Comprehensive school safety policy: A global baseline survey

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ABSTRACT

Over the last three decades, comprehensive school safety (CSS) has emerged as a guiding framework for disaster risk reduction in the education sector. Yet, little is known about what national-level CSS policies have been developed and implemented globally. In 2017, a CSS Policy Survey was administered in 68 countries. The survey recorded adoption of CSS policies and identified key facilitators and blockers of CSS policy development and implementation. Results indicate that most countries have enacted emergency management policies that address the education sector. Most also have enacted policies for safer school construction, though less than a quarter provide funding for multi-hazard risk assessment and retrofit of weak schools. Less than half limit use of schools as temporary shelters. While about half require schools to carry out emergency drills, less than a quarter include disaster management in teacher training. A quarter include climate change and disaster risk reduction in their school curriculum, but only a few of these countries train teachers in these subjects. Respondents found that evidence of disaster impacts and advocacy were key facilitators for CSS policy enactment. Insufficient funds and technical capacity tended to impede it. Regression analysis found that regional differences and economic ranking correlated with policies to strengthen weak school facilities, but did not correlate with the presence of most other CSS policies. These results help identify contexts in which CSS policy development may be most successful as well as next steps for continued risk reduction in the education sector.

1. Introduction

Globally, the growth of disaster risk and disaster impacts poses significant implications for the well-being of school-aged children and youth. Their high level of vulnerability is due to their physical fragility, their developing mental and emotional capacity, and their dependency on adults for care [1,2]. Because of this, they assume a disproportionate share of the burden created by disasters. Approximately half of the people affected by disasters are children and youth, and the number of children and youth affected is projected to rise significantly during the next decade [3,4].

Disasters and emergencies have myriad impacts on students and their education. School facilities that have not been designed, constructed or maintained to withstand their region's local hazards have heightened risk of damage and collapse when hazards do occur. The result has been a litany of high-profile school disasters that have killed tens of thousands [5]. Armed conflict and crises have also engulfed schools, which has resulted in school sites becoming targets for attacks. Students themselves have also become targets for assault and forced conscription [6], undermining the rights of children in conflict [7]. However, death, injury and lost school days are only the most immediate outcomes of natural and human-made hazard impacts. A raft of cascading consequences further impact children and youth. Children and youth experiencing educational disruption are susceptible to short- and long-term compounding psychosocial impacts such as depression, anxiety, sleep disorders, and behavioral problems. Further, school closures increase drop-out rates, rates of children and youth in the workforce; closures also reduce content coverage, test scores, and students' academic confidence and perception of themselves [1,8–12].

At the start of the millennium, several initiatives emerged to highlight the importance of school safety and address risks in the education sector. The United Nations Children's Fund (UNICEF) launched several efforts, including the Safe Schools Initiative to address armed conflict in Nigeria and the Child-Friendly Schools framework for increasing

education quality for all children [13]. Separately, the Interagency Network for Education in Emergencies (INEE) developed minimum standards to ensure safe learning environments for children and adults in crisis situations. Many of these issues were further addressed in the Worldwide Initative for Safe Schools (WISS), an initiative involving 50 countries launched by the United Nations Office for Disaster Risk Reduction in 2014 (see https://gadrrres.net/what-we-do/). At the same time, the Global Coalition to Protect Education from Attack (GCPEA) sought to strengthen global monitoring and reporting of attacks on educational facilities. To date, 95 governments have signed the Safe Schools Declaration for protecting schools and their occupants in times of armed conflict [14].

Despite a growing consensus around the importance of school safety, the concept was ill-defined during the 2000s [15]. In response, advocates from engineering, emergency management, education, and policy coalesced to identify a framework to assess school safety as it related to all hazards, including environmental hazards, violence and conflict, and others. Insights from these distinct disciplinary perspectives were slowly unified into the Comprehensive School Safety (CSS) Framework, a strategy that evolved out of South Asian grassroots efforts [16], outcomes of baseline studies and practitioner dialogue [8] and efforts to systematically conceptualize the relationship between what had traditionally been discipline-specific approaches [17]. In 2012, a formal CSS Framework was first introduced and endorsed [18]. In 2015, a broad coalition of organizations advocating for disaster risk reduction in the education sector endorsed it through the Global Alliance for Disaster Risk Reduction and Resilience in the Education Sector (GADRRRES), an alliance facilitated through the United Nations Office of Disaster Risk Reduction [19].

The CSS Framework conceptualizes school safety as three overlapping "pillars" – Pillar 1: Safe Learning Facilities, Pillar 2: School Disaster Management, and Pillar 3: Risk Reduction and Resilience Education. These pillars are embedded within an enabling environment of education sector policies and plans and disaster management plans at different levels of government. The goals of CSS are to protect students and educators from death, injury, and harm; plan for the continuity of education through all expected hazards and threats; safeguard education sector investments; and strengthen risk reduction and resilience through education [19]. The concept is further articulated through CSS targets and indicators.

This article examines the results of the first CSS Baseline Survey of national policies conducted in 2017. The survey was based upon the CSS framework as this framework was globally recognized and had articulated targets and indicators that could structure the survey questions. The survey, completed by 68 countries in the Asia-Pacific, Africa, and Latin America and the Caribbean (LAC) region, identifies areas of widespread CSS policy adoption as well as areas where adoption lags.

Below we discuss the methodology used to develop the survey instrument, collect data and analyse it. We then report the findings of the CSS baseline policy survey, starting with descriptive statistics of CSS policies, procedures and resources. Means and standard deviations are reported globally, as well as by region. Next, we discuss responses to questions about facilitators and blockers of CSS policy development, followed by a regression analysis to help identify factors correlated with several key CSS policies. Finally, we provide initial recommendations that emerge out of this baseline survey as next steps for improving and expanding CSS policy globally.

2. Methodology

In 2017, Save the Children, on behalf of GADRRRES, and in partnership with the Global Facility for Disaster Reduction and Recovery, conducted a global survey collecting baseline data on national CSS policies and programs (CSS baseline survey). Save the Children staff developed the survey instrument, based upon the CSS targets and indicators, and sought feedback from global coalitions and advising academics. The survey was translated into French, Spanish, Arabic, and Russian.

In total, the survey instrument consisted of 29, multi-part questions assessing national policies related to:

- **Enabling Environment and Risk Indicators** (presence of disaster management policy in the education sector; school safety focal points; budget; data collection about hazard, risks, and impacts)
- **Pillar 1 – Safer Learning Facilities** (new school construction; assessment and retrofitting of existing schools; maintenance; use of schools as temporary shelters)
- **Pillar 2 – School Disaster Management** (disaster management; response preparedness procedures and drills; capacity development)
- **Pillar 3 – Risk Reduction and Resilience Education** (public awareness; formal curriculum; teacher training)

Given limited resources, Save the Children selected countries in Africa, the LAC region, and the Asia-Pacific region with a high ranking in the World Risk Report 2015 and with whom they, or their partners, had established relationships in the government.

