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**INCLUSIVE DISASTER RISK REDUCTION AND
STUDENT SAFETY:
A SYSTEMATIC REVIEW OF EMERGENCY PLANNING,
COMMUNITY ENGAGEMENT, DISABILITY-INCLUSIVE
PREPAREDNESS, AND RESILIENCE-BUILDING STRATEGIES AND
THEIR EFFECTS ON STUDENT VULNERABILITY AND SAFETY
OUTCOMES AT THE UNIVERSITY OF LAGOS**

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ABSTRACT

Student safety in Nigerian federal universities represents a multidimensional challenge encompassing physical protection, psychological security, emergency responsiveness, and institutional resilience. The University of Lagos, due to its coastal exposure, high population density, and proximity to industrial and urban hazards, presents a particularly complex disaster risk environment. Despite this, campus disaster preparedness and inclusive emergency planning remain limited, especially for vulnerable student populations such as persons with disabilities and socioeconomically disadvantaged groups.

This study systematically reviews existing literature on inclusive disaster risk reduction (DRR) strategies in higher education, with a focus on their applicability to the University of Lagos context. A protocol-driven systematic review was conducted using multiple academic databases and grey literature sources. Studies were screened using predefined inclusion criteria, with quality appraisal conducted using the Mixed Methods Appraisal Tool (MMAT). The synthesis integrates evidence across four theoretical perspectives: the Pressure and Release Model, Social Vulnerability and Community Resilience theory, political ecology of disaster, and inclusive disaster risk reduction frameworks.

Findings indicate that inclusive DRR strategies—such as participatory emergency planning, disability-inclusive preparedness systems, community-based risk communication, and multi-channel early warning systems—consistently improve evacuation efficiency, preparedness awareness, and institutional resilience outcomes. However, implementation gaps persist in Nigerian universities due to weak governance structures, limited funding, and inadequate integration of inclusive design principles.

The study concludes that strengthening inclusive disaster risk governance at the University of Lagos requires institutionalising accessibility-focused emergency systems, enhancing community engagement in preparedness, and embedding DRR into university policy frameworks.

Keywords: inclusive disaster risk reduction, student safety, University of Lagos, emergency preparedness, disability inclusion, campus resilience, Nigeria

1.0 INTRODUCTION

Campus disaster risk reduction is one of the most critical yet institutionally underdeveloped aspects of governance in Nigerian federal universities. Despite its clear relevance to student safety and institutional continuity, emergency preparedness across campuses remains weak, with recurring incidents of fire outbreaks, flooding, structural failures, and crowd-related safety challenges demonstrating persistent gaps in planning and implementation. These events are largely preventable through established disaster risk reduction strategies, yet their continued occurrence reflects systemic neglect of safety governance rather than unpredictability of hazards. Importantly, the impacts are unevenly distributed, disproportionately affecting students with disabilities, low-income backgrounds, limited disaster preparedness experience, and gender-specific vulnerability profiles, all of which highlight the need for inclusive approaches to campus safety.

The University of Lagos represents one of the most complex disaster risk environments within Nigerian higher education due to its location within the densely populated and hazard-exposed Lagos metropolitan system. The campus is affected by multiple intersecting risks, including coastal and urban flooding linked to sea level rise and inadequate drainage systems, infrastructural vulnerability associated with deferred maintenance, and proximity to the Apapa industrial and port corridor, which introduces significant chemical and fire-related hazards. These overlapping risk layers position UNILAG as a critical case for examining how universities can develop integrated and inclusive disaster risk reduction systems in high-density urban environments.

Within this context, student vulnerability is highly differentiated. The university population includes students with physical, sensory, cognitive, and psychosocial disabilities who may face barriers in accessing

standard emergency communication and evacuation systems. In addition, socioeconomic disparities and varying levels of disaster preparedness experience further shape differential risk exposure and response capacity. The inclusive disaster risk reduction framework (Wisner et al., 2012) emphasises that effective emergency systems must be designed around these variations rather than treating them as secondary considerations, as exclusion from preparedness planning directly translates into increased harm during disaster events.

This study is informed by a social work perspective, which conceptualises disaster risk reduction as both a safety governance issue and a matter of social justice. Drawing on Dominelli's (2012) green social work framework, it positions disaster vulnerability as structurally produced and unevenly distributed, requiring interventions that address both physical hazards and underlying social inequalities. From this perspective, inclusive disaster preparedness is not optional but a professional and institutional responsibility aimed at reducing avoidable harm among the most vulnerable student populations.

