

## Strengthening the Education Cluster through Disaster-Safe Education Units (SPAB) in Disaster Management in Lebong Regency

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### ABSTRAK

The floods in Lebong Regency, Bengkulu Province, in April and May 2026 exposed the vulnerability of educational institutions and showed that education disruption is not merely a school-level facility problem, but a public service governance issue. This article uses a qualitative, document-based case study to formulate a district-level Education Cluster strengthening model anchored in the Disaster-Safe Education Unit (SPAB) framework. The research gap addressed is the tendency of previous studies to examine post-disaster response or school preparedness separately, while the governance design that connects normal-time preparedness, emergency coordination, and learning recovery remains underdeveloped. Data were obtained from preliminary school loss records, policy documents, local news, and academic literature, then analyzed through open coding, thematic categorization, policy interpretation, and model synthesis. The findings identify three layers of vulnerability: physical school infrastructure, continuity of learning and evaluation, and inter-actor coordination. The novelty of this study lies in an absorptive and adaptive Education Cluster model that integrates a joint secretariat, education risk data, school early warning procedures, contingency plans, and pentahelix partnerships. The model positions the Education Cluster as a collaborative governance and resilience governance instrument to protect children's right to learn before, during, and after recurring floods.

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## 1. Introduction

Flood disasters are a recurring hydrometeorological hazard that significantly disrupts public service continuity. In public administration, service disruption is not only reflected in damaged infrastructure but also in the weakening capacity of the state and society to ensure safe, timely, and sustainable service delivery. Among various public services, education is particularly vulnerable because it involves children, teachers, administrative personnel, learning facilities, and the broader continuity of human development. When disasters occur, schools are not merely physical assets affected by damage, but also critical social institutions where the right to education, child protection, and future societal resilience are directly at stake.

Lebong Regency in Bengkulu Province provides a relevant case illustrating the recurring nature of flood risk in educational governance. Official reports indicate two major flood events within a short period: the 6 April 2026 flood caused by the overflow of the Uram River and the 7 May 2026 flood triggered by the Ketahun River overflow. The close temporal proximity of these events indicates that flooding in the region cannot be understood as an isolated seasonal incident but rather as a repeated risk requiring structured governance intervention. The impacts extend beyond residential areas to educational institutions exposed to flooding, landslides, erosion, and disrupted accessibility.

The educational impact of flooding in Lebong is multidimensional. Physical damage includes classrooms, furniture, laboratory equipment, digital devices, textbooks, sanitation systems, and administrative archives. At the same time, access disruption prevents students from attending school due to damaged roads or inundated settlements. Academic activities are also interrupted, as seen in the postponement of standardized examinations at SMP Negeri 12 Lebong. These conditions demonstrate that disasters affect not only school infrastructure but also administrative continuity, evaluation systems, and students' psychological readiness to learn.

From a child rights perspective, interruptions in education during disasters must be minimized through structured recovery strategies. Prolonged learning disruption increases the risk of academic delay,

psychosocial stress, and reduced sense of safety within educational environments. Teachers and education personnel face dual responsibilities, managing household impacts while ensuring continuity of schooling services. Local governments are therefore required to make rapid decisions regarding school closures, temporary learning arrangements, relocation of learning spaces, damage assessments, and coordination of recovery assistance. This complexity shows that disaster-affected education cannot be managed by schools alone but requires coordinated governance across multiple actors.

Indonesia's policy framework has already established a foundation for disaster-responsive education governance. The National Disaster Management Agency (BNPB) through Decree No. 308 of 2024 introduces a cluster-based disaster management system, including education as a core service cluster. Furthermore, BNPB Regulation No. 1 of 2025 concerning the National Disaster Management Plan (2025–2029) emphasizes disaster-safe education development, particularly in high-risk regions. In the education sector, Minister of Education and Culture Regulation No. 33 of 2019 on Disaster-Safe Education Units (SPAB) provides the institutional framework for mitigation, preparedness, response, and recovery within schools.

Despite the existence of these policy instruments, implementation challenges remain significant at the subnational and school levels. Many schools lack risk mapping, early warning systems connected to parents, structured recovery plans for learning continuity, and standardized emergency academic procedures. Inter-agency coordination is often reactive, strengthening only after disasters occur. This leads to uneven distribution of assistance, delayed response for some schools, and inefficient resource allocation. These conditions indicate the need for a more structured coordination mechanism at the district level through an Education Cluster approach.