Save the Children hired and trained consultants in each region to work with their country offices to develop context appropriate data collection methodologies. These methodologies included prepopulating the survey based upon existing education sector assessments and staff knowledge, as well as direct interviews with government officials, especially focal points within Ministries of Education (MoEs) and/or the National Disaster Management Organizations (NDMOs). In Southeast Asia, the survey was first approved by the Association of Southeast Asian Nations, then the Secretariat directly distributed the survey to country-level focal points. In the Caribbean, countries participating in the 2017 Safe Schools Ministerial Forum were encouraged to complete the survey prior to attending.

Sixty-eight countries completed the survey from August 2016 to April 2017, as shown in Table 1. After data entry, government officials were asked to review and validate the responses recorded.

2.1. Data analysis

We used a mixed-methods approach to conduct inductive analysis and scoping of the CSS baseline dataset in Statistical Package for the Social Sciences (SPSS). Most of the survey questions were nominal, though some questions were ordinal, helping to quantify the 'dimensionality' of a policy. We calculated mean percentages of CSS policy per region and globally.

Through inductive analysis, we developed themes based on the exploration of raw data, allowing "research findings to emerge from the frequent, dominant, or significant themes inherent in raw data, without the restrains imposed by structured methodologies" [20]. Furthermore, the approach allows for scoping, the "mapping" or summarization of a range of evidence to reveal the breadth and depth of a field [21].

The baseline survey also offered 15 variables that facilitate policy development and 20 variables that block policy development. Respondents selected all variables that applied in their country context. Nearly a third of responding countries did not provide answers in this section of the survey and were excluded from this portion of the analysis. We grouped facilitators and blockers variables into four facilitative themes and six impeditive themes, as we discuss in more detail below.

Further, we constructed and analyzed four regression models to

Table 1
Countries organized by geographic region.

Africa (25)	Asia Pacific (24)	Latin America and the Caribbean (LAC) (18)	Europe (1)[c]
Algeria[a]	Afghanistan[a,b]	Antigua and Barbuda[a]	Croatia[a]
Angola	Bangladesh[a,b]	Bolivia[a,b]	
Burkina Faso[a,b]	Bhutan[a,b]	Brazil[b]	
Chad[b]	Cambodia[a,b]	British Virgin Islands[a]	
Dem. Rep. of the Congo[b]	Fiji[b]	Chile[a,b]	
Republic of the Congo[a]	India[b]	Colombia[a,b]	
Cote d'Ivoire[b]	Indonesia[a,b]	Costa Rica[a,b]	
Ethiopia[a,b]	Japan[b]	Dominican Republic[a,b]	
Ghana[a,b]	Kiribati[a]	Ecuador	
Kenya[b]	Laos[b]	El Salvador[a,b]	
Madagascar[b]	Malaysia[a]	Guatemala[b]	
Malawi[a,b]	Maldives[a]	Honduras[a,b]	
Mali[b]	Myanmar[a,b]	Panama[a,b]	
Namibia[a]	Nepal[b]	Paraguay[a,b]	
Niger[b]	Pakistan[a,b]	Peru[b]	
Nigeria[a,b]	Papua New Guinea[a,b]	Saint Kitts and Nevis[a]	
Rwanda[b]	Philippines[a,b]	Saint Lucia[a]	
Senegal[a,b]	Solomon Islands[b]	Saint Vincent and the Grenadines[a]	
Sierra Leone[b]	Sri Lanka[b]		
South Africa[a,b]	Thailand[b]		
Sudan[a]	Tonga[a]		
South Sudan	Tuvalu[a]		
Tanzania[a]	Vanuatu[a,b]		
Togo[a]	Vietnam[a,b]		

[a] Country data was verified by relevant government agency in country.
[b] Save the Children has a country office, member office or implementing partner.
[c] Croatia was included in global averages only. Monserrat was removed from the analysis due to lack of responses.

confirm or reject relationships between four indicator variables of CSS policy and top facilitator and blocking factors, geographic region, and gross national income. Our indicator of policy depth in the Enabling Environment was a binary variable indicating whether a country discusses 'disaster risk reduction' within their national education policies. For an indicator of Pillar 1 policies we used a binary variable measuring whether a country funded hazard risk assessment or retrofit of unsafe building stock.[1] For Pillar 2, we summed the guidances given to schools on five topics: risk reduction, response, recovery, fire drills, and drills for other hazards. As an indicator of policy depth in Pillar 3, we summed the presence of teacher training in three categories: disaster risk reduction, resilience, and climate change.

We used seven independent variables in the four regression models. Two were created by summing the number CSS policy implementation facilitators in the two themes of *Evidence* and *Advocacy*; another two independent variables were created by summing the number of CSS policy implementation blockers in the two themes of *Lack of* Funding and *Lack of Capacity*. Two additional independent variables assessed the influence of being within the LAC or African region, and a final independent variable considered gross national income per capita (GNIPC), based upon 2018 World Bank data. None of the independent variables were found to have high multicolinearity with each other.

We ran a binary logistic regression against the Enabling Environment and the Pillar 1 dependent indicator variables. Because dependent

indicator variables for Pillar 2 and Pillar 3 were counts variables, and because their variances did not match their means, we used a negative binomial regression in their analysis.

3. The current state of CSS policy

The primary objective of the CSS baseline survey was to assess the current state of CSS policy adoption and implementation. As shown in Table 2, we first calculated the mean percentages of CSS policy coverage overall, and broken out by pillar. The results indicated that globally, countries on average have adopted about 48% of CSS policies assessed in the survey. However, the percent of average policy coverage varies widely by the three surveyed regions, with African countries lower than global average, and with LAC countries higher. The Enabling Environment policies were the most frequently present policies in comparison to the pillar-specific policies. This trend might be explained by the relative necessity of Enabling Environment policies, which consist of national education or disaster management policies, before policies in the specific CSS pillars are possible.

3.1. Enabling environment

National structures and policies around education and emergency management create an important context, or enabling environment, in which stakeholders for school safety must work. Beyond policy, the presence or absence of personnel, funds, technical expertise and data can also, in different ways, support or retard stakeholders' efforts aimed at achieving comprehensive school safety goals of protecting occupants, education sector investments, and educational continuity.

The first portion of the CSS baseline survey assessed this Enabling Environment by asking 15 multi-part questions about overarching national policies, budget, and data collection. On average, countries have adopted 64% of the overarching enabling policies or activities included in the survey. Asia-Pacific countries had the highest rate, adopting 76% of overarching Enabling Environment policies. Responding countries in the LAC region followed, with an average of 69% adoption of over-arching policies.