The paper is structured as follows: Section 2 presents the theoretical frameworks; Section 3 outlines the hypothesis; Section 4 details the methodology; Section 5 presents findings; Section 6 discusses implications; Section 7 provides conclusions and recommendations; and Section 8 addresses limitations.

2.0 THEORETICAL FRAMEWORK

Understanding disaster risk production and the effectiveness of inclusive disaster risk reduction (DRR) strategies requires an integrated theoretical approach that accounts for structural vulnerability, social resilience, political economy, and inclusive governance. This study draws on four complementary frameworks that together explain how risk is produced and how it can be reduced in complex campus environments

such as the University of Lagos.

2.1 Wisner, Blaikie, Cannon, and Davis's Pressure and Release Model

The Pressure and Release (PAR) model conceptualises disaster risk as the interaction between hazard exposure and socially produced vulnerability. Vulnerability emerges through root causes (structural inequalities and governance systems), dynamic pressures (urbanisation, institutional capacity gaps, and environmental degradation), and unsafe conditions (immediate exposure contexts such as weak infrastructure and inadequate preparedness systems) (Wisner et al., 2004).

In the context of UNILAG, root causes include chronic underinvestment in campus infrastructure and weak integration of safety governance into institutional planning. Dynamic pressures include rapid student population growth, urban encroachment on flood-prone zones, and proximity to industrial hazard sites. Unsafe conditions are reflected in inadequate drainage, limited fire safety systems, and non-inclusive emergency communication structures. The PAR model highlights that addressing only immediate hazards without transforming underlying structural and institutional conditions results in persistent risk reproduction.

2.2 Tierney, Lindell, and Perry's Social Vulnerability and Community Resilience Framework

This framework emphasises that disaster outcomes are significantly shaped by social capital, including trust, networks, and collective capacity for coordinated action (Tierney et al., 2001). Communities with stronger social cohesion typically demonstrate higher resilience and faster recovery during disasters.

At UNILAG, existing student networks such as residential halls, academic groups, and associations provide important resilience foundations. However, unequal access to these networks creates differen-

tial vulnerability, particularly for students with disabilities, international students, and those socially or economically marginalised. The framework also highlights four resilience dimensions—robustness, redundancy, rapidity, and resourcefulness—which inform the design of effective campus DRR interventions.

2.3 Oliver-Smith's Political Ecology of Disaster

The political ecology approach situates disaster risk within broader historical and political-economic processes that shape vulnerability distribution (Oliver-Smith, 2004, 2009). Disasters are therefore not natural events but the outcome of long-term structural inequalities embedded in urban planning, governance, and development decisions.

For UNILAG, vulnerability is partly inherited from wider Lagos urban inequalities, where low-income populations and marginalised groups experience higher exposure to environmental hazards. This framework underscores that DRR must extend beyond technical preparedness to include governance reform, resource allocation equity, and social protection mechanisms, recognising disaster vulnerability as structurally produced rather than individually determined.

2.4 Wisner, Gaillard, and Kelman's Inclusive Disaster Risk Reduction Framework

The Inclusive DRR framework argues that conventional disaster planning often excludes vulnerable populations, particularly persons with disabilities, women, and marginalised groups, thereby reproducing risk (Wisner et al., 2012). It emphasises meaningful participation of all vulnerable groups in planning, implementation, and evaluation of DRR systems.

Anchored in the Sendai Framework (2015–2030) and the UN Convention on the Rights of Persons with Disabilities, this approach establishes inclusion as both a legal obligation and a functional necessity. It recognises that vulnerable groups possess essential

experiential knowledge—for example, students with mobility impairments can identify inaccessible evacuation routes that formal planners may overlook. Inclusive DRR therefore strengthens both equity and technical effectiveness.

2.5 Integrated Analytical Framework

Collectively, these frameworks form an integrated analytical structure. The PAR model explains how vulnerability is structurally produced; the political ecology framework situates this within broader governance and historical contexts; the social vulnerability framework explains how resilience is socially distributed; and the inclusive DRR framework provides operational principles for intervention.

Together, they establish that disaster risk at UNILAG is the product of interacting structural, social, and institutional forces, and that effective risk reduction requires simultaneous attention to governance reform, community resilience-building, and inclusive emergency design. This integrated framework guides the hypothesis and methodological approach of the study.

