Nigeria's commitments under the Sustainable Development Goals, in particular SDG 1 (no poverty), SDG 5 (gender equality), SDG 8 (decent work and economic growth), SDG 11 (sustainable cities and communities), and SDG 13 (climate action). Waterfront informal economies sit at the intersection of all five goals, yet remain largely invisible to the statutory planning and social protection instruments through which those commitments would ordinarily be delivered. Understanding how vulnerability is produced and compounded in these settlements is therefore a precondition for any development or social work response that aspires to be more than palliative.

2.0. LITERATURE REVIEW

Obinna, Owei, and Mark (2010), in their foundational paper on Port Harcourt's informal sector, provide quantitative data demonstrating that the informal sector — artisanal timber processors, fish smokers, and boat builders — is not an economic anomaly but the primary economic engine for the city's coastal working class, while noting that these economies operate in chaotic, unsanitary, and structurally unsafe spatial conditions. Their analysis quantifies economic value but treats the built environment as a backdrop rather than an object of spatial analysis. Ogbonna, Nnodim, and Ugwoha (2021), studying the same waterfronts,

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document that informal settlements are characterised by poor and overstressed facilities, inadequate utility supplies, and a lack of appropriate waste disposal systems, directly linking these conditions to elevated rates of malaria, diarrhoea, and respiratory infection — a public health burden that falls squarely within the remit of community social work.

On environmental vulnerability specifically, Douglas (2017) observes that in African cities routine tidal floods are often more economically damaging than extreme flood events because they erode the capital base of small-scale traders through repeated small losses rather than single catastrophic shocks — a distinction with direct bearing on intervention design, since infrastructure and social protection instruments built to respond to extreme events may still fail to address the cumulative damage of routine tidal cycles. Goyal and Silva (2024), in a comparative study of coastal slums, similarly note that residents in such settlements have limited options for prevention and absorption, lacking the engineered defences and insurance mechanisms available in wealthier coastal contexts. On spatial organisation, Todes, Karam, Klug, and Malaza (2018), studying market infrastructure in South African townships, found that the absence of organised pathways, loading zones, and storage facilities directly reduces trader incomes by increasing porterage costs and spoilage rates — a mechanism directly replicated in the Port Harcourt testimony reported below.

Taken together, this literature establishes each dimension of waterfront disadvantage separately but leaves their interaction under-theorised, and consistently treats the built environment as backdrop rather than as an object of analysis in its own right. The present study contributes the missing spatial lens: an integrated empirical account, produced through architectural research methods, that is then translated into implications for social work and development practice in the Nigerian context.

3.0. METHODOLOGY

3.1. Design and Sampling

A convergent mixed-methods design combined a structured questionnaire (n = 364, stratified random sampling proportional to community population share: Bundu Waterside 38.7%, Marine Base 33.3%, Abonnema Wharf 28.0%) with semi-structured interviews with nine informal traders and community leaders, purposively sampled via criterion sampling requiring at least one year of continuous residence or work in the waterfront. The data reported here were collected within a broader architectural research programme on the adaptive reuse of the waterfront's colonial mercantile buildings, which also included archival cartographic reconstruction and a non-destructive building condition assessment of five surviving warehouses; the present article draws on the socio-spatial, economic, and environmental strands of that programme.

3.2. Data Collection and Analysis

Interviews were conducted in Port Harcourt Pidgin English and analysed using Braun and Clarke's (2006) six-phase thematic analysis framework. The questionnaire instrument's Section A captured demographic and occupational characteristics; Section B addressed physical condition and environmental vulnerability. Verbatim quotations are reproduced in Pidgin English with contextual interpretation, preserving respondents' own voice consistent with participatory research ethics.

4.0. RESULTS

4.1. Demographic and Occupational Composition

Gender distribution was nearly balanced (52.5% male, 47.5% female), challenging the common assumption that waterfront economies are male-dominated and indicating that both men and women participate actively in mercantile and informal trade. The largest age cohort was 25–34 years (31.0%), followed

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by 35–44 years (24.5%) and 18–25 years (18.4%), with older cohorts (45–54 years, 16.8%; 55 years and above, 9.3%) smaller but present — a youthful, economically active population alongside a minority of long-resident elders who retain local knowledge and informal governance roles.