To avoid conceptual ambiguity, this study distinguishes between Disaster-Safe Education Units (SPAB) and Education Clusters. SPAB refers to school-level institutional arrangements focused on safe infrastructure, preparedness systems, and disaster risk reduction education. In contrast, the Education Cluster operates at the district

level as a multi-actor coordination mechanism linking education offices, disaster management agencies, schools, communities, universities, media, and the private sector. Thus, SPAB functions as the operational unit, while the Education Cluster serves as the governance structure that coordinates actors, resources, and decisions across the disaster cycle.

Based on this distinction, the central research question is how the Education Cluster in Lebong Regency can be strengthened through SPAB implementation to manage recurring flood risks. This study aims to identify the impacts of flooding on education services, analyze institutional gaps in cluster governance, and formulate a practical governance model for preparedness, emergency response, learning continuity, and recovery. The focus is not on estimating financial losses but on translating disaster impacts into actionable governance improvements for education resilience.

The urgency of this study lies in the need to reposition schools from passive recipients of disaster aid to active resilience actors. Schools must function not only as service delivery units but also as centers of risk awareness, child protection, and community preparedness. Without this shift, disaster response will remain reactive, addressing damage only after it occurs rather than preventing or minimizing its impact.

The Lebong case is particularly relevant due to its geographical and hydrological characteristics involving river systems, dispersed settlements, and inter-village mobility constraints. Disruptions in one school often cascade into broader impacts affecting families, teacher mobility, and community coordination. This illustrates the interdependence between education governance and regional disaster governance, requiring integrated policy responses rather than sectoral interventions.

The theoretical foundation of this study draws from disaster risk governance, education in emergencies, and school safety frameworks. The Sendai Framework for Disaster Risk Reduction 2015–2030 emphasizes risk understanding, governance strengthening, resilience investment, and preparedness for recovery (UNDRR, 2015). The Inter-Agency Network for Education in Emergencies (INEE) standards highlight education as a humanitarian necessity that must ensure

access, protection, and continuity during crises (INEE, 2024). Meanwhile, the Comprehensive School Safety Framework (GADRRRES, 2022) emphasizes safe learning facilities, school disaster management, and risk reduction education as three interrelated pillars.

In the Indonesian context, SPAB operationalizes these global frameworks into school-based disaster governance. However, studies indicate that SPAB implementation is often constrained by limited regulatory enforcement, inadequate funding, and insufficient human resource capacity (Wardhani et al., 2024). This suggests that school-level preparedness alone is insufficient without strong institutional coordination at the district level.

From a governance perspective, the Education Cluster reflects collaborative governance, where multiple actors jointly address complex public problems that cannot be solved by a single institution (Ansell & Gash, 2008). Network governance theory further explains that disaster response effectiveness depends on the structure and quality of inter-organizational networks (Provan & Kenis, 2008). Disaster resilience theory emphasizes adaptive capacity, learning mechanisms, and institutional flexibility in responding to shocks (Boin & Lodge, 2016).

The pentahelix approach strengthens this framework by involving government, academia, business, communities, and media in disaster risk reduction. Each actor contributes distinct resources ranging from policy and funding to knowledge dissemination and logistical support. In flood contexts, this collaboration is essential not only during emergencies but also in preparedness and recovery phases.

The research gap addressed in this study lies in the disconnect between SPAB-focused school studies and cluster-based disaster governance studies. Existing literature tends to examine either school readiness or emergency coordination separately, without fully explaining how district-level governance can systematically integrate both. This study addresses that gap by proposing an integrated Education Cluster model that connects school-level SPAB implementation with district-level coordination mechanisms.

The novelty of this research lies in developing an Education Cluster model that integrates absorptive and adaptive capacities. Absorptive capacity refers to the ability to maintain minimum education services during disasters, while adaptive capacity refers to the ability to adjust policies, learning systems, and institutional roles based on evolving risk conditions. This dual capacity framework provides a governance-oriented approach to protecting the right to education in flood-prone regions such as Lebong.

## **2. Methods**

This article uses a qualitative, document-based case study design. The case study approach is used to examine a specific policy and governance problem: the disruption of education services caused by the April and May 2026 floods in Lebong Regency and the need to strengthen an Education Cluster through the SPAB framework. The document-based design is chosen because the available empirical material consists of preliminary loss data, initial response records, policy documents, local news, and academic literature.

The unit of analysis is the district-level governance of the Education Cluster. Affected educational units are treated as sources of empirical indications for identifying vulnerability patterns and institutional needs. This distinction prevents the analysis from stopping at school-by-school descriptions and enables the article to synthesize a district-level model for preparedness, response, learning continuity, and recovery.