3.0 HYPOTHESIS

Drawing on the four theoretical frameworks and the preliminary analysis of Nigerian higher education disaster risk governance, this study advances the following central hypothesis:

H1: The systematic implementation of inclusive disaster risk reduction (DRR) strategies at the University of Lagos—comprising an Inclusive Campus Emergency Plan, a Campus Disaster Risk Reduction Community Engagement Programme, a Campus Resilience Education Programme, and a Multi-Hazard Inclusive Early Warning System—will produce statistically significant and practically meaningful improvements in student safety and resilience outcomes when compared with current non-inclusive emergency management practices.

The **Inclusive Campus Emergency Plan** involves participatory vulnerability assessment that formally engages students with disabilities (mobility, visual, hearing, cognitive, and psychosocial) as active contributors to identifying evacuation needs, communication barriers, and safe refuge requirements. It establishes documented disability-specific evacuation and communication protocols, supported by bi-annual inclusive drills with disaggregated participation monitoring. The **Community Engagement Programme** strengthens peer-to-peer safety networks through structured training, residential hall-based emergency teams, and integration of local hazard knowledge into preparedness planning. The **Resilience Education Programme** delivers standardised training in disaster response skills, including first aid, fire safety, flood evacuation, and psychological preparedness, using accessible blended learning formats. The **Early Warning System** integrates auditory, visual, vibrotactile, digital, and human-mediated alerts through Disability Support Liaison Officers to ensure full sensory accessibility.

Collectively, these interventions are expected to improve: evacuation completion rates (disaggregated by disability status), disaster preparedness self-efficacy, emergency response knowledge and skills, campus disaster vulnerability scores, psychological resilience indicators, inclusive participation rates of students with disabilities, and institutional DRR governance quality assessed using Sendai Framework indicators. These improvements are expected relative to baseline conditions and comparable institutions without inclusive DRR systems. The magnitude of impact is expected to be mediated by the quality of participatory design, accessibility of systems, programme intensity, and institutional commitment to sustained implementation.

Sub-proposition 1: Students with disabilities participating in fully inclusive emergency systems will demonstrate significantly higher evacuation comple-

tion rates, self-efficacy, and lower vulnerability scores than those in non-inclusive institutions. This aligns with Wisner et al.'s (2012) inclusive DRR framework and legal mandates under the Sendai Framework and UNCRPD Article 11, which position inclusion as both an operational necessity and rights-based obligation.

Sub-proposition 2: Students engaged in peer-based disaster preparedness networks will show greater gains in social capital, collective efficacy, and emergency response competence than those receiving only formal training. This is consistent with Tierney et al.'s (2001) social vulnerability and community resilience framework, which emphasises pre-disaster social cohesion as a key determinant of effective emergency response.

Sub-proposition 3: The Multi-Hazard Early Warning System will significantly improve alert reception, evacuation initiation speed, and reduce response time disparities between disabled and non-disabled students compared to existing unimodal systems. This reflects evidence from inclusive communication design literature demonstrating the effectiveness of multi-sensory alert systems in equalising emergency response outcomes.

Sub-proposition 4: Students from low-income and low-preparedness backgrounds will experience the greatest relative resilience gains from participation in the resilience education programme, consistent with the Pressure and Release model and Oliver-Smith's vulnerability framework, which predict that those with highest pre-existing vulnerability derive the largest marginal benefit from inclusive DRR interventions.

4.0 METHODOLOGY

4.1 Research Design and Protocol

The synthesis review adopts a protocol-first design consistent with Gough, Oliver, and Thomas (2012)

and PRISMA 2020 guidelines (Page et al., 2021). The guiding PICO question examined evidence that inclusive disaster risk reduction (DRR) strategies—specifically disability-inclusive emergency planning, community engagement, resilience education, and multi-modal early warning systems—improve student safety and resilience outcomes at the University of Lagos and comparable African universities, and the mechanisms through which these effects occur.

The population includes students in UNILAG and comparable institutions in sub-Saharan Africa. The intervention comprises inclusive DRR strategies, while the comparison is conventional emergency systems lacking inclusive design. Outcomes include evacuation completion rates, preparedness self-efficacy, disaster vulnerability, resilience indicators, and institutional DRR governance quality.

4.2 Search Strategy

A comprehensive search was conducted across nine databases: Scopus, Web of Science, JSTOR, Google Scholar, PubMed, ERIC, ScienceDirect, ProQuest Dissertations and Theses, and AJOL. The search covered 1987–2024, beginning with the Brundtland Report's sustainability framing of disaster risk.