Occupationally, traders formed the largest group (41.5%), followed by artisans (24.5%); formal-sector occupations such as civil servants (11.3%), real estate developers (8.5%), and architects or town planners (8.0%) were considerably smaller, with fishermen the smallest category (6.3%), indicating that traditional fishing has been substantially superseded by mercantile trade and artisanal production as the dominant livelihood. Residency duration showed a near-even split between recent arrivals (27.7% with one to nine years' presence) and established multi-generational residents (22.8% with thirty years or more), indicating that these communities function simultaneously as entry points for new migrants and as settled, multi-generational homes.

The near gender-parity finding deserves particular emphasis because it carries direct implications for the social infrastructure that any intervention must provide. The community leader testimony reported below regarding the need for childcare provision ("place for our pikin") is not a peripheral demand but a structural requirement consistent with a workforce in which women constitute close to half of all economically active participants, many of whom are simultaneously responsible for childcare during working hours. Gender-balanced informal economies of this kind have been documented elsewhere in West African coastal trade (Obinna et al., 2010), but are rarely reflected in the design of formal market infrastructure or social protection programmes, which have historically defaulted to assumptions of a male-dominated user base.

Environmental Vulnerability

Flooding disruption to economic activity was reported by 75.3% of respondents — the single highest-magnitude finding in the physical-condition section of the survey. Interview testimony distinguishes two analytically separate flood mechanisms. The first is twice-daily tidal inundation, described by one trader: "When water high, we dey carry fish waka, we no fit use wheelbarrow, na head and hand we dey use carry our market from boat." This is not episodic flooding but the predictable lunar tidal cycle of the Bonny River, against which no raised landing infrastructure has been provided despite its complete predictability. The second is rain-induced surface flooding, described by another respondent: "Rain dey scatter market, e dey spoil timber, and we lose money every time." This is less predictable than the tidal cycle but equally damaging to inventory and financial stability.

Basic infrastructure deficits compound environmental exposure. A fish smoker stated bluntly: "No light, no clean water, how we wan process fish well? Na suffer we dey." Fish smoking requires reliable energy for smoking kilns and clean water for washing fish prior to processing; absent these, processors resort to firewood and untreated river water, elevating both health risk (respiratory illness, bacterial contamination) and product-quality risk. Timber processors reported comparable difficulty operating saws and planers without stable power, forcing a reversion to manual labour.

Spatial Disorganisation

Interview testimony identifies the disconnection between boat-landing points and trading areas as a specific, named spatial inefficiency rather than a generalised complaint. A community leader explained: "Na confusion everywhere, boat go land, but we go still waka far before we fit sell. Time dey waste, money dey go." The absence of designated loading bays forces all goods movement to compete with pedestrian traffic, creating congestion and delay on every trade cycle — a hidden transaction cost levied on every transaction conducted at the waterfront, imposed

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not by market conditions but by the absence of basic spatial organisation.

5.0. DISCUSSION

5.1. Compounding Rather Than Independent Vulnerabilities

The central analytical contribution of this study is the demonstration that demographic composition, environmental exposure, and spatial disorganisation are mutually reinforcing rather than independently occurring conditions. A youthful, economically active, occupationally informal population is precisely the population least able to absorb the repeated small capital losses that routine tidal flooding imposes (Douglas, 2017), because informal trading income rarely permits the savings buffer that would allow recovery from frequent, low-magnitude shocks. Spatial disorganisation compounds this further by imposing a time-and-labour tax on every transaction, reducing the margin available to absorb flood-related losses in the first place. None of these three conditions, addressed in isolation, would substantially relieve the pressure the other two continue to exert.