The research does not use interviews, direct observation, or informant quotations. Therefore, the findings are not presented as a representation of subjective experiences of students, teachers, principals, or disaster officers. Instead, the article is positioned as an initial conceptual-applied study that interprets available documentary evidence. This limitation is explicitly stated so that the claims remain proportionate to the data used.

The primary data source comes from an initial manuscript entitled *The Inevitability of Education Clusters in Disaster Management in Lebong Regency* written by Agus Widiyanto on May 12, 2026. The manuscript contains records of flood events, their impact on education implementation, MDMC involvement in the response, and

the initial idea of establishing a joint secretariat for SPAB. Another primary source is the Temporary Data on Losses Due to Floods and Landslides in Lebong Regency document, which lists affected educational units, locations, and types of damage to school facilities and assets.

### 2.1. Data Sources and Collection

Supporting data were obtained from local news regarding the postponement of the Academic Ability Test at SMP Negeri 12 Lebong, national regulations on disaster management clusters, the national disaster management plan, and the implementation of SPAB. International references on disaster risk reduction, education in emergencies, comprehensive school safety, collaborative governance, network governance, disaster governance, and resilience governance were used to connect field facts with the public administration perspective.

### 2.2. Coding and Thematic Analysis

Data analysis was conducted through open coding and thematic categorization. Each document was read to identify information on flood chronology, affected schools, types of damage, disruption to learning and evaluation, actors involved, and institutional ideas. The initial codes were then grouped into four themes: physical vulnerability, learning-continuity vulnerability, coordination vulnerability, and governance-response needs.

After thematic categorization, the analysis proceeded to policy interpretation. The empirical themes were interpreted by linking them with the Disaster Management Cluster framework, the 2025-2029 National Disaster Management Plan, the SPAB framework, the INEE minimum standards, the Comprehensive School Safety Framework, and public administration theories. This stage was used to identify what type of institutional function should answer each vulnerability pattern.

### 2.3. Data Validation and Research Limitations

Validity was maintained through source triangulation, audit trail, and limitation mapping. Source triangulation was conducted by

comparing the preliminary school loss data with the initial manuscript, local news, regulations, and academic literature. The audit trail was maintained by showing how damage indicators were translated into codes, themes, policy functions, and model components. Limitation mapping was conducted by clearly acknowledging the unavailability of detailed data on the number of affected students, duration of learning disruption, value of asset losses, psychosocial conditions, and interview-based perceptions.

#### 2.4. Model Synthesis Procedure

Model synthesis was carried out by translating each empirical theme into an operational governance function. Physical damage was translated into the need for education risk data and safe-facility mitigation. Damage to books, devices, and examination schedules was translated into learning-continuity and emergency academic protocols. Access barriers and parent communication needs were translated into early warning and safe-route procedures. The involvement of multiple actors was translated into a joint secretariat and pentahelix partnership. The final model is therefore not a normative assumption, but a synthesis of documentary evidence, policy requirements, and public administration theory.

**Table 1.** Analytical Coding and Model Synthesis Matrix

<b>Empirical Indicator</b>	<b>Open Code</b>	<b>Theme</b>	<b>Policy Function</b>	<b>Model Output</b>
Classrooms, fields, fences, furniture, sanitation, and school assets damaged	Physical damage and unsafe facilities	Physical vulnerability	Risk mapping and safe-facility mitigation	Education risk data and school safety audit
Books, computers, laptops, laboratory equipment, networks,	Loss of learning assets	Learning-continuity vulnerability	Educational logistics and asset protection	Learning asset protection and recovery protocol

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and curriculum books damaged				
Academic Ability Test at SMPN 12 Lebong postponed	Evaluation disruption	Learning-continuity vulnerability	Emergency academic calendar and alternative assessment	Education contingency plan
Access to schools disrupted and students affected at village level	Access and communication barriers	Coordination vulnerability	Early warning, safe route, and parent-school communication	School-based early warning SOP
BPBD, education office, MDMC, schools, committees, villages, media, academics, and business sector involved	Multi-actor response	Governance-response needs	Collaborative and network governance	Joint secretariat and pentahelix partnership

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Source: Author's synthesis, 2026

### 3. Results and Discussion

#### 3.1. Results

The results are presented as thematic findings derived from the document coding process. As shown in Table 2, flooding in Lebong Regency affected educational units with varying degrees of damage. Preliminary data recorded eleven affected educational units, consisting of one early childhood education center (PAUD), four elementary schools, and six junior high schools. The identified

impacts included not only flooding in classrooms, but also damage to fields, chairs, floor tiles, books, technological devices, laboratory equipment, prayer equipment, sports equipment, teacher administration, printers, computer equipment, and school support facilities.