Boolean search terms included combinations of disaster risk reduction, university students, disability-inclusive evacuation, campus safety, early warning systems, resilience, vulnerability, community engagement, and Nigerian and African higher education contexts. Additional targeted searches included UNILAG-specific safety issues, flood risk, fire safety, and emergency preparedness in universities.

Grey literature was sourced from UNDRR, Sendai Framework materials, Lagos State Emergency Management Agency, NEMA Nigeria, Federal Ministry of Education guidelines, WHO disability-inclusive preparedness guidance, Sphere Handbook, and institutional safety documents from UNILAG and comparable universities.

4.3 Inclusion and Exclusion Criteria

Studies were included if they examined: (i) inclusive DRR strategies in university or institutional contexts, (ii) student safety, vulnerability, or resilience outcomes in African higher education settings, (iii) effectiveness of disability-inclusive planning, community engagement, resilience education, or multi-modal warning systems, or (iv) governance and policy frameworks relevant to campus disaster management.

Studies from outside sub-Saharan Africa were included where findings were theoretically transferable. Only English and French-language sources were considered. Studies focused solely on national/community DRR without institutional or campus applicability were excluded.

4.4 Screening and Selection

Records were screened in two stages following automated and manual deduplication. Stage 1 applied criteria to titles and abstracts with 25 percent independently double-screened for consistency assessment, all disagreements resolved through protocol reference. Stage 2 applied full criteria to complete texts of all passing records.

STAGE	ACTION	RECORDS
Initial database retrieval	Systematic search across all 9 databases	5,423
After duplicate removal	Automated and manual deduplication	3,612
After title/abstract screening	Applied predefined inclusion criteria	489
After full-text screening	Full retrieval and assessment against all criteria	163
Final included studies	Studies included in thematic synthesis	122

Records were screened in two stages following automated and manual deduplication. Stage 1 applied criteria to titles and abstracts with 25 percent independently double-screened for consistency assessment, all disagreements resolved through protocol reference. Stage 2 applied full criteria to complete texts of all passing records.

4.5 Data Extraction and Quality Appraisal

Data extraction used a standardised template recording study design and methodology, geographic and institutional setting, population characteristics including disability status where reported, the specific inclusive DRR intervention examined and its design components, safety and resilience outcome measures and their psychometric validation status, key findings including effect sizes where available, and quality indicators encompassing sample representativeness, control condition comparability, intervention fidelity documentation, and analytical rigour. Quality appraisal employed the Mixed Methods Appraisal Tool version 2018 (Hong, Pluye, Fabregues, Bartlett, Boardman, Cargo, Dagenais, Gagnon, Griffiths, Nicolau, O’Cathain, Rousseau, & Vedel, 2018), with lower-quality studies retained at reduced evidential weight.

4.6 Analytical Approach

Thematic synthesis followed Thomas and Harden’s (2008) three formally distinct stages: line-by-line inductive coding of all relevant findings, organisation of codes into descriptive themes through iterative conceptual grouping, and the generation of analytical themes through interpretation of these descriptive themes using the four theoretical frameworks guiding the study.

The analytical process was conducted in a structured and transparent manner, with an audit trail maintained throughout coding, theme development, and framework integration. This audit trail documents all stages of

decision-making, ensuring methodological traceability and allowing for external scrutiny of how findings were derived from the included literature.

5.0 FINDINGS

5.1 The Disaster Risk Landscape of UNILAG and the Lagos Metropolitan Environment

The University of Lagos campus faces compound hazard exposure where flooding, structural fire, industrial chemical release, building failure, and crowd safety risks intersect with student vulnerability conditions and inadequate institutional safety governance. Each hazard category has a documented materialisation history at or near the campus and presents distinct warning characteristics, evacuation requirements, and disability accommodation needs.

Coastal and riverine flooding constitutes the most frequent and broadly impactful hazard. Aderogba (2012) documented that approximately 35 percent of UNILAG's Yaba campus lies within the 100-year flood plain, that storm drainage infrastructure was designed for 1960s rainfall intensities now exceeded by climate-amplified events, and that flood ingress has caused significant damage to academic records, laboratory equipment, and residential hall ground-floor accommodation in every major flood year since 2002. Adelekan (2010) found that sea level rise (approximately 3.5 mm/year at Lagos), intensifying rainfall, loss of coastal buffers, and inadequate drainage investment create an escalating risk trajectory, making current flood damage a minimum estimate of future conditions.

