

Condition Assessment of Public-School Buildings in Southern Borno State, Nigeria: A Review

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Abstract- *Public school infrastructure in Southern Borno State comprising the nine local government areas (LGAs) of Biu, Hawul, Kwaya Kusar, Shani, Damboa, Chibok, Askira/Uba, Bayo, and Gwoza occupies a peculiar position in the Nigerian building-condition-assessment literature. Unlike ordinary building stock, which deteriorates mainly through age, weathering and deferred maintenance, school buildings in this zone have also been shaped by more than a decade of Boko Haram insurgency, mass displacement and interrupted occupancy. This review synthesises the general literature on building condition assessment (BCA) methodologies, the wider Nigerian evidence base on public school building deterioration and documented evidence on the scale of conflict-related damage to school infrastructure in Borno State. It examines commonly used assessment tools including the Facility Condition Index (FCI), Building Condition Index (BCI), and walkthrough rating scales. It discusses their applicability and limitations in a post-conflict, low-resource setting, presenting comparative tables and illustrative figures to structure the synthesis. Recurring themes identified include poor roofing and structural conditions, inadequate sanitation and water facilities, weak maintenance culture, funding shortfalls and the compounding effect of insecurity on both physical deterioration and the ability of researchers and agencies to conduct assessments. The review concludes that Southern Borno represents an under-researched but urgent case for systematic, security-conscious condition-assessment frameworks that combine conventional BCA metrics with conflict-damage and safeguarding indicators, and it offers recommendations for practice, policy, and further research.*

Keywords: *Building Condition Assessment, Building Maintenance, Post-Conflict Reconstruction, Public School Buildings, Southern Borno, School Infrastructure.*

I. INTRODUCTION

The physical condition of school buildings has a direct bearing on teaching and learning outcomes, student and staff safety, and enrolment retention. In Nigeria, public school buildings are generally acknowledged to

be in a poor and declining state of repair, a condition attributed to age, substandard construction, weak maintenance culture, and inadequate government funding for upkeep once a building is commissioned. Southern Borno State — the predominantly Kibaku, Bura, Marghi, and Chibok-speaking zone that forms the Borno South senatorial district — presents an especially acute version of this national problem. In addition to the routine drivers of deterioration common across the country, school buildings in this zone have, since around 2009, been subject to direct attack, occupation by displaced populations, looting, and prolonged periods of disuse arising from the Boko Haram/ISWAP insurgency centred on north-eastern Nigeria [1].

This combination of ordinary structural decay and conflict-induced damage makes Southern Borno a distinctive but understudied case within the condition-assessment literature. Much of the published empirical work on Nigerian school building condition has been conducted in the south-west (particularly Ogun State) and in other relatively stable states, where deterioration is driven almost exclusively by age, weathering, and maintenance neglect. Studies that speak directly to the Borno context tend to originate from humanitarian and development agencies rather than from the construction/facilities-management research tradition, and they tend to report on access and enrolment rather than on the technical condition of the building fabric itself.

This review therefore has three aims: first, to summarise the methodologies used to assess the physical condition of school buildings; second, to draw together what is known — from the general Nigerian literature and from humanitarian reporting — about the state of public school buildings in Borno State and, where available, its southern LGAs specifically; and third, to identify the gaps that a dedicated condition-assessment study of Southern

Borno's public schools would need to fill, and to propose a framework and recommendations suited to that purpose. To make the synthesis more technical and reproducible, comparative tables and schematic figures are used throughout to structure the review's methodology, findings, and proposed framework.

II. THE STUDY AREA: SOUTHERN BORNO STATE

Borno State is administratively divided into 27 local government areas grouped into three senatorial districts. Borno South senatorial district — commonly referred to as “Southern Borno” — comprises the nine LGAs listed in Table I. The zone is geographically and ethnically distinct from the semi-arid, Kanuri-dominated north of the state, being characterised by hilly terrain, a relatively higher rainfall regime, and a

population drawn mainly from the Bura, Kibaku (Chibok), Marghi, and related groups.