**Table 2.** Temporary Data on Educational Units Affected by Floods and Landslides in Lebong Regency

<b>Education units</b>	<b>Location</b>	<b>Main Forms of Damage</b>
<b>SDN 76 Lebong</b>	Pagar Agung, Central Lebong	Water enters low grade, field damaged, some chairs damaged
<b>SMPN 03 Lebong</b>	Air Koprass	Broken floor tiles
<b>SMP Muhammadiyah 05 Muara Aman</b>	Subdistrict Pasar Muara Aman	Speakers, amplifiers, books, tables, chairs, science laboratory equipment, prayer equipment, uniforms, administration, printers
<b>SDN 01 Lebong</b>	Lokasari Village, North Lebong	Abrasion of the cliff behind the school and abrasion of the ceremonial field
<b>TK Harapan Bangsa</b>	Lemeu Village, Uram Jaya	Outdoor educational play tools
<b>SDN 13 Lebong</b>	Lemeu, Uram Jaya	Meubeler
<b>SMPN 09 Lebong</b>	Karang Anyar Village	School front fence, printer, laptop, active speaker, library equipment and books
<b>SMPN 01 Lebong</b>	Highway Kampung Jawa	Around 8,000 books, 200 pairs of tables and chairs, 5 laptops, 2 computers
<b>SMPN 04 Lebong</b>	Rimbo Pengadang	Did not experience any damage because it was far from the point of the incident.
<b>SDN 31 Lebong</b>	Kota Agung Village	Speakers, carpets, sofas, mattresses, books
<b>SMPN 12 Lebong</b>	Tangua Village, Uram Jaya	UPS, printer, speaker, organ, keyboard, power cable, generator, computer, LAN cable, Merdeka Curriculum book

Source: Processed from Temporary Data on Losses Due to Floods and Landslides in Lebong Regency, 2026

SMP Muhammadiyah 05 (Muhammadiyah 05 Junior High School) Muara Aman was one of the schools with extensive damage. The damage included speakers, amplifiers, teacher and student textbooks, teacher and student desks, teacher and student chairs, school kitchen equipment, tablecloths, science laboratory equipment, prayer rugs, ambalankas, Qurans, Iqro books, new student uniforms, sports equipment, prayer robes, teacher administration, and a printer.

This data indicates that the flood disrupted the school's academic, religious, administrative, and support services simultaneously.

SMP Negeri 01 Lebong experienced extensive damage to its learning assets. Preliminary data indicates that approximately eight thousand books, two hundred pairs of desks and chairs, five laptops, and two computers were affected. Such extensive damage to learning assets demonstrates that educational recovery requires more than simply cleaning classrooms. The school needs to replace books, technology equipment, and furniture to enable meaningful learning to resume.

SMP Negeri 12 Lebong experienced damage to its UPS, printer, speakers, organ, computer keyboard, computer power cord, generator, computer, LAN cable, and Merdeka Curriculum textbooks. The school was also affected by the postponement of the Academic Ability Test due to flooding. These findings indicate a direct link between the damage to school facilities and the disruption to the learning evaluation calendar. The damage to electrical equipment and networks also demonstrates the importance of asset protection procedures when early warnings are received.

Damage to elementary schools and early childhood education shows that vulnerability is not limited to junior high school level. SDN 76 Lebong experienced water entering the lower classes from first to third grade, damaged fields, and several damaged chairs. SDN 01 Lebong experienced abrasion of the high cliff behind the school and abrasion of the ceremonial field. Harapan Bangsa Kindergarten experienced damage to outdoor educational play equipment, while SDN 13 Lebong experienced damage to furniture. SDN 31 Lebong experienced damage to speakers, carpets, sofas, mattresses, and books. This variation indicates that each level of education has different recovery needs.

Not all schools recorded suffered direct damage. SMP Negeri 04 Lebong was said to have not experienced any damage because it was far from the incident location. This information is important because it shows the need for location-based risk mapping. Schools located near rivers, lowlands, cliffs prone to abrasion, or access routes that are often cut off require different intervention priorities than schools that

are relatively safe. In other words, data on affected educational units needs to be supplemented with threat maps and access maps.