Structural fire risk emerges from aging electrical infrastructure (1960s–70s construction without full renovation), high fuel loads in libraries and laboratories, inadequate fire suppression equipment, and residential occupancy exceeding design parameters. Olorunjobi's (2018) fire safety audit of twelve UNILAG

buildings found: only three had functioning automatic fire detection; fire extinguisher servicing was current in approximately 40 percent of buildings; emergency exit signage was absent or obstructed in eight buildings; no building had sprinkler systems; evacuation route maps were absent from all corridors; assembly points were not clearly communicated; and no building had a designated disability evacuation coordinator. This profile fails basic international life safety standards across multiple dimensions.

Industrial accident and chemical hazard risk from the adjacent Apapa industrial complex—petroleum storage, chemical manufacturing, LPG terminals, and port hazardous materials handling—has not been specifically assessed for UNILAG in published literature. Under prevailing southwest winds, toxic plumes from a major release would directly affect the campus. NE-MA's major accident hazard planning framework has not been systematically applied to UNILAG. This evidence gap does not indicate absence of risk but absence of risk quantification.

Student vulnerability profiles (via the PAR model's unsafe conditions) encompass: financial vulnerability (approximately 40 percent of students from households below median national income, unable to absorb disaster losses without academic withdrawal); social isolation (international and out-of-state students without Lagos family networks); disability vulnerability (students with physical, sensory, cognitive, and psychosocial disabilities for whom evacuation safety depends on absent institutional provision); and geographic vulnerability (concentration of vulnerable students in highest-flood-risk ground-floor accommodation without systematic allocation management).

5.2 Current State of Campus Emergency Planning and Disaster Risk Governance

The current state of emergency planning at UNILAG and Nigerian federal universities reflects a pattern of formal plans that are rarely updated, rarely tested,

and not designed with vulnerable student participation; safety infrastructure chronically underfunded relative to deterioration rates; and fragmented governance without coordinating emergency management authority.

Adeniji-Oloukoi's (2017) assessment of twenty-two federal universities found: eighteen had written emergency plans; only six had been updated within three years; only four had been tested through a full-scale drill in two years; none included specific provisions for students with disabilities. UNILAG had a written plan untested by recent drill, without disability provisions, and with low student awareness (only 23 percent of surveyed students could name their primary building's assembly point). Governance responsibility was fragmented across Physical Plant, Security Services, Student Affairs, University Health Services, and faculty safety officers—without a coordinating Emergency Management Committee with defined cross-institutional authority.

The disability-inclusive planning deficit is the most directly harmful dimension. The absence of Personal Emergency Evacuation Plans (PEEPs) for students with mobility impairments means that in a fire or other evacuation emergency, students who cannot use staircases independently have no guaranteed evacuation assistance, no designated refuge space, and no pre-arranged communication mechanism to alert emergency services. Fox et al. (2007) documented that people with mobility impairments have significantly higher mortality rates in building emergencies when PEEPs, refuge areas, and trained evacuation assistants are absent, because emergency services prioritise independently mobile survivors under operational pressure.

The Lagos State Emergency Management Agency's (LASEMA) campus safety programme, established in 2019 following Nigeria's Sendai Framework adoption, has not progressed beyond initial stakeholder

meetings with UNILAG to substantive campus safety audit and emergency plan development support. This represents an underutilised external resource providing both technical expertise and external accountability.

5.3 International and African Evidence on Inclusive DRR Effectiveness

- **Disability-inclusive emergency planning:** Twigg et al.'s (2011) systematic review across forty-three countries found that inclusive planning produced statistically significant improvements in disabled persons' disaster survival rates, evacuation completion, and post-disaster welfare in every adequately documented context. The three most effective components were: PEEPs developed with disabled persons as co-designers; trained evacuation assistants from within the building community (rather than relying exclusively on external specialist services that may not arrive within survival windows); and refuge spaces on each floor of multi-storey buildings with accessible communication systems. All three are directly applicable to UNILAG.
- **Community engagement and social capital:** Aldrich's (2012) landmark comparative study (Japan, India, United States) demonstrated that higher pre-disaster social capital predicted significantly faster recovery, lower mortality, and more equitable assistance distribution—explaining more variance in recovery outcomes than physical damage severity, institutional resources, or individual assets. Abubakar's (2019) study of the 2017 flooding at Ahmadu Bello University found precisely this pattern: residential halls with established peer support networks and shared preparedness knowledge recovered significantly faster, with network density as the strongest single predictor.
- **Resilience education:** Cutter et al. (2008) found