The presence of national-level disaster management and education sector policies is an important framework that enables action on school safety. As shown in Table 3, most responding countries had achieved this fundamental element of an enabling environment. The vast majority of the responding countries (88%), had a national disaster management policy. These policies typically clarify horizontal and vertical coordination within agencies in preparing for, responding to, recovering from, and mitigating emergencies and disasters [22]. Similarly, nearly all responding countries (93%) had a national education sector policy to formalize the structure, organization, and rules that govern the education system. The overwhelming presence of these policies may underscore how much education is a fundamental requisite for a functional society, and that a common framework may help protect life, the environment, and property when emergencies occur.

Integrations across these two foundational policies was less prevalent. Most countries (74%) had a national disaster management policy that refer to the education sector, as seen in the second row of Table 3. Yet the depth of integration was often limited. While several (16%)

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[1] While the original formatting of this survey question was an ordinal level variable, when coded as such, it violated a major assumption required for ordinal regressions, so it was instead converted to a binary indicator variable. Where respondents indicated that the government had allotted funding to hazard risk assessment or replacement, a value of '1' was assigned, and a value of '0' was assigned to those who had not allotted funding to either.

Table 2
Mean percent ± standard deviation of adoption of CSS policies.

	Global N = 68	Africa N = 25	Asia-Pacific N = 24	LAC N = 18
All CSS Policies	48 ± 20	33 ± 16	52 ± 15	62 ± 18
Enabl. Envir	64 ± 25	48 ± 26	76 ± 20	69 ± 20
Pillar 1	44 ± 26	29 ± 25	46 ± 23	59 ± 20
Pillar 2	44 ± 32	19 ± 20	48 ± 25	70 ± 31
Pillar 3	44 ± 33	25 ± 28	56 ± 30	52 ± 34

Table 3

Percentage of responding countries with enabling environment policies and resources.

	Global	Africa	Asia Pacific	LAC
	N = 68	N = 25	N = 24	N = 18
	% (n)	% (n)	% (n)	%(n)
Nat'l disaster management policy	**88** (60)	72 (18)	100 (24)	94 (17)
references education sector	**74** (50)	64 (16)	75 (18)	83 (15)
Education sector policy	**93** (63)	96 (24)	100 (24)	78 (14)
references DRR or disaster response	**59** (40)	64 (16)	54 (13)	56 (10)
Ed sector EM or EiE policy	**56** (38)	24 (6)	83 (20)	61 (11)
Personnel allocated	**63** (43)	44 (11)	79 (19)	72 (13)
Ex-ante budget	**44** (30)	24 (6)	58 (14)	50 (9)
Disaster impacts data collected	**63** (43)	40 (10)	67 (16)	89 (16)

mentioned the education sector throughout their national disaster management policy, most (43%) dedicated only a section or paragraph, and a few dedicated only a sentence (15%). The remaining countries had no reference, marked other, or did not answer.

Integration of disaster risk reduction and disaster response into education sector policy was even less prevalent. While an overwhelming majority of countries have an education sector policy (93%), as seen in the third row, only about two-thirds (59%) referred to either disaster risk reduction or disaster response at all. African respondents had the highest rate of referencing either DRR or disaster response in their education sector policy (64%). Globally, about half the countries allocated a paragraph or more to the topic of DRR (53%); a little over a third allocated a paragraph of more to the topic of disaster response (37%). Only two countries, Bolivia and Myanmar, mention both disaster risk reduction and disaster response throughout their national education policy.

Two other policies are especially relevant – education sector disaster management policies and education in emergencies policies. The former provides a system for managing preparedness, mitigation, response and recovery within schools within national Ministries of Education (MoEs) or equivalent, and their line ministries. The latter establishes the structures for education to continue during times of emergency. Over half of the responding countries (56%) had one or both of these policies, with a quarter (25%) indicating that they have both, a fifth having only a disaster management policy (21%), and a tenth having only an EiE policy (10%). The countries with both policies – Antigua and Barbuda, Bhutan, Cambodia, Chile, Croatia, Dominican Republic, Ecuador, Fiji, Guatemala, India, Indonesia, Malaysia, Namibia, Peru, Philippines, Solomon Islands, and Vietnam – spanned all regions, but were especially prevelant in the Asia-Pacific region. Yet some countries, such as some island states in the Caribbean, indicated that they did not have an education sector-specific disaster management policy due to the presence of an all-encompassing national disaster management policy.

Notably, the survey did not ask whether countries had signed the Safe Schools Declaration, which provides guidelines for protecting schools from being used by the military during conflicts. In this area, the African region is providing strong leadership. As of 2019, over two dozen African countries have signed the declaration – nearly half of the African Union. Nearly 20 LAC countries have also signed. In doing so, these countries have committed to collecting relevant data, investigating allegations, and adopting conflict-sensitive approaches to education [14].

While policies provide an important framework for addressing school safety issues, they are relatively weak without human and financial resources and data to inform decision making. Over half (56%) of national education authorities employ someone to oversee disaster risk reduction or education in emergencies, though half of these countries staffed the position only part-time. Globally, less than half of the national education authorities surveyed allocate funding towards risk reduction and resilience programming (44%) or education in

emergencies (32%). Yet, many respondents (69%) indicated that emergency funds were available in an ad hoc way, such as after a disaster. This is consistent with global trends, whereby spending on disaster risk reduction is largely on response and reconstruction ex post [23,24].

Regionally, education authorities in Asia-Pacific countries had the highest rates of allocating budgeting for risk reduction and resilience programming, with 58% of the Asia-Pacific countries surveyed stating their governments provided budget for such programming. This number was lower among LAC region and African countries surveyed, 50% and 24% respectively. However, less than half of this funding for risk reduction and resilience programming was consistent funding. Regionally, consistent funding was highest in LAC countries where 28% of the responding countries stated they had at least some consistent funding, compared to 21% and 8% in the Asia-Pacific and Africa respectively.

In addition to policies and resources, data also supports good policy implementation. Over half of education authorities (63%) used risk data to support planning for school safety; most typically these data came from other government agencies. The most commonly collected data were school infrastructure damage (74%) and school deaths (71%). Conversely, the least commonly collected data were long-term educational outcomes (46%). While data on hazard frequency and magnitude may be developed and collected by scientific agencies outside of the education sector, data on the impacts hazard events have on the education sector, outside of the obvious infrastructural damage, is much more challenging to quantify. Impacts, particularly hazard impacts on educational outcomes, requires school level participation in data collection and reporting, something few school administers are ready to do, especially following a disaster [25,26].

3.2. Pillar 1: safe learning facilities

Death, injury, and economic loss due to school building and non-structural damage is avoidable when safety measures are comprehensively considered during the planning, design, construction and maintenance of school facilities. The CSS baseline survey asked five, multi-part questions about CSS policies associated with *Pillar 1: Safe Learning Facilities*. These questions addressed construction of new schools and evaluation and mitigation of existing schools.