Based on the type of damage recorded, educational vulnerability in Lebong can be grouped into three layers. The first layer is physical vulnerability, in the form of damage to classrooms, fields, fences, furniture, ceramics, and sanitation facilities. The second layer is vulnerability to the continuity of learning, in the form of damage to books, laptops, computers, networks, laboratory equipment, and delays in learning evaluations. The third layer is coordination vulnerability, in the form of the need for rapid data collection, distribution of aid, emergency school arrangements, and communication with students and parents. These three layers appeared simultaneously in the Lebong case.

Field findings also show the need for an early warning system connected to educational units. Early warnings are not limited to information on weather, potential flooding, or rising river levels. This information must be translated into school actions, such as moving documents, securing electronic devices, contacting parents, stopping activities, or preparing alternative learning. Without clear protocols, schools risk losing crucial time to save school residents and educational assets.

The results of the document synthesis indicate that the Education Cluster model required by Lebong Regency contains at least five components. These components are a joint secretariat, an education risk data system, school early warning systems, an education contingency plan, and a pentahelix partnership. Each component has different but complementary actors, activities, and outputs. This model stems from the practical need to ensure that the education response does not have to start from scratch every time a flood occurs.

In terms of recovery needs, data shows that affected schools require several types of support. The first support is cleaning and restoring learning spaces so that face-to-face activities can resume. The second support is replacing or repairing learning assets such as books, desks, chairs, laptops, computers, laboratory equipment, printers, and networks. The third support is restoring school administration, including teacher documents and learning data. The fourth support is restoring supporting environments such as prayer rooms, canteens,

fields, sanitation facilities, and educational play equipment. The fifth support is psychosocial arrangements and communication with students and parents.

The analysis also shows that the affected schools have varying levels of needs. Some require physical rehabilitation, others require replacement of learning assets, others require protection against abrasion, and others may not have experienced direct damage but still need to be included in the risk mapping system. This variation in needs underscores the importance of a rapid assessment that not only counts the number of schools but also assesses the type of damage, the level of urgency, the potential for learning disruption, and the school's capacity to recover using its own resources.

**Table 3.** Operational Framework for Strengthening the Lebong Regency Education Cluster

<b>Component</b>	<b>Main Actor</b>	<b>Key Activities</b>	<b>Expected Output</b>
<b>Joint Secretariat</b>	BPBD, education office, MDMC, education units, committees, villages	Coordination, division of roles, information management, response evaluation	Official coordination forum and annual work plan
<b>Education risk data</b>	Department of education, BPBD, schools, village government	Mapping of vulnerable schools, student data, access routes, important assets	Database of flood-prone educational units
<b>School early warning</b>	BPBD, schools, villages, parents	Information flow, action threshold, parent-teacher communication, evacuation	SOP for early warning and school evacuation
<b>Contingency plan</b>	Schools, committees, MDMC, related agencies	Temporary learning scenarios, safe learning spaces, academic calendar adjustments, educational logistics, and child protection arrangements	Contingency plan document for each vulnerable school

<b>Pentahelix partnership</b>	Government, society, academics, business world, media	Resource mobilization, public education, restoration of facilities	Collaborative support before, during, and after a disaster
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Source: Author's Synthesis Results, 2026

### 3.2. Discussion

The findings regarding the eleven affected educational units show that flooding in Lebong is a problem of educational public service governance, not merely a matter of damaged facilities. When books, desks, chairs, technological devices, laboratory equipment, and teacher administration are damaged, schools lose their capacity to carry out academic and managerial functions. When roads to schools are impassable, educational issues shift from the classroom to the village social space and public infrastructure. When exams are postponed, the impact of the disaster enters the learning evaluation system. Therefore, strengthening the Education Cluster must be designed as a governance system that includes schools, homes, villages, transportation access, and the education bureaucracy.

Collaborative governance explains why the Education Cluster is necessary to avoid a fragmented response. Without a cluster, affected schools may report damage to different parties, aid may flow through uncoordinated channels, and needs data may change without a common basis. The Education Cluster provides a space for agreeing on data standards, response priorities, support distribution mechanisms, and role allocation. Within the emergency response command system, the cluster links education needs with regional emergency decisions so that education is not left behind by other sectors.

Network governance further shows that the effectiveness of the Education Cluster depends on the quality of its coordination nodes. BPBD can function as the disaster coordination node, the education office as the education-service node, schools as the data and implementation nodes, villages and parents as the community-safety nodes, and humanitarian organizations such as MDMC as response-support nodes. Resilience governance then requires this network to

work as a cycle: preparing before floods, absorbing disruption when floods occur, adapting learning services during emergency conditions, and learning from each event through post-disaster evaluation.