Southern Borno has been one of the area's most severely affected by the insurgency. Chibok LGA became internationally known following the abduction of schoolgirls from a government secondary school in 2014, while Damboa, Gwoza, and Askira/Uba have all experienced periods of insurgent occupation, mass displacement, and repeated attacks on towns and public infrastructure, as summarised in Table I. In recent years the zone has also been a focus of stabilisation and reconstruction effort, including school rehabilitation programming set out in UNICEF's national education strategy [12], as displaced populations return and LGAs are progressively reopened for civil administration.

TABLE I. LOCAL GOVERNMENT AREAS COMPRISING SOUTHERN BORNO (BORNO SOUTH SENATORIAL DISTRICT)

LGA	Headquarters	Documented insurgency-related exposure (from reviewed sources)	Ref.
Biu	Biu town	Relatively more stable; hosts the senatorial zone's main urban and educational centre and reconstruction/rehabilitation activity.	[14]
Hawul	Azare	Periodic insecurity affecting rural communities and school access.	[15]
Kwaya Kusar	Kwaya Kusar	Smaller LGA; limited published detail, but within the affected corridor.	[16]
Shani	Shani town	Reports of attacks and displacement affecting access to schooling.	[17]
Damboa	Damboa town	Repeated insurgent attacks and periods of occupation; documented school and infrastructure damage.	[18]
Chibok	Chibok town	Site of the 2014 Government Girls Secondary School abduction; prolonged insecurity affecting school operation.	[19]
Askira/Uba	Askira	Periods of insurgent occupation and infrastructure damage reported.	[20]
Bayo	Fikhayel	Affected by broader zonal insecurity; limited disaggregated data available.	[21]
Gwoza	Gwoza town	Among the most severely affected LGAs; extended insurgent control and significant reported school damage.	[22]

Sources: senatorial-district composition compiled from Nigerian administrative records; headquarters coordinates individually sourced per LGA as cited in column 4 (refs. [14]–[22]); insurgency-exposure notes synthesised from UNICEF, JRS, and related humanitarian reporting reviewed in Sections III and VI. Exposure entries reflect the depth of documentation available in the sources reviewed, not a formal, independently verified damage census.