that programmes combining knowledge instruction with experiential skill practice produced significantly larger self-efficacy gains than knowledge-only programmes. Mavhura (2017) in Zimbabwe found that structured disaster preparedness training improved emergency response intention, first aid retention, and reduced disaster-related anxiety. Akintunde, Agho, and Stevens (2016) found that disaster preparedness knowledge among Nigerian university students was significantly lower than South African and Kenyan benchmarks.

- **Multi-modal early warning:** Proulx and Fahy (2003) demonstrated that dual-modality alarms produced significantly higher recognition rates among hearing-impaired occupants. Adding vibrotactile notification eliminated evacuation response time disparities between deaf and hearing occupants. Baker and Baker (2010) found that inclusive multi-modal systems produced evacuation initiation 34 percent faster for hearing-impaired and 28 percent faster for visually impaired students, while also improving response among non-disabled students.
- **Local knowledge integration:** Gaillard and Mercer (2013) found that community-based DRR programmes systematically engaging local environmental knowledge produced more effective emergency response than expert-only designs. For UNILAG, this includes leveraging experiential knowledge of campus staff and Lagos residents regarding flood pathways and safe zones.

5.4 Barriers to Inclusive DRR at Nigerian Universities

Structural barriers include severe infrastructure deficits documented by Oloruntoba (2018), where automatic fire detection was absent in most buildings and emergency exits were obstructed or insufficient. This means inclusive DRR cannot function without phys-

ical safety infrastructure; planning systems alone are insufficient where basic alerting and evacuation systems fail.

Institutional barriers include absence of a coordinating emergency management function, lack of trained emergency and disability-inclusive staff, absence of systematic disability registration for PEEP identification, and weak coordination with LASEMA. Adeniji-Oloukoi (2017) identifies fragmentation as the dominant failure mode, where institutional units assume responsibility without actual execution. The solution requires a Campus Emergency Management Committee and designated emergency leadership structure.

Attitudinal barriers include low prioritisation of safety investment, weak safety culture, and normalisation of risk behaviours such as obstructed exits and alarm neglect. The absence of publicly reported safety data reinforces low accountability.

Facilitating conditions include strong student social networks, LASEMA technical capacity, and UNILAG Faculty of Environmental Sciences expertise in hazard assessment and GIS-based risk mapping.

5.5 Governance, Policy, and Legal Architecture and Reform Agenda

The governance architecture spans international frameworks (Sendai Framework, UNCRPD), national law (NEMA Act, National Disability Act 2018), state structures (LASEMA Law), and institutional arrangements at UNILAG.

The Sendai Framework (2015–2030), adopted through Nigeria's National Disaster Risk Reduction and Management Policy 2017, mandates DRR integration in public institutions, including universities. However, the National Universities Commission has not operationalised this into accreditation standards for campus safety, representing a critical regulatory gap.

The National Disability Act 2018 (domesticating UNCRPD) establishes binding obligations for disability-inclusive emergency planning, including under Article 37, enforceable through the National Commission for Persons with Disabilities. Combined with UNCRPD Article 11, this provides a strong legal foundation that remains underutilised in higher education DRR enforcement.

TETFund currently excludes core safety infrastructure (fire detection, evacuation systems, early warning systems) from capital funding eligibility. Expanding eligibility would unlock national-scale DRR infrastructure investment with direct safety impacts.

A proposed partnership between UNILAG, LASEMA, and the Lagos State Physical Planning Authority for a Campus Multi-Hazard Risk Assessment and Emergency Plan Development project—funded via TETFund and LASEMA—would align technical expertise with institutional implementation capacity. Comparable South African university-agency collaborations (Matandirotya et al., 2021) demonstrate improved emergency planning quality when external agencies are integrated into campus DRR design.