The joint secretariat is an important initial component because it serves as a coordination hub. This secretariat can be positioned as a working forum involving the Regional Disaster Management Agency (BPBD), the Education and Culture Office, the Ministry of Religious Affairs for madrasas, the MDMC, school representatives, school committees, village governments, universities, the media, and the business community. The secretariat's existence is not to increase bureaucracy, but rather to ensure that information, decisions, and resources flow through clear mechanisms. The secretariat can also develop annual work plans, simulation schedules, lists of priority schools, and emergency activation protocols.

An education risk data system is a key requirement for the Education Cluster to operate on an evidence-based basis. Existing preliminary damage data needs to be developed into a dynamic database that includes school locations, history of flooding, distance from rivers, simple elevation, drainage conditions, number of students, student residences, access routes, sanitation facilities, library conditions, availability of digital devices, and student special needs. This data will help local governments identify schools in need of physical reinforcement, those requiring training, and those requiring alternative learning locations.

School-based early warnings should bridge the gap between disaster information and educational action. A good early warning not only communicates that heavy rain or river discharge is imminent, but also addresses who receives the information, who makes decisions, who contacts parents, who secures documents, and when learning activities should be suspended. In the Lebong context, schools located near the Uram River, the Ketahun River, or areas prone to abrasion require different procedures depending on the threat. These procedures should be simple, written, posted in schools, and regularly practiced.

An educational contingency plan is necessary to prevent the learning process from being interrupted for too long. This plan can include temporary learning scenarios, a list of safe spaces that can be

used, agreements with nearby schools, the use of village halls or mosques, support for learning packages, adjustments to the academic calendar, and alternative evaluation mechanisms. Emergency schools do not always mean tents. In many cases, safe and mutually agreed-upon community buildings can be used as temporary learning spaces. However, these decisions should be made before a disaster, not discussed only after classrooms are submerged.

The implementation of SPAB in Lebong needs to be directed at the concrete needs of flood-prone schools. The pillars of safe facilities can begin with a simple audit of classroom locations, waterways, drainage channels, assembly points, electrical installations, bookshelves, document storage areas, and the location of electronic devices. Schools don't have to wait for major projects to begin mitigation. Placing documents in high places, providing secure shelves for electronic devices, marking evacuation routes, and conducting asset relocation drills can be inexpensive but impactful initial steps.

The pillars of school disaster management require the formation of a standby team in every vulnerable educational unit. This team should consist of the principal, teachers, administrative staff, security officers or school guards, committee representatives, and student representatives at the appropriate level. The team should have contact lists for parents, village government numbers, the Regional Disaster Management Agency (BPBD), community health centers, and volunteers. The team also needs to know the procedures for stopping activities, gathering students, checking attendance, arranging for their return, and reporting school conditions to the Education Cluster. Without a clearly defined team, emergency decisions can be delayed and rely on a single person.

The pillars of risk reduction education must be contextualized with local experiences. Students in Lebong need to understand the threat of flooding from the Uram and Ketahun Rivers, the relationship between rainfall, river flow, drainage, and behaviors that protect river basins. Disaster learning can be included in subjects, student profile projects, extracurricular activities, scouting activities, school health programs, and simulations with residents. A local approach will make disaster education less abstract. Children learn from the rivers, roads, villages, and schools they know every day.

MDMC's role in the Lebong disaster response can provide social capital to encourage the formation of an Education Cluster. As a humanitarian organization with response experience, MDMC can assist with rapid assessments, volunteer mobilization, school community education, and early recovery assistance. However, policy leadership still needs to be placed in the hands of local governments, in accordance with their mandates. The role of humanitarian organizations is strongest when connected to the mandate of the Regional Disaster Management Agency (BPBD) and the education office, not when they replace government authority. This pattern maintains legitimacy, sustainability, and accountability.

The village government also has a strategic position because many educational risk factors are outside the school fence. Broken roads, flooded villages, affected students' homes, and communication with parents are within the village's social authority. Therefore, school contingency plans need to be discussed with the village government and school committee. The village can help provide gathering locations, boats or emergency vehicles if available, data on affected families, and community service to restore the school environment. By involving the village, the Education Cluster becomes closer to the realities of students' lives.

Partnerships with universities, media, and businesses can expand the capacity of the Education Cluster. Universities can assist with participatory risk mapping, module development, simulation evaluation, and educational loss assessments. The media can disseminate preparedness messages, correct inaccurate information, and promote transparency in aid. Businesses can support the procurement of secure document racks, learning devices, cleaning tools, sanitation, or facility rehabilitation. This collaboration should be managed through a work plan to ensure that support is not fleeting.