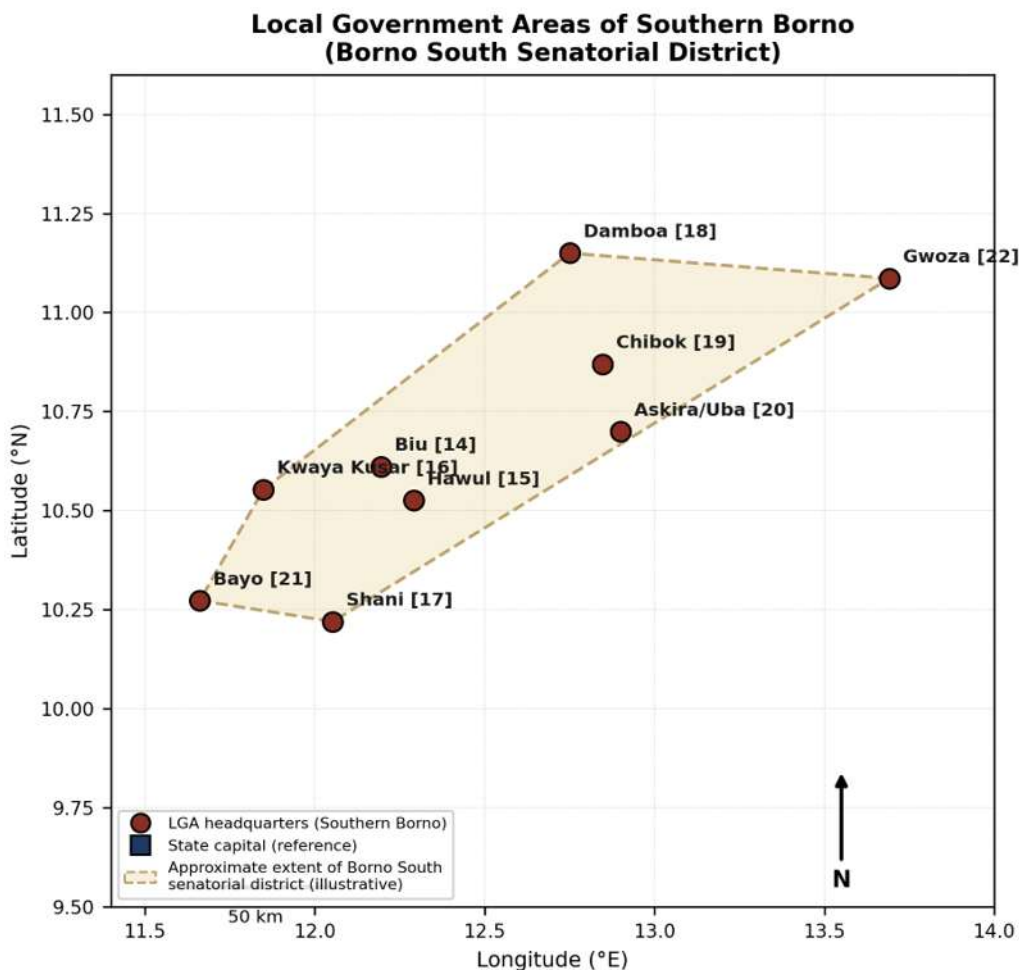


Fig. 1. Locator map of the nine LGAs comprising the Borno South senatorial district (Southern Borno), plotted from individually sourced headquarters coordinates (refs. [14]–[22], as labelled), with Maiduguri shown for orientation. The shaded outline is an illustrative convex hull of LGA headquarters, not a surveyed administrative boundary.

III. REVIEW METHODOLOGY

This review adopts a narrative synthesis approach, drawing on three overlapping bodies of literature: (i) methodological literature on building condition assessment (BCA); (ii) Nigerian empirical studies on public school building condition and maintenance, drawn mainly from Ogun and Anambra States in the absence of a substantial peer-reviewed body of work located specifically in Southern Borno; and (iii) humanitarian and development-sector reporting on the impact of the insurgency on education infrastructure in Borno State.

Because rigorous, published, peer-reviewed condition-assessment studies confined specifically to

Southern Borno's public schools are scarce, this review is explicit about where it extrapolates from the wider Nigerian literature or from humanitarian data rather than from studies conducted in the zone itself. This gap is treated as a substantive finding of the review, illustrated schematically in Fig. 1, rather than a limitation to be glossed over.

IV. CONCEPTUAL FRAMEWORK

Building condition assessment (BCA) is the systematic process of inspecting a building and its component systems — structure, roof, walls, floors, doors and windows, electrical and plumbing installations, and sanitary facilities — to record their present physical state, identify defects, and inform

maintenance or investment decisions [8]. For school buildings, condition assessment typically also considers factors bearing directly on the teaching–learning environment, alongside life-safety considerations such as structural stability. Reviews of the BCA literature note that condition-rating scales in use internationally range from three to six or more categories, with no single scale universally agreed [6].

Fig. 2 sets out the conceptual framework used to structure this review: three literature streams are synthesised narratively, yielding thematic findings, identified gaps, and comparative insight, which together inform a proposed conflict-aware condition-assessment framework.