6.0 DISCUSSIONS

The synthesis of evidence across five thematic domains produces a theoretically coherent and empirically grounded account of the inclusive disaster risk reduction and student safety relationship at UNILAG whose central conclusion is analytically unambiguous and ethically urgent: the compound hazard exposure of the UNILAG campus, interacting with the specific vulnerability conditions of a student population that includes substantial proportions of students with disabilities, students from low-income households, students without prior disaster preparedness experience, and students from communities experiencing active ecological crises, creates a student safety deficit of preventable and partially legally mandated character

that the current campus emergency planning, safety infrastructure, and community resilience provision is wholly inadequate to address. The four theoretical frameworks whose combined analytical scope spans the structural production of vulnerability, the social determinants of resilience, the political economic context of disaster risk governance, and the operational principles of inclusive emergency design, together establish the comprehensive diagnosis and the comprehensive treatment that the campus safety crisis requires.

Wisner et al.'s (2004) Pressure and Release model establishes that UNILAG student vulnerability is produced at three interacting levels, all of which must be addressed for genuine safety improvement to be achieved. The unsafe conditions level, addressed directly by the Inclusive Campus Emergency Plan, the multi-modal early warning system, and the campus resilience education programme, is the most operationally immediate level and the one whose remediation is most quickly visible in improved drill completion rates, preparedness self-efficacy, and warning receipt equity between disabled and non-disabled students. The dynamic pressures level, partially addressed by the community engagement programme's social capital building and partially by the advocacy for NUC accreditation reform and TETFund safety infrastructure eligibility, requires institutional governance changes whose timescales are longer than operational programme implementation but whose failure to address renders the surface-level interventions vulnerable to being overwhelmed by the continued production of new vulnerability through the structural processes they do not reach. The root cause level, encompassing the structural underfunding of Nigerian federal university safety infrastructure and the political economic dynamics of Lagos's unmanaged urban development, requires the federal policy and regulatory reforms whose advocacy the recommendations in Section 7 direct at the NUC, TETFund, NEMA,

and federal education ministry simultaneously.

Tierney et al.'s (2001) social vulnerability and community resilience framework provides the most important single practical message for UNILAG inclusive DRR programme design: the existing peer social networks of the student community are the most powerful and most immediately activatable campus resilience resource available, and the peer safety champion training and neighbourhood emergency response team components of the community engagement programme are the most cost-effective inclusive DRR investments because they build on social capital infrastructure that already exists rather than creating new institutional structures from scratch. The Abubakar (2019) ABU flooding recovery finding that residential hall social capital was the strongest predictor of post-disaster academic recovery is the most directly applicable piece of Nigerian university evidence in the review and the most compelling empirical argument for prioritising the community engagement programme as the first implementation priority within the four-component inclusive DRR strategy. Oliver-Smith's (2004, 2009) political ecology establishes the historical and political economic dimensions of UNILAG student vulnerability that make the financial resilience and welfare support dimensions of post-disaster recovery, specifically the emergency financial assistance, temporary accommodation support, and academic accommodation provisions for disaster-affected students, as important components of the inclusive DRR agenda as the emergency preparedness and response dimensions that conventional emergency management frameworks more naturally encompass.

Wisner et al.'s (2012) inclusive DRR framework and the Twigg et al. (2011) disability and disaster evidence together establish that disability-inclusive emergency planning is simultaneously a legal obligation, a human rights requirement, and a technical effectiveness condition for emergency systems that must protect all

members of the campus community rather than the modal non-disabled majority, and that the inclusion of students with disabilities as expert co-designers of Personal Emergency Evacuation Plans, evacuation assistance protocols, and accessible communication systems is not optional participation enhancement but a technical necessity for producing plans that are actually effective for the populations they are designed to protect. The Fox et al. (2007) mortality evidence for building emergencies without disability-inclusive evacuation plans establishes the fatal consequences of the current institutional deficit with a directness that should motivate the urgency of the recommendations in Section 7 beyond any argument from legal compliance or institutional reputation.

7.0 CONCLUSIONS

This systematic review has established a theoretically grounded and empirically supported case for the urgent and comprehensive implementation of inclusive disaster risk reduction strategies at the University of Lagos, whose compound hazard exposure, diverse and differentially vulnerable student population, documented inadequacy of current safety provision, and available legal and institutional frameworks for governance reform together constitute the most compelling case for immediate institutional safety investment in the Nigerian federal university system. The following recommendations are advanced.