On average, governments have adopted less than half (44%) of the 14 Pillar 1 policies, as shown in Table 2 above. Survey results indicate that LAC countries have the highest rates of adoption, having adopted about 59% of the Pillar 1 policies covered in the survey.

Globally, the most progress has been made in incorporating safe design practices into school construction. Most responding countries have both safe design (74%) and safe construction (74%) written into their school construction policies. Conversely, only about two-thirds of the countries included safe site selection (66%) or monitoring of school construction (66%) in their school construction policies, as shown in the first two rows of Table 4.

Policies in Vanuatu and Nepal provide examples of the ways countries are trying to address safer school facilities. While hampered by a lack of a robust building code and technical construction guidance, Vanuatu's Ministry of Education policy mandates that schools be designed to resist wind and seismic hazard and built outside of flood, landslide and sea level rise exposure zones. Further, schools must consult with a provincial facilities officer to plan, design and orient new school facilities on a site. The officer then supervises construction. The policy also ensures that head teachers and community representatives inspect school facilities at the beginning of each academic year and make necessary repairs [27]. Following the completion of school construction, school management must develop a maintenance plan, including responsible parties and a budget, and submit it to the subnational education office (personal communication, Shantony Moli, 29 Mar 2019). In Nepal, the official guidelines for the planning and design of new schools after the 2015 Ghorka earthquake streamline

Table 4
Percentage of countries with selected CSS Pillar 1, 2 and 3 policies.

	Global	Africa	Asia Pacific	LAC
	N = 68	N = 25	N = 24	N = 18
	% (n)	% (n)	% (n)	% (n)
Pillar 1: Safe School Facilities				
Safe site selection	**66 (45)**	56 (14)	63 (15)	83 (15)
School construction monitoring	**66 (45)**	60 (15)	58 (14)	83 (15)
Funding for school retrofit/ replacement	**19 (13)**	8 (2)	17 (4)	39 (7)
Policies limiting use of school as shelters	**37 (25)**	12 (3)	38 (9)	67 (12)
Pillar 2: School Disaster Management				
Nat'l risk reduction or disaster management plan	**75 (51)**	64 (16)	88 (21)	72 (13)
Mandated fire drills	**46 (31)**	8 (2)	58 (14)	78 (14)
Teacher training for school disaster management	**25 (17)**	12 (3)	25 (6)	39 (7)
Pillar 3: Risk Reduction & Resilience Education				
Included in national curriculum	**65 (44)**	48 (12)	75 (18)	72 (13)
Included in teacher training	**35 (24)**	20 (5)	50 (12)	39 (7)
Public awareness campaigns	**68 (46)**	48 (12)	88 (21)	67 (12)

reconstruction. The guidelines offers a selection of tailored school designs to fit a range of social, physical, and environmental contexts. Guidelines incorporates a multi-hazard approach for safe site selection, design, construction, and monitoring of construction [28].

While the majority of countries have some policies to support construction of hazard-resistant school facilities, fewer responding countries had explicit policies to support non-structural mitigation. Non-structural mitigation can involve anchoring, bracing, or re-locating items within buildings to prevent them from falling during earthquakes or raising materials or wiring to avoid damage from expected floods. Slightly less than half have policies to support school building maintenance (43%) and non-structural mitigation (34%). Regionally, LAC countries have the highest rate of adoption (67%). These low rates suggest that non-structural mitigation and maintenance are areas for further policy development, especially given that blunt force trauma caused by projectiles can be fatal or can cause complex, life-threatening medical conditions during disasters when medical care is already limited [29].

Despite the prevalence of policies for safer school construction, many countries are grappling with schools facilities built before the implementation of robust building codes and construction supervision. These weak schools pose a substantial risk to occupants, especially in sudden on-set hazards like earthquakes and blast impact. The survey found that less than a third of the responding countries (31%) have funded multi-hazard assessment of all school facilities. Paraguay is one of the notable exceptions. In 2016, officials enacted a series of policies that resulted in the hazard assessment for all school facilities in the country. The assessment indicated that 15% of Paraguay's 3504 schools were at risk of collapse [30]. However, actions have yet to be taken to retrofit or replace schools at risk. Like Paraguay, few responding countries (19%) fund retrofit and replacement of unsafe schools, as shown in row three of Table 4. Japan is an example of a country that is investing funds into retrofitting or replacing weak building stock. Over the course of fourteen years, Japan's government increased their earthquake-resistant school building stock from 45% to 98% [31].

Respondents were also asked about policies and guidance on the use of schools as temporary shelters. When evacuees occupy schools,

resources or basic facility functions are diverted from students and spread among evacuees. Students must locate alternate learning locations, and may become exposed to abuse or neglect [32]. Less than half of the responding countries had policies limiting the use of schools as shelters (37%), as shown in row four of Table 4. Even less include guidance on how to manage schools as temporary shelters (32%), guidance on how to appropriately select schools as temporary shelters (27%), or policy on reimbursement for damages and costs incurred when schools are used as temporary shelters (13%). The Philippines provides an exemplary counterpoint. Legislation mandates the that schools be used as shelters only as a last option, and that classroom occupied more than 15 days must be closely monitored by the national government [33]. The absence of policies to guide the use of schools as emergency or temporary shelters in other countries may present challenges to the quality and continuity of education in disasters and emergencies.

3.3. Pillar 2: school disaster management

Robust disaster management, from the ministerial down to the individual school level, and regular practice of response skills ensures that students, staff, and teachers understand how to respond safely during emergencies. The baseline survey asked six multi-part questions about CSS policies associated with *Pillar 2: School Disaster Management*, centered on disaster management planning, drills, and capacity development. On average, governments have adopted about half (44%) of the Pillar 2 policies, as shown in Table 2. On average, LAC countries have adopted about 70% of Pillar 2 policies, while Asia-Pacific countries have adopted about 48% of Pillar 2 policies. African countries have adopted 19%.

Globally, most progress has been made in incorporating risk reduction and disaster management plans within the education sector. Most responding countries (75%) indicate that their education authority has a national risk reduction or disaster management plan, as seen in row five of Table 4. The region with the strongest presence of education sector risk reduction and/or disaster management plans at the national level was the Asia-Pacific (88%), followed by LAC countries (72%), but in those regions less than half were publicly available. Respondents indicated that the plans most frequently included risk reduction (69%), risk preparedness (65%), and risk assessment (62%). Less frequently covered was the topic of education continuity (54%) and guidance on active child participation (25%). The paucity of children and youth as active participants in either national or sub-national risk reduction or disaster management plans is likely due to the inaccurate historical assumption that "children and youth are passive victims with no role to play in communicating risks, participating in DRR-related decision making, or preventing and responding to hazards" [34]. Findings suggest that engaging with children and youth is an area that needs further effort.