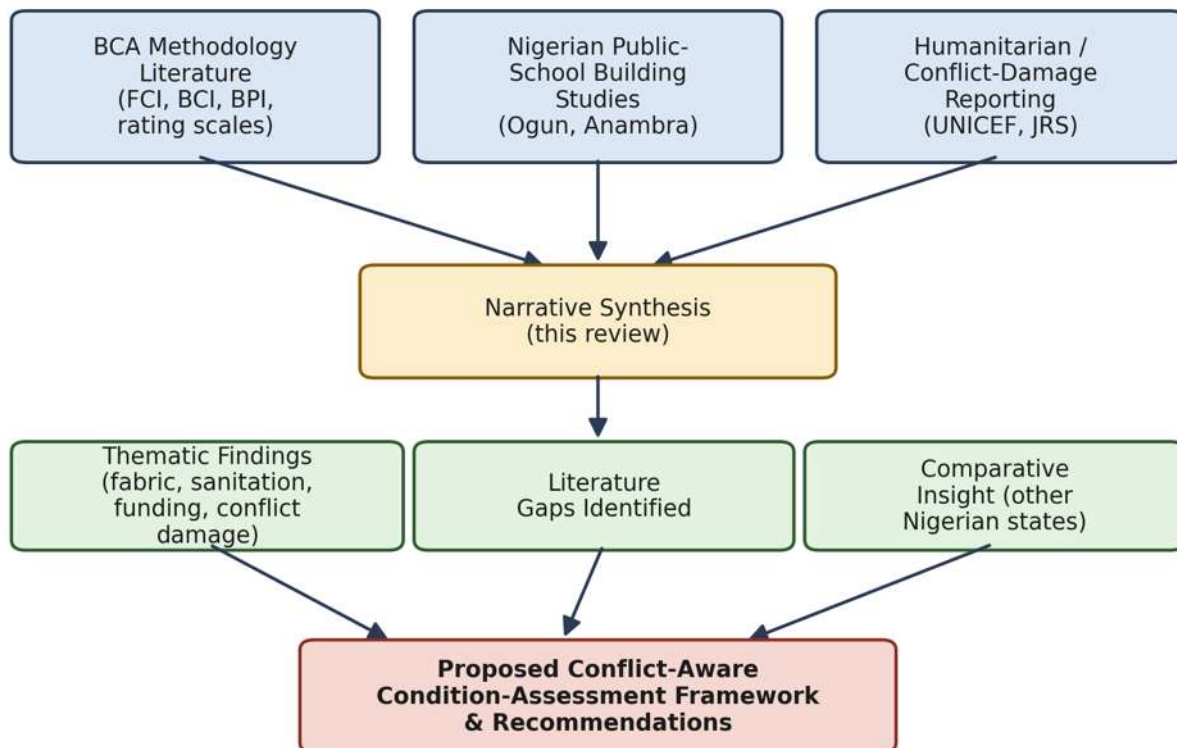


Fig. 2. Conceptual framework showing how the three reviewed literature streams are synthesised into thematic findings, gaps, and the proposed conflict-aware assessment framework.

V. CONDITION ASSESSMENT METHODS AND METRICS

A. Facility Condition Index (FCI) and Building Condition Index (BCI)

The FCI expresses the cost of a facility's deferred and outstanding repair needs as a proportion of its replacement value, giving a single normalised figure for comparing buildings of different sizes, ages, and uses. Reviews note that while the FCI produces an easily communicated summary figure, it can mask

which specific systems are driving the score — a reason researchers have sought to integrate FCI-type metrics with more granular Building Condition Index (BCI) data at component level [9].

B. Component-Level Rating Scales and the Building Performance Indicator (BPI)

An alternative approach scores individual building components on an ordinal scale reflecting physical state, fitness for use, and preventive-maintenance status, aggregating these into a composite Building

Performance Indicator (BPI) [7]. A generic five-point severity gradient of the type used across the reviewed BCA literature is shown in Fig. 3, running from “Good” (score 5) to “Dilapidated” (score 1); some

national frameworks instead use a six-point variant of this scale [10].



Fig. 3. Generic five-point building-element condition-rating gradient used across the reviewed BCA literature.

C. User-Perception and Walkthrough Surveys in the Nigerian Context

The dominant published methodology for assessing Nigerian public secondary school buildings combines structured user-perception questionnaires (administered to teachers, non-academic staff, and administrators) with an observational walkthrough survey using a defined condition-rating scale. Studies applying this method in Ogun State found that a large share of public secondary school buildings were poorly maintained, a condition attributed by respondents chiefly to insufficient maintenance funding and weak institutional maintenance culture [4], [5].