Strengthening the Education Cluster also has budgetary implications. Local governments need to start incorporating disaster-safe education needs into their annual planning. Budgets should not only be directed to post-flood rehabilitation, but also to mitigation, training, simulations, asset protection, and the provision of emergency learning tools. Small investments before a disaster can reduce large losses after a disaster. Within the framework of public administration,

mitigation spending is part of service efficiency because it prevents lost learning time and higher recovery costs.

The model offered in this article is not intended to be a rigid structure. Each school in Leborg has different threats, capacities, and needs. Therefore, the Education Cluster must work adaptively, based on the principles of open data, rapid coordination, school community participation, and continuous learning. After each flood event, the cluster should conduct a brief evaluation of what worked, what went wrong, and what needs to be improved. In this way, each disaster becomes an institutional lesson, not just a passing event.

Ultimately, strengthening the Education Cluster is an effort to guarantee children's right to learn in risky situations. Flood-resilient schools are not just schools with strong buildings, but schools whose citizens are prepared, whose data is available, whose communication is clear, whose assets are protected, whose learning can continue, and whose recovery is coordinated. Leborg Regency has the opportunity to use the experience of the 2026 flood as a starting point to build a safer, more responsive, and more collaborative education system.

Leborg's experience demonstrates that damage data needs to be compiled in a format that can be readily used for decision-making. A list of affected schools containing their names, locations, and the extent of damage is a good starting point. However, for the Education Cluster, this data needs to be supplemented with the status of learning activities, the number of students affected, the minimum requirements for reopening schools, estimated recovery time, and the parties who have provided support. More operational data will help the cluster avoid making decisions based on assumptions or relying on unverified information.

In addition to damage data, the Education Cluster requires capacity data. Schools with trained teachers, active committees, good relations with village governments, and alternative facilities may be able to recover more quickly than schools with limited capacity. Capacity mapping is important so that interventions are not uniform. Schools with high capacity can be encouraged to become reference schools or temporary learning points, while schools with low capacity require intensive assistance. Thus, risk data and capacity data must be read together in disaster-safe education planning.

Emergency school plans also need to consider the principles of child protection. Temporary learning spaces must be safe from further threats, have access to clean water and sanitation, be easily accessible, and not pose new risks to children. Temporary learning schedule arrangements need to consider the conditions of affected families, travel distance, teacher availability, and psychosocial recovery needs. In certain situations, temporarily reducing learning hours may be more realistic than imposing a normal schedule. However, this decision must be accompanied by a plan for recovering learning outcomes so that students' lags do not last long.

Psychosocial support is an often overlooked aspect of educational recovery. Floods can cause fear, loss, fatigue, and anxiety in both students and teachers. Children whose homes are affected may come to school emotionally unstable. Teachers may also experience stress from having to teach while recovering their personal lives. Education Clusters need to include basic psychosocial support in response plans, for example through teacher training to recognize signs of stress, structured play activities, early counseling, and referrals to health services when needed.

Parental involvement is key to early warning and learning recovery. When flooding threatens, schools need a rapid communication channel with parents to ensure decisions about sending students home, picking them up, or evacuating them are clear. During the recovery period, parents can help clean the school, monitor their children's condition, and support learning at home. Therefore, standard operating procedures (SOPs) for flood-prone schools need to include two-way communication mechanisms, not just one-way notifications from the school to parents.

Another aspect that needs attention is the protection of educational documents and data. The damage to teacher administration and school assets demonstrates the need to secure both physical and digital documents. Schools prone to flooding can prepare high-rise document storage facilities, digital copies of critical data, asset inventories, and procedures for moving electronic devices. These steps are inexpensive but can expedite aid claims, rehabilitation, and administrative recovery after a disaster. In the long term, digitizing

school administration needs to be accompanied by secure and accessible data backups in emergencies.

The Education Cluster Model must also include a post-event evaluation mechanism. After the flood, each affected school needs to submit a brief report regarding the chronology, actions taken, obstacles, assistance received, and further needs. The report is then discussed in the joint secretariat to improve SOPs, update risk maps, and prepare budget recommendations. Post-event evaluation turns disaster experience into institutional knowledge. Without evaluation, the same mistakes can be repeated in the next disaster.