Though most countries have national risk reduction or disaster management plans, less prevalent is a mandate for and guidance on hazard drills. Frequent drills – such as Bangladesh's Standing Orders on Disasters that instructs the Ministry of Education to conduct evacuation and first aid drills biannually, or the Philippines Dept of Education policy requiring quarterly fire and earthquake drills [35] – are important because students and staff are regularly replaced. Newcomers may not be aware of emergency protocols. Almost half (46%) of responding countries have a fire drill policy, as seen in row six of Table 4. Nearly half (47%) have an "other" hazard drill policy (earthquake, tsunami, etc). However, less than a quarter of countries that have a policy for fire and "other" hazard drills conduct both types of drills more than once a year for all grades. Good practice is considered to be at least three drills per year [17]. Furthermore, less than half of the responding countries provide guidance to schools on *how* to do fire drills (29%) or "other" hazard drills (34%).

Requirements for regular fire drills is particularly high in the Asia-Pacific countries, where almost half of the countries require more than one drill a year. The low frequency elsewhere reveals an area for

improvement. Research indicates that drill effectiveness increases when it builds individual capacity by teaching situational awareness, testing realistic scenarios and modifying expectation for age and ability. It also has increased effectiveness when it builds organizational capacity through a systematic review process and linkages to preparedness outside the school setting [36].

Globally, most governments provide other types of guidance on disaster management. About half provide guidance on emergency response (62%), risk reduction (54%), and recovery (44%). The higher prevalence of guidance on emergency response is likely due to the historical focus on response over prevention [8,37,38].

A quarter of the countries (25%) indicate that they include school disaster management in teacher training curriculum, as seen in row seven of Table 4. Strategies for teacher training vary. In Angola, UNICEF, in partnership with the Ministry of Education and the National Commission for Civil Protection, trained over six hundred teachers on promoting and integrating disaster risk reduction and emergency preparedness in formal and non-formal education, specifically through clubs and activities [39]. In the Dominican Republic, the MoE developed a 2013 handbook series for teachers to incorporate disaster risk management into classrooms, specifically considering major hazards of flooding, earthquakes, tsunami, landslides, and cyclones. The series included a teacher's manual and five modules for preschool through adult learning. In Bhutan, the MoE and Department of Disaster Management jointly developed a 'Teachers Handbook for Disaster Risk Reduction', a guiding document intended for principals and teachers who wish to incorporate disaster management into their schools [40]. The lower prevalence of disaster management in teacher training curriculum may be a result of the absence of human and financial capital, as well as the historically prevailing assumption that content on disaster risk reduction can be delivered without training [41].

3.4. Pillar 3: risk reduction and resilience education

Schools advance knowledge and skills in disaster risk reduction through formal and non-formal education, an aspect captured through three multi-part questions in the CSS baseline survey section on *Pillar 3: Risk Reduction and Resilience Education*. Respondents answered questions about risk reduction and resilience education in national curriculum, teacher training, and public messaging campaigns. On average, governments have adopted less than half (44%) of Pillar 3 policies, as shown in Table 2. Asia-Pacific and LAC countries have the highest adoption rates.

Respondents were asked if their national curriculum includes risk reduction and resilience modules such as climate change, disaster risk reduction, and resilience. Globally, more than half of the responding countries (56%) include at least one module in their national curriculum, as seen in row eight of Table 4. When broken down by topic, 62% include climate change, 60% include disaster risk reduction, and 40% include resilience. Asia-Pacific countries had the highest rates of integrating risk reduction and resilience education modules into their national curriculum. About 42% of Asia-Pacific countries offer all three risk reduction and resilience topics within their curriculum.

Countries rely on different institutions, either state or non-state, to manage the development and dissemination of risk reduction and resilience curriculum. Some governments task relevant government agencies with developing curricula, such as Afghanistan's Curriculum Department or Brazil's National Institute for Investigation and Development of Education. Others rely on local and international non-governmental organizations or U.N. agencies that may support government actors in development or work directly with communities on pilot projects. Many countries have approached risk reduction and resilience education through curricular infusion, rather than curricular integration or stand-alone specialized courses [37]. Qualitative survey responses and other research indicate curricular infusion is most often achieved in geography or natural science courses, usually for lower

grade levels.

Piloting curriculum is often an initial step to adding risk reduction and resilience concepts to the national or sub-national curriculum, although these pilots may fail to be scaled up. In Indonesia, the Ministry of Education and Culture (MoEC) developed a scalable approach. With backing from the U.N. and several non-governmental organizations, the MoEC launched the 'Mainstreaming of Disaster Education at School' strategy, which sought to standardize risk reduction and resilience education at all grade levels [42]. Under the strategy, curriculum was piloted for eight months in nine primary, secondary, and senior high schools. The Indonesian MoEC then issued a 'Circular Letter' to all education offices in support of risk reduction and resilience curriculum development and implementation [43]. Such curricular piloting, combined with high-level leadership within the government, may avoid the critique that NGO-led curricular pilots have 'thin' lines of communication with national governments and critiques that state-led pilot projects are 'smoke screens' of avoidance for substantive curriculum change [44, 45].

While most surveyed countries have included risk reduction and resilience modules in their national curriculum to some degree, teachers training in these subjects is offered at a lower rate. Globally, over half of responding countries (65%) indicated that they include disaster risk reduction, climate change, or risk reduction resilience in their national education curriculums. In contrast, less than half of responding countries (35%) include the same subjects within their national teacher training programs. Furthermore, qualitative survey responses indicate that teacher training in disaster risk reduction is often ad-hoc.

Many respondents report that teacher training is often a one-time event conducted by non-governmental organizations. If teacher training material is available, it exists in manual format. Respondents also indicate that while teacher training is strongly emphasized as an objective in the Hyogo Framework for Action, less frequently has it been meaningfully implemented in the national education system. A notable exemplar in teacher training is Sierra Leone. In partnership with UNICEF, the Sierra Leone Ministry of Education developed "Emerging Topics," a course that covers topics on disaster risk reduction, human rights, peace, the environment, and gender equity. The course is offered in teacher training colleges and teacher certification programs [46].

Public awareness campaigns are another strategy for spreading risk reduction and resilience information beyond the classroom. Campaigns communicates information through flyers, pamphlets, posters, television ads, texts, social media, and interpretative art. Most responding countries (68%) indicate that they conduct public awareness campaigns that included consistent, action-oriented messages, as seen in row ten of Table 4. Public awareness campaigns were especially prevalent in the Asia-Pacific region (88%).