D. Suitability of Standard BCA Methods for Southern Borno

Applying conventional BCA methodology to Southern Borno's public schools poses two challenges not faced elsewhere. First, security conditions in several LGAs restrict the physical access and dwell-time available for inspection, constraining the granularity possible and favouring rapid or remote-assessment techniques. Second, standard defect categories do not capture conflict-specific damage mechanisms. Table II compares the three principal method families reviewed, including their applicability to the Southern Borno context.

TABLE II. COMPARISON OF BUILDING CONDITION ASSESSMENT METHOD FAMILIES REVIEWED

Method	Basis	Typical Output	Strengths	Limitations in Southern Borno
FCI	Cost of deferred repairs / replacement value	Single normalised ratio per facility	Easy to communicate; good for portfolio comparison	Masks which system drives the score; needs cost data rarely available post-conflict
BCI / BPI	Component-level ordinal scoring, aggregated	Composite building score (e.g., 0–100)	Identifies priority systems for repair	Requires trained inspectors and repeat site access, constrained by insecurity

Walkthrough + user-perception survey	Observational rating + occupant questionnaire	Descriptive condition ratings per element	Low-cost; captures functional/experiential issues; used widely in Nigeria	Subjective; does not distinguish conflict damage from ordinary wear unless adapted
Proposed conflict-aware extension	Conventional scale + damage-cause classification	Condition score + damage-cause tag (war-damaged, looted, abandoned, ordinary wear)	Captures cause of deterioration, aiding targeted reconstruction	Not yet standardised or empirically tested in the zone

VI. THEMATIC REVIEW OF FINDINGS

A. Structural and Fabric Condition

Across the Nigerian literature, roofing is consistently the building element most frequently reported in poor condition, followed by walls (cracking, peeling paint, damp staining) and floors. Since most public school buildings in northern Nigeria are single-storey structures with corrugated-iron or asbestos-cement roofing on timber or steel trusses, roofing failure disproportionately affects usability, since a failed roof typically renders a classroom unusable during the rainy season and accelerates deterioration of ceilings, walls, and furniture beneath it.

The most consistently documented feature specific to Borno State is the scale of direct conflict damage to school infrastructure. UNICEF reporting from the peak of the crisis (2017–2018) indicated that close to 1,400 schools across Borno State had been damaged or destroyed [2] and that 57% of the state's schools remained closed [11], [13], as summarised in Fig. 4. Humanitarian needs assessments conducted in LGAs such as Dikwa, Gwoza, and Monguno have documented how insurgent activity damaged school buildings directly and also disrupted access indirectly, through displacement, occupation of school premises by displaced households, and the killing or displacement of teaching staff [3].