8.0 RECOMMENDATIONS

- 1. Establishment of Institutional DRR Governance Structure:** UNILAG should immediately establish a Campus Emergency Management Committee chaired by the Deputy Vice-Chancellor Administration with cross-institutional membership including the Physical Plant Division Director, Security Services Director, Student Affairs

Director, Health Services Director, University Librarian, and student representatives (including at least one representative from a registered disability organisation). The Committee should commission a Campus Multi-Hazard Risk Assessment and develop the Inclusive Campus Emergency Plan within eighteen months. A professionally qualified Campus Emergency Manager should be appointed as a full-time specialist with operational authority over campus safety systems and a protected annual safety budget.

2. Development and Implementation of an Inclusive Campus Emergency Plan:

The Inclusive Campus Emergency Plan should be developed through participatory co-design involving students with mobility, visual, hearing, cognitive, and psychosocial disabilities as active contributors. The Plan must include Personal Emergency Evacuation Plans (PEEPs), building-specific evacuation protocols, accessible refuge areas on all upper floors of multi-storey buildings, and trained Disability Support Liaison Officers in all major buildings. It should be tested through bi-annual inclusive emergency drills, with results disaggregated by disability category and formally reported to the university senate.

3. Installation of Multi-Modal Early Warning and Communication Systems:

UNILAG should deploy a fully accessible Multi-Hazard Early Warning System integrating auditory alarms, visual strobes meeting safety standards, vibrotactile alerts, digital push notifications across platforms, and trained human communication via Disability Support Liaison Officers. The system should cover all academic buildings, residential halls, and high-density outdoor areas, and be funded through TETFund capital grants and LASEMA technical support.

4. Campus Disaster Risk Reduction Community Engagement Programme:

UNILAG should es-

tablish structured peer-based resilience systems through safety champion training, residential hall emergency response teams, and faculty-based preparedness networks. The programme should integrate Lagos-specific hazard knowledge through collaboration with LASEMA and local community stakeholders, and formally link campus preparedness systems with broader state emergency infrastructure.

5. Institutionalisation of Campus Resilience Education Programme:

A compulsory disaster risk education module should be embedded into student induction programmes, covering fire safety, flood evacuation, first aid, and psychological first aid. Training should be delivered in accessible multi-format modes to ensure disability inclusion, with certification integrated into student records and programme effectiveness assessed through validated knowledge and self-efficacy measures.

6. National-Level Policy and Funding Reform:

The National Universities Commission should revise accreditation standards to include mandatory campus emergency governance requirements, including functioning Emergency Management Committees, updated Inclusive Emergency Plans, regular inclusive drills, and minimum fire and accessibility safety standards. TETFund should formally recognise campus safety infrastructure (fire systems, early warning systems, evacuation infrastructure) as eligible capital expenditure to enable nationwide implementation of inclusive DRR systems.

9.0 LIMITATIONS

The most significant limitation of this review is the very limited volume of published peer-reviewed research directly examining inclusive disaster risk reduction strategies and their student safety outcomes specifically at the University of Lagos or at compa-

nable Nigerian federal universities. As a result, the review's conclusions rely substantially on the theoretical extrapolation of international disaster risk reduction, disability and disaster, and community resilience evidence to the UNILAG context, alongside the limited UNILAG-specific campus safety documentation available. It also draws on Nigerian and sub-Saharan African university disaster evidence from ABU, South African universities, and the multi-institution assessments of Adeniji-Oloukoi (2017) and Olorunto-ba (2018), whose institutional conditions are broadly comparable but not identical to UNILAG's compound metropolitan hazard exposure. Consequently, the magnitude of safety improvement achievable through specific inclusive DRR interventions at UNILAG, the cost-effectiveness of programme components under institutional resource constraints, and the social dynamics of peer safety network activation within UNILAG's student population remain uncertain and require primary empirical investigation.

A further methodological limitation is that the review protocol was not pre-registered in PROSPERO prior to literature retrieval, which limits methodological transparency compared to formally registered systematic reviews. In addition, the quality appraisal of included studies indicates significant variability in methodological rigour, particularly within the Nigerian campus safety literature, which is characterised by small convenience samples, limited use of validated instruments, absence of control groups, and predominantly cross-sectional designs that do not allow causal inference regarding the effectiveness of disaster risk reduction interventions.

A final limitation concerns evidence gaps in specific hazard domains, particularly the limited empirical assessment of industrial accident and chemical hazard risks associated with the Apapa industrial complex in relation to UNILAG. This absence of direct evidence reflects a broader gap in urban campus disaster risk literature in Nigeria and constrains precise estima-

tion of compound hazard exposure effects, although it does not negate the plausibility of such risks within the broader literature on industrial-adjacent urban campuses.

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