Strong public awareness campaigns are emerging in countries with intense vulnerability to sea level rise. In the Maldives, The National Disaster Management Centre, in partnership with the Broadcasting Commission, began public messaging and prioritizes these messages in media when hazards do occur [47]. Fiji, the Solomon Islands and Vanuatu governments and civil society stakeholders adapted and adopted public awareness and public education key messages in 2016 to inform public awareness campaigns [48]. Fiji's educational authority, National Disaster Management office and other NGOs then used these key messages to develop standard operating procedures for emergencies and safety procedures for schools, which were then broadcast nationally on public television for students and school staff to watch and practice.

Qualitative survey responses indicate that a popular form of public messaging is through digital poster, often developed with the support of non-governmental organizations, but other innovative approaches are also present. Kenya's national government, in collaboration with the UNISDR, organizes dialect-specific radio talk shows to raise awareness of hazards [49]. South Africa developed 'climate change and smart living' plays in schools across Western Cape Province. The purpose of the plays was to 'convey key environmental and social issues using

multi-lingual and multi-cultural styles through music, dance, song, and comedy' [50].

4. Facilitators and blockers of CSS policy development

In a separate section, 44 countries response to survey questions asking which factors out of a list of 15 facilitating factors and 20 blocking factors seemed to support or impede CSS policy development in their country. Table 5 shows these facilitators on the left and blockers on the right, organized by theme. As would be expected, factors that were least frequently selected as facilitators were often the same factors that were most frequently selected as blockers.

When grouped into themes, the facilitating factors most often selected were in the themes of *Evidence* and *Advocacy*. Those selected as blocking factors were in the themes of *Lack of* Funding and *Lack of Capacity*. We discuss these four themes in turn.

Table 5
Percentage of responding countries selecting facilitating and impeding factors for CSS policy development, grouped by themes (N = 44).

Facilitators	%	Blockers	%
Evidence			
Evidence on the impacts of CSS	66	No strong evidence that supports CSS	7
Large disasters or frequent hazard impacts	52	No corresponding blocker	–
Professional journalists report on CSS	14	Professional journalists do not report on CSS	27
Advocacy			
Ed sector official advance CSS	50	Ed sector officials not committed to CSS	18
Disaster mgmt officials advance CSS	48	Disaster mgmt officials not committed to CSS	14
Continued advocacy on CSS for a long period	48	No corresponding blocker	–
Civil society advances CSS	41	Civil society is not involved	9
Elected officials advance CSS	25	Gov't leaders have not shown commitment	25
No corresponding facilitator	–	Gov't leaders don't show consistent support	23
Funding			
No corresponding facilitator	–	Funding has not been sufficiently allocated	66
No corresponding facilitator	–	Funds hard to access, not timely	39
Capacity			
Gov't part of regional/global CSS efforts	45	No corresponding blocker	–
Gov't has clear framework for approaching CSS	32	Gov't does not have a framework for CSS	27
Gov't coordinates with internat'l & nat'l agencies	29	No corresponding blocker	–
Gov't has a good technical capacity	23	Gov't does not have a sufficient tech capacity	45
No corresponding facilitator	–	Gov't staff are too busy to conduct CSS	43
Culture			
Education is valued by the public	45	Culture does not value education	14
Focus on post-disaster response	15	Public policy focused on disaster response	20
Private sector supports CSS financially	11	Private sector is not interested in CSS	16
No corresponding facilitator	–	Public is not focused on CSS	30
Strategy			
No corresponding facilitator	–	Policies were implemented too quickly	5
No corresponding facilitator	–	Nat'l gov't lacks jurisdiction over sub-nat'ls	16
No corresponding facilitator	–	No strong guidance for sub-nat'ls	18
No corresponding facilitator	–	Policies not aligned well with other policies	25

4.1. Evidence

Respondents indicated that factors related to *Evidence* were most influential in facilitating CSS policy development. Specifically, over half of the 44 responding countries (66%) indicated that 'strong evidence (proof) on the impacts of disasters on education' was a facilitating factor for policy development. Two other factors in the evidence theme were selected less often: school safety being important because of 'large disasters or frequent hazard impacts' (52%), and 'professional journalists regularly report' on school safety issues (14%).

In theory, evidence allows policymakers and practitioners to make decisions informed by the best available research and experience. Evidence-based decisions can help identify interventions that most effectively address the problem, avoid unnecessary harms, and save limited resources [53,64,65] . Evidence is seen as so crucial, that representatives of MoEs and NDMOs from fifteen different countries described evidence as required for convincing decision makers to prioritize school safety in planning and budgeting at the First Meeting of Safer School Leaders in Instanbul [51]. Notably, the growing global consensus around CSS is itself an attempt to bring an evidence-based approach to reducing hazard risk in the education sector. As such, evidence of disaster impacts and risk reduction is fundamental to achieving CSS.

While respondents favored evidence as a facilitating factor, research suggests that evidence alone does not necessarily lead to policy outcomes. Instead, policy is often informed by institutional arrangements, cultural values, social contexts, and competing interests which shape or constrain policy choices and outcomes [52,53]. Further, evidence supporting CSS-based policies already exists and has existed for some time, suggesting that if governments were influenced by evidence alone, they would have already adopted such policies. Respondents may overestimate the role of evidence to engender policy change because of its emphasis and frequency in the Yokohama, Hyogo, and Sendai Frameworks. What may be more crucial than evidence collected per se, is evidence tailored to the needs and interests of key decision makers. As will be discussed later, regression analysis further indicates that evidence is not a strong driver of CSS policy.

4.2. Advocacy

Advocacy was the second most prevalent theme. A substantial minority of responding countries indicated that advocacy-related facilitators helped them develop CSS policy. The facilitators 'senior and mid-level education sector officials' being advocates for school safety (50%), 'senior and mid-level disaster management officials' being advocates (48%), the presence of 'continued advocacy … for a long period of time' (48%), 'civil society groups us[ing] their position to advance school safety publicly' (41%), and 'elected officials us[ing] their position to advance school safety publicly and within government' (25%) were factors respondents saw as most supporting the development of CSS policies within their countries.

Frameworks for continuous advocacy for school safety has emerged at the national, regional and global levels. At the global scale, advocates have worked through UNISDR's Disaster Risk Reduction Begins at School 2005–2006, the Worldwide Initiative for Safe Schools, and the Safe Schools Declaration to provide pressure and highlight successful school safety reform. At the regional level, coalitions such as the Association of Southeast Asian Nations' Safe Schools Initiative and the Group for the Management of Disaster Risk in the Education Sector in LAC countries provide regional support and helps sustain and amplify local and national level advocacy. A recent examples is the 2017 Antigua and Barbuda Declaration on School Safety, signed by 12 Caribbean countries and territories, which lays out a roadmap and regional priorities for increasing school safety. Concurrently, child-rights organizations have developed programs to empower children and youth to be active participants in identifying and developing plans to reduce the risks they

face and engage in peer-to-peer education.