B. Conflict-Related Damage

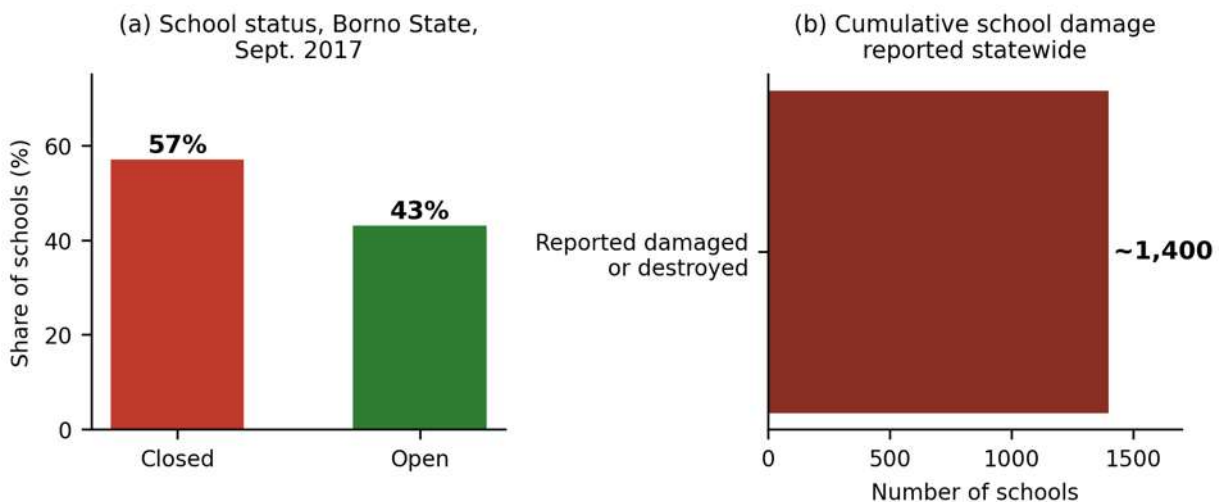


Fig. 4. Reported status of schools in Borno State around the peak of the insurgency: (a) share of schools closed versus open, September 2017; (b) cumulative number of schools reported damaged or destroyed statewide. Compiled from UNICEF reporting.

C. Sanitation, Water Supply, and Ancillary Facilities

Nigerian school-facility studies consistently report deficiencies in water supply, sanitation, and drainage as being at least as severe as deficiencies in the core building fabric. In a post-conflict setting such as Southern Borno, this pattern is compounded by the destruction or non-functionality of boreholes and water points and by informal occupation of school compounds by displaced households.

D. Maintenance Culture, Funding, and Institutional Capacity

A recurring conclusion across Nigerian public-school building studies is that deterioration is driven less by inherent design weaknesses than by the near-total absence of a planned, funded maintenance regime once a building is commissioned. In Southern Borno, this generic problem is layered onto the additional burden of post-conflict reconstruction financing, where resources are understandably prioritised toward

rebuilding destroyed schools rather than routine maintenance of schools that remain standing but ageing.

E. Furniture, Instructional Materials, and the Learning Environment

Several Nigerian studies extend “facility condition” to cover furniture and basic instructional infrastructure, finding chronic shortages and poor condition of furniture in public secondary schools — compounded in Borno State by looting or destruction of furniture during insurgent occupation and by the strain placed on furniture stocks when schools reopen to accommodate returning and newly displaced pupils in overcrowded classrooms. Table III synthesises the typical condition reported for each building element, contrasting ordinary Nigerian deterioration patterns with the additional conflict-related risk documented for Southern Borno.

TABLE III. SYNTHESISED CONDITION PROFILE BY BUILDING ELEMENT (ILLUSTRATIVE SYNTHESIS OF REVIEWED LITERATURE)

Building Element	Typical Nigerian Condition (non-conflict)	Additional Conflict-Related Risk (Southern Borno)	Implication for Assessment Practice
Roof	Frequently reported poor / leaking	Sheets looted or blast/fire damaged; long vacancy accelerates truss decay	Prioritise roof-cause tagging (weather vs. removed/looted) during inspection
Walls / structure	Cracking, damp, peeling paint	Shelling, arson, or forced-entry damage; structural instability in worst-hit sites	Structural safety check before reoccupation, not just cosmetic rating
Doors / windows	Wear, broken hardware	Removed or destroyed during occupation/looting	Record presence/absence, not only condition
Water / sanitation	Often the weakest-rated facility class	Boreholes damaged or disabled; compounds informally occupied by IDPs	Assess functionality of water points as a distinct, high-priority item
Furniture	Chronic shortages, poor condition	Looted/destroyed; overcrowding from returnee/displaced enrolment surges	Track furniture-to-pupil ratio alongside condition score
Maintenance regime	Largely absent; funding-driven neglect	Competes with reconstruction financing for scarce resources	Recommend ring-fenced routine-maintenance budget lines in reconstruction plans

Note: entries synthesise qualitative patterns reported across the reviewed sources; they are not derived from a primary field survey of Southern Borno schools and should be validated empirically before being used for budgeting or engineering decisions.