5.2. Distinguishing Tidal From Episodic Flood Vulnerability

The distinction the interview data draws between predictable tidal inundation and unpredictable rain-induced flooding has been underexplored in the regional vulnerability literature, which has tended to treat "flooding" as an undifferentiated category. This distinction carries direct intervention implications: tidal flooding, being fully predictable on a lunar cycle, can in principle be designed around with fixed-elevation infrastructure (raised landing platforms, elevated storage), whereas rain-induced flooding requires drainage capacity and storage protection responsive to variable rainfall intensity. Conflating the two risks producing interventions that address one mechanism while leaving the other — and the cumulative trader capital erosion that Douglas (2017) and Goyal and Silva (2024) describe — largely unaddressed.

5.3. Implications for Social Work and Development Practice

Three implications follow for social work and development practice in Nigeria. First, the compounding structure of vulnerability documented here argues for integrated, community-based case management rather than sectorally siloed programming: a micro-credit or cash-transfer scheme that ignores the twice-daily tidal erosion of trader capital will see its transfers consumed by flood losses, while a flood-infrastructure project that ignores livelihood organisation will protect assets the spatial system still prevents traders from converting into income. Social workers positioned within these communities are uniquely placed to coordinate across these domains and to advocate for joined-up responses.

Second, the near gender-parity of the waterfront workforce, combined with women's concurrent childcare responsibilities, identifies gender-responsive social protection — including workplace-proximate childcare — as a structural requirement rather than an optional add-on, directly advancing SDG 5 alongside SDG 8. Programme designs that assume a male breadwinner model will systematically under-serve close to half of the economically active population.

Third, the finding that these settlements function simultaneously as entry points for recent migrants and as multi-generational homes cautions against treating waterfront residents as a transient population whose displacement carries low social cost. Established residents hold local knowledge and informal governance roles that constitute social capital any intervention should build upon; community social work practice should engage these existing structures — trader associations, community leaders, elders — as partners in programme design rather than as objects of intervention. This aligns with rights-based and strengths-based traditions in social work, and with the partic-

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ipatory turn in development practice more broadly (Watson, 2009).

Finally, the architectural provenance of this evidence carries its own practice implication: the physical conditions documented here — unraised landing points on a fully predictable tidal cycle, absent loading bays, and disconnection between landing and trading space — are design failures, and therefore design opportunities. The colonial mercantile warehouses that anchor these settlements possess, by virtue of their original engineering, precisely the elevated storage capacity, wide spans, and river-proximate position the trades now lack, making their adaptive reuse a built-environment vehicle through which social protection objectives could be physically delivered. Realising that potential requires interprofessional collaboration in which social workers contribute community engagement, welfare assessment, and safeguarding expertise, while architects and planners contribute spatial diagnosis and design response — a division of labour this article models by presenting architectural evidence in a social work forum.

5.4. Limitations

The cross-sectional design captures conditions at a single point in time and cannot establish whether the demographic, environmental, and spatial patterns reported here have intensified, stabilised, or improved over the preceding decade. The purposive interview sample (n = 9), while reaching thematic saturation on the core themes reported, cannot capture the full heterogeneity of experience across three distinct communities of substantially different population size and economic character.

6.0. CONCLUSION

This article has presented architectural research characterising the socio-spatial, economic, and environmental conditions of three marginalised Port Harcourt waterfront communities as mutually reinforcing rather than independent, demonstrating that a youthful, economically informal, gender-balanced population bears compounding exposure to predictable tidal flooding, unpredictable rain-induced flooding, and structurally embedded spatial disorganisation. For social work and development practice, the findings recommend integrated rather than siloed intervention design; gender-responsive social protection that reflects the near-parity composition of the waterfront workforce; and engagement with existing community governance structures as partners in programme delivery. For the built-environment disciplines, they identify the waterfront's spatial failures as designable problems whose resolution, including through the adaptive reuse of the mercantile buildings the communities already occupy, can serve as a physical delivery mechanism for social protection. Future intervention design in comparable waterfront contexts should explicitly distinguish tidal from episodic flood mechanisms, integrate demographic, environmental, and spatial data into a single planning instrument, and pair social work and architectural expertise from the outset rather than sequentially.

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