4.3. Lack of funding

While the threats hazards pose to education is evident, dedicated and ongoing investments into safe school initiatives remains a real challenge for governments. Responding countries frequently indicated that 'government has not allocated sufficient funds' (66%) and funds were 'hard to access and not distributed on time' (39%) impeded CSS policy development.

The meaningful development of CSS policies requires large investments that are often not available, especially in low- and middle-income countries. Meaningful development of CSS policies involves redeveloping or reconstructing already established national systems, especially when efforts include addressing Pillar 1 issues of safe learning facilities.

One of the most costly elements of comprehensive school safety is the retrofit and replacement of weak schools. First, governments must take stock of existing school facilities and identify which need to be retrofit or replaced. Governments must then allocate funding and resources towards construction, with costs that can quickly reach hundreds of millions to billions of dollars. For example, in 2017, Peru's Ministry of Education commissioned a multi-hazard risk assessment on the country's school building stock. The results indicate that over $6 billion was required to entirely replace or retrofit almost 140,000 school facilities at high risk of collapse [54]. Securing such funding is challenging.

The re-development of existing national curricula to accommodate risk reduction and resilience education as a standardized core subject also requires substantial funding. It requires a dedicated body of education specialists to conduct longitudinal, evidence-based research to inform the design of the curriculum, text books, activities, and other learning materials. A curriculum must also be created for teacher training colleges so that those training to be teachers can learn how to effectively teach the subject. Continuing education must also be made available to teachers who may already teach risk reduction and resilience education but who have not received any formal training. Once developed, these resources must also be evaluated and improved. All of these efforts inevitably require substantial and sustained funding that have yet to be fully realized in many countries.

While the threats to education from hazards are evident, policymakers are reluctant to dedicate adequate funding towards safe school initiatives. Reluctance to fund safe school initiatives may be caused by nearsighted horizons, already limited budgetary resources, and other pressing issues that take precedent over prevention [55].

4.4. Lack of capacity

The second strongest theme in the blockers of CSS policy development was *Lack of Capacity*. Survey results indicate that staffing and technical capacity are particularly absent. Responding countries indicated that 'the government does not have sufficient technical capacity' (45%), 'the departments and staff are too busy' to implement CSS policy (43%), and that the government 'lacked clear framework, ideas, approaches, or steps' for making school safer (27%) were blockers of CSS policy development.

These responses to the CSS baseline survey underline the importance of building local capacity and frameworks. A growing body of literature has identified limited functional and technical capacities as a deterrent across disaster risk reduction efforts [56]. This topic is also regularly broached at regional and global meetings. In 2014, representatives of MoEs and NDMOs at the First Meeting of Safe School Leaders identified government capacity as a leading blocker in the effort to achieve safer schools [51]. Both the 2016 Pacific Coalition for School Safety meeting and the 2017 Caribbean School Safety Initative Roadmap identified standardized assessment tools and safe school standards as pressing needs. Furthermore, the Yokohama, Hyogo, and Sendai strategies for

disaster risk reduction each identified capacity as one of the primary vectors needed to substantially reduce disaster risk [57].

5. Regression analysis

Although the size of the sample and limited number of response options reduces robustness of the data, regression analysis can begin to suggest the strength and directionality of correlations between facilitators and blockers, as well as other independent variables, and CSS policy development.

We used binary logistic regressions to predict the probability that a country would positively respond to the first two indicator variables. For the Enabling Environment indicator variable, regression was able to successfully classify 57% of countries that did not include DRR in the national education policy, and 86% who did, with an overall success rate of 76%. However, no independent variable was found to be a significant predictor of the presence of disaster risk reduction with the national education policy, as shown in Model 1 of Table 6. Regional differences and income differences seem not to drive the presence of this key indicator. Rather, enabling environment policies were present across a wide range of contexts.

For the Pillar 1 indicator variable capturing whether countries had funded hazard risk assessment and/or retrofit of unsafe building stock, the Model 2 logistic regression was able to successfully classify 78% of countries that did not conduct a hazard risk assessment/replacement on their school building stock, and 79% who did. The overall success rate was 78%. In this model, the independent variables of GNIPC, the LAC region, *Lack of Capacity*, and *Lack of Funding* produced significant effects, measured at the p < .1 level. *Lack of Funding* was a particularly strong predictor.

School risk assessment and retrofitting is a costly and technical procedure. As such, it is expected that countries with lower economic strength and those where funding and technical capacity were perceived as weak, would less often address this aspect of CSS. Risk assessments and retrofit is especially important where sudden onset hazards like earthquakes can cause immense school-related casualties. With its high seismic risk, it is also unsurprising that LAC countries are more likely to be engaging in school assessment and retrofit.

For the Pillar 2 and 3 indicator variables, which were based upon counts of guidance and training topics respectively, we used negative binomial regression. As seen in Model 3 of Table 7, none of the dependent variables were significant predictors of guidance on school disaster management. School disaster management was present in countries of high and low gross national income, across all three regions, and did not seem to be strongly influenced by the presence of CSS advocacy or evidence. Further, guidance was not stymied by a lack of technical capacity or funding. That all independent variables failed to be significant predictors was likely a result of school disaster management being closely related to disaster response, the most robust and often overemphasized element of disaster risk reduction.

The results of Model 4 in Table 7 indicate that GNIPC and the theme *Advocacy* had significant effects at the p < .1 level on teacher training for

Table 6

Logistic regressions predicting inclusion of DRR in national education policy and funding of risk assessment/retrofit of unsafe schools.

	Model 1. DRR in National Education Policy			Model 2. Funding of Risk Assessment and/or Retrofit		
	B	Exp(b)	Sig.	B	Exp(b)	Sig.
GNIPC	0.000	1.000	0.137	0.000	1.000	0.088*
Region: LAC	1.468	4.339	0.719	2.662	14.321	0.068*
Region: Africa	1.309	3.703	0.255	−1.590	0.204	0.179
Advocacy	0.773	2.165	0.697	3.766	43.186	0.101
Evidence	1.659	5.255	0.234	−1.064	0.345	0.404
Lack of Capacity	1.128	3.088	0.444	−2.971	0.051	0.082*
Lack of Funding	−0.553	0.575	0.638	−2.981	0.051	0.027*

Table 7

Negative binomial regressions predicting guidance on school disaster management and topics covered in teacher training.