VII. COMPARATIVE INSIGHT FROM OTHER NIGERIAN STATES

Because so little dedicated condition-assessment research exists for Southern Borno specifically, comparative studies from Ogun and Anambra States are instructive as a baseline for “ordinary” deterioration in the Nigerian public school system, absent conflict. These studies consistently found that a majority of buildings were poorly maintained, that observational rating scales were feasible and informative for prioritising interventions, and that maintenance shortfalls were attributed principally to funding constraints and weak maintenance culture rather than design failure [4], [5].

VIII. GAPS IN THE EXISTING LITERATURE

This review identifies gaps spanning (i) the absence of dedicated, published condition-assessment studies for Southern Borno's public schools; (ii) a lack of LGA-disaggregated data; (iii) the absence of a standard instrument combining conventional BCA metrics with conflict-damage classification; (iv) Limited longitudinal data; and (v) weak linkage between reconstruction/rehabilitation programme data and

independent, criteria-based condition assessment. These gaps are mapped against corresponding recommendations in Table IV.

IX. CHALLENGES FACING CONDITION ASSESSMENT IN THE REGION

Practical challenges include security access constraints limiting thorough or repeated site inspections; data and record-keeping gaps arising from disruption to local education offices; resource competition between headline reconstruction and routine maintenance; overlapping vulnerabilities, whereby the LGAs with the most severely damaged schools also tend to have the weakest local governance and revenue base; and the absence of a shared assessment protocol among the state Ministry of Education/SUBEB, UBEC, and international partners.

X. RECOMMENDATIONS

Table IV summarises the principal recommendations arising from this review, mapped against the literature gap each is intended to address.

TABLE IV. IDENTIFIED LITERATURE GAPS MAPPED TO RECOMMENDATIONS

Identified Gap	Corresponding Recommendation
No dedicated condition-assessment studies for Southern Borno	Develop and pilot a Southern-Borno-specific condition-assessment instrument combining conventional element scales with a conflict-damage classification, applied consistently across all nine LGAs
Lack of LGA-disaggregated data	Prioritise LGA-level data collection and public reporting to target resource allocation to schools and communities most in need
No standard conflict-aware instrument	Adopt the proposed framework in Fig. 1 and method comparison in Table II as a starting template, refined through field piloting
Limited longitudinal tracking	Establish a shared, multi-agency condition-assessment database (SUBEB, UBEC, Ministry of Education, humanitarian/donor partners) enabling repeat measurement over time

Weak link between reconstruction programming and independent assessment	Integrate routine maintenance funding into reconstruction programming from the outset, and use remote/rapid-assessment techniques where physical access is constrained
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In addition, dedicated peer-reviewed field research combining engineering condition surveys with user-perception data should be commissioned specifically within Southern Borno's public schools, and local institutional capacity for basic preventive maintenance should be built at the LGA and school level so that low-cost interventions can be carried out promptly.

XI. CONCLUSION

The condition of public school buildings in Southern Borno State sits at the intersection of two distinct problems: the well-documented, nationwide Nigerian pattern of poor maintenance culture and underfunded public school infrastructure, and the more acute, conflict-specific damage inflicted on school buildings across Borno State by more than a decade of insurgency. While the general Nigerian literature on building condition assessment provides a useful methodological foundation, summarised here through Tables I–IV and Figs. 1–4, none of the reviewed studies were conducted specifically within Southern Borno, and existing evidence on the zone comes overwhelmingly from humanitarian access and enrolment reporting rather than engineering-based condition surveys. Closing this gap will require a purpose-built assessment framework that layers conflict-damage indicators onto conventional building condition metrics, LGA-level data disaggregation, and sustained, security-conscious data collection — providing the evidence base needed to target reconstruction and maintenance resources effectively as Southern Borno continues its transition from active conflict toward stabilisation and recovery.

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