From a public policy perspective, strengthening the Education Cluster in Lebong requires formal legitimacy. Decrees from regional heads, agency heads, or other official mechanisms can provide the basis for actors to share data, attend meetings, develop plans, and utilize resources. Formal legitimacy is also crucial to ensure sustainability when officials change or public attention to the disaster declines. However, formal legitimacy must be accompanied by a simple and realistic work plan to ensure the forum's activities are not merely on paper.

Mainstreaming the Education Cluster into regional planning documents is the next strategic step. Disaster-safe education issues can be incorporated into education office work plans, BPBD contingency plans, school programs, and village agendas. This integration is crucial because flood risk cannot be addressed by a single document or training activity. Once incorporated into planning, needs such as simulations, mapping, provision of cleaning equipment, strengthening school drainage, and teacher training can receive clearer budget support.

By looking at all the findings and discussions, the Education Cluster model for Lebong can be understood as a work cycle. In normal times, the cluster conducts mapping, training, simulations, facility strengthening, and SOP preparation. When the threat increases, the cluster activates early warning, parent-teacher communication, asset security, and evacuation readiness. In emergencies, the cluster conducts rapid assessments, educational logistics support, emergency schools, and child protection. During the recovery period, the cluster oversees rehabilitation, psychosocial

support, recovery of learning outcomes, and evaluation. This cycle makes the Education Cluster work throughout the year, not only when floods make the news.

The principle of inclusivity also needs to be part of the Education Cluster. Students with disabilities, early childhood education, students living far from schools, and students whose families have been severely impacted require special attention. Evacuation SOPs, emergency school locations, communication with parents, and temporary learning methods must ensure that no child is left behind. This inclusive approach is crucial because disasters often exacerbate pre-existing inequalities. Flood-resilient schools must be able to identify the most vulnerable groups and prioritize them in response and recovery.

Strengthening the Education Cluster can also be a gateway to improving data culture in the regional education sector. School data is often used for routine administrative purposes, such as the number of students, teachers, study groups, and infrastructure. In a disaster context, this data needs to be supplemented with information on risks, capacity, evacuation routes, priority assets, and emergency contacts. This shift in data culture will help education agencies make faster decisions and strengthen accountability for aid, as all support can be linked to documented needs.

#### **4. Conclusion**

Floods in April and May 2026 in Lebong Regency showed that the education sector is a sector that is vulnerable to hydrometeorological disasters. Temporary data shows the impact on eleven educational units with various forms of damage, ranging from classrooms, fields, furniture, books, technological devices, laboratory equipment, worship equipment, teacher administration, to school support facilities. The impact is also related to disruption of student access and delays in learning evaluation activities.

This article concludes that the vulnerability of education in Lebong lies in three layers, namely the physical vulnerability of educational units, the vulnerability of learning continuity, and the vulnerability of coordination. Therefore, disaster management in the education sector is not sufficient to be done through cleaning schools

and rehabilitating buildings. A coordination system is needed that is able to connect data, actors, authorities, resources, and emergency learning decisions.

The proposed model for strengthening the Lebong Regency Education Cluster includes five main components: a joint Education Cluster secretariat, an education risk data system, school-based early warning procedures, an education contingency plan, and a pentahelix partnership. These five components need to be integrated with the SPAB framework. In this model, SPAB functions as the school-level operational framework, while the Education Cluster functions as the district-level collaborative governance mechanism that connects school needs with public authority, humanitarian support, community participation, and learning recovery.

This article's practical recommendations include the need for the Lebong Regency Government to establish a forum or secretariat with the Education Cluster through official regional mechanisms, conduct risk mapping for educational units, develop SOPs for school early warning systems, prepare emergency school scenarios, and integrate disaster education based on local contexts. MDMC, school committees, village governments, universities, the media, and the business community can be strategic partners in this process.

Further research is needed to calculate the educational losses in greater detail, map the residences of affected students, measure the duration of learning loss, and evaluate the preparedness of each educational unit. Further studies can also test the Education Cluster model through simulations, school mentoring, and regional policy evaluations. With these steps, Lebong Regency can move from a reactive disaster response to resilient, inclusive, and sustainable education governance.

Conceptually, this article emphasizes that flood-resilient schools are the result of collaborative, networked, and resilience-oriented public administration. Resilience is not only determined by strong buildings, but also by consistent terminology, reliable data, trained school communities, rapid decision-making, community support, and continuity of learning. Therefore, the formation of the Education Cluster should be understood as a long-term institutional investment for Lebong Regency.

## Declaration of Conflicting Interest

No potential conflict of interest was reported by the author(s).

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