	Model 3. Guidance on School Disaster Management			Model 4. Teacher Training Topical Coverage		
	B	Exp(b)	Sig.	B	Exp(b)	Sig.
GNIPC	0.000	1.000	0.966	0.000	1.000	0.088*
Region: LAC	0.292	1.339	0.559	0.453	1.573	0.436
Region: Africa	−0.074	0.929	0.902	0.194	0.824	0.775
Advocacy	0.827	2.286	0.391	2.346	10.445	0.055*
Evidence	0.098	1.103	0.885	0.267	1.306	0.745
Lack of Capacity	−0.393	0.675	0.623	−1.077	0.341	0.255
Lack of Funding	0.051	1.052	0.932	0.022	1.022	0.975

DRR, climate change and resilience. As discussed above, many countries had created and implemented student curriculum on these topics. Yet many fewer had created teacher training. Wealthier countries and those with strong advocates for CSS policy were significantly more likely to have teacher training policy in place.

Developing and implementing teacher training programs requires more capital and coordination than does writing student learning modules and integrating risk reduction, climate change, or resilience education into national curriculum. Though governments approach teacher training differently, it often requires a coordinated continuing education program or a change in the requirements for teacher certification. Because governments are often restricted by the absence of financial and human resources and the ability to coordinate, they may less frequently allocate investments into teacher training programs than into curricula development.

Teachers delivering risk reduction and resilience education without having first been trained on the subject matter themselves compromises the efficacy of risk reduction and resilience education. Untrained teachers are less adequately equipped to deliver lesson plans, which reduces students' uptake of disaster risk reduction behavior and competency, and can impede students' reduction of their own vulnerability [58,59]. Training must be provided if teachers are to become 'reflective practitioners' instead of 'technically adept deliverers of a prescribed curriculum' [60].

6. Recommendations for strengthening CSS policy

Efforts to engender school safety involves a coordinated and systematic political effort, both internally from within MoEs and NDMOs as well as externally from development partners and civil society. Policies must be developed, funded, and implemented through a comprehensive, multi-agency, interdisciplinary effort that bolsters coordination and cooperation from the local to national scale. The following recommendations are intend to guide government leaders, development partners, and civil society advocate in reaching the CSS Framework goals of protecting children, youth and educators; ensuring educational continuity; protecting education-sector investments; and enhancing risk reduction and resilience education.

- **Collect and use risk and impact data.** Evidence was the strongest facilitating theme of CSS policy development. Two-thirds of the responding countries indicated that one or more *Evidence* facilitators influenced their policy development. However, the survey data also indicates that over a third of the countries do not systematically collect, update, or publicly share education-sector risk data. To advance CSS, governments should collect and publicly share non-sensitive data on education-sector loss. Important data include variables such as number of deaths and injuries (disaggregated by sex, ethnicity, ability, and age), infrastructure, and long-term education outcomes. Development partners and advocacy organizations can support by helping to develop education sector indicators and monitoring frameworks within countries and across regions.

Similarly, MoEs can begin or continue to partner with existing agencies to collect hazard, risk, and forecasting data. They can ensure that such data is incorporated into education sector planning and is presented to key policy makers to allow for evidence-based CSS policy development.

- **Establish focal points.** The second strongest facilitating theme was advocacy. About half of the responding countries stated that sustained advocacy from education sector officials, disaster management officials, and/or civil society facilitated CSS policy development. Furthermore, the presence of advocacy was a significant predictor of the Pillar 3 indicator policy. Yet, only about half the responding countries employed someone to oversee disaster risk reduction or education in emergencies; most did not allocate funding towards this programing.

One strategy for ensuring and sustaining advocacy can be the establishment of focal points within national, sub-national, and local MoEs and NDMOs. Advocating for CSS policy and facilitating coordination among stakeholders becomes a fundamental part of a focal points work and makes it easier for external advocate, stakeholders, and communities to raise concerns. Where such focal points already exist, governments should ensure they have sufficient time and resources to address all elements of CSS.

- **Establish or strengthen national and subnational coordinating mechanism.** Another strategy for sustaining robust CSS advocacy may be the establishment of national coordinating mechanisms. Such coordinating mechanisms can provide a platform for developing a shared vision, setting priorities, and implementing policies and initiatives related to school safety and education in emergencies. In some contexts, the Education Cluster may be a readily available platform; in other contexts a coordinating mechanism may need to be established and supported. Focal points in MoEs, NDMOs, education sector development partners, and civil society advocates should all be invited to participate. At the subnational and local levels, coordinating mechanisms, with focal points connected to national activities, can ensure that national level plans and policies have a means of being effectively implemented at the local level. Beyond the national context, regional coalitions that amplify the successes and encourage sharing of good practice are also important platforms for sustained advocacy.

- **Assess national school stock and retrofit/replace weak facilities.** Within CSS policies related to Pillar 1, the issue of weak school facilities is key. While over half of the responding countries have included language on education sector risk assessment in their disaster management policies, only 31% have funded the hazard risk assessment of their school building stock. Even fewer, 19%, have funded the retrofit or replacement of weak schools. Identifying and replacing unsafe schools may be the most importance of all CSS measures because doing so can save the lives of children and youth and educators. Governments that protect the physical safety of schools also can protect education sector infrastructure investments and ensure a quicker societal recovery. Thus, funding for multi-hazard risk assessments and the retrofit or replacement of weak schools is an important area for further governmental investment. Development partners and donors should support these efforts as the financial investment and technical capacity needs are often substantial.

- **Limit and plan for schools as temporary evacuation centres.** The survey results indicated that only 37% of the responding countries have developed limitations on the use of schools as evacuation centres during emergencies. Unrestricted use of schools as evacuation centres can affect educational continuity, the quality of education, and student safety. As such, guidance for limiting the use of schools as evacuation centres, and for managing and reimbursing schools when they are used as such, is an area for further policy development, monitoring, and adaptation.

- **Expand drills and training.** Drills are a major component of building children's competency in emergency response. They allow school occupants to practice situational awareness, including how to react during hazards and emergencies and why such actions are protective. Despite its importance, only 46% of the countries surveyed required schools to conduct periodic fire drills; only 29% provided guidance on how to conduct fire drills. Notably, only 25% covered the principles of disaster management in teacher training. To fill this gap, governments should establish policies mandating periodic fire and hazard drills. Furthermore, with the support from development partners and advocacy organizations, governments should offer training to teachers and faculty so that they can effectively develop drills and simulations for their students.

- **Strengthen national curriculum and teacher training.** While 65% of the countries surveyed indicate that they included DRR, resilience, and climate change adaptation within the national curriculum, many of these countries have yet to comprehensively embed these subjects into the curriculum. Furthermore, only 35% included these DRR topics in teacher curriculum, meaning teachers are teaching these subjects without previous academic preparation. Thus, governments should incorporate these topics into national curriculum and match it with teacher training and professional development opportunities. The content of DRR and climate change education should go beyond response and preparedness, but should also cover topics such as the root causes of societal vulnerability, indigenous knowledge and local capacities for risk reduction [61]. Lastly, as suggested by Merchant [62], DRR curriculum should also be matched with student assessments to ensure that they meet performance expectations, and that they retain information from the curriculum.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.ijdrr.2019.101399.

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