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Evaluating Comprehensive School Safety through a Global Baseline Survey of Disaster Risk Reduction Policies in the Education Sector

Adriana Varchetta
Western Washington University, adrianavarchetta@gmail.com

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Evaluating Comprehensive School Safety through a Global Baseline Survey of Disaster Risk Reduction Policies in the Education Sector

By

Adriana Varchetta

Accepted in Partial Completion

of the Requirements for the Degree

Master of Arts

ADVISORY COMMITTEE

Dr. Rebekah Paci-Green

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Master's Thesis

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Adriana Varchetta

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Evaluating Comprehensive School Safety through a Global Baseline Survey of Disaster Risk Reduction Policies in the Education Sector

A Thesis

Presented to

The Faculty of

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Abstract

As disaster risk increases across the globe a growing attention has been placed on how disasters and emergencies impact children and youth's access to education. International humanitarian agencies, national governments, non-governmental organization, researchers, practitioners, and advocates have coalesced to identify strategies to address school safety in the presence of disaster risk. The Comprehensive School Safety (CSS) framework developed out of this movement. CSS aims to protect students and educators from physical harm, plans for the continuity of education, safe safeguards investments, and incorporates resilience topics into curriculum. This study uses Save the Children's 2016 CSS Baseline Dataset to identify the presence of CSS policies within 68 countries. An inductive analysis and scoping approach were used to identify themes and trends from the data, policy documents, and supporting literature. The results indicated that overall, countries have adopted about 48% of CSS policies, with Asia Pacific countries most frequently adopting policies in comparison to the two other sampled geographic regions (Latin America/Caribbean and Africa). Further, results indicate that most countries have enacted disaster management policies that address the education sector. Most also have enacted policies for safer school construction, although far fewer have allotted funding for multi-hazard risk assessment and retrofit of schools identified for reconstruction. Fewer than half limit use of schools as temporary shelters. About a quarter include climate change and disaster risk reduction in their school curriculum, but far fewer train teachers in these subjects. The results indicate that evidence of disaster impacts and advocacy are important facilitators for CSS policy development. Conversely, insufficient funding and poor technical capacity tended to impede it. The results expose policy gaps and practices that

require attention, and provide a measure for the degree to which CSS policies have been

enacted within the sampled countries.

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Chapter 1: Introduction

Disasters – triggered by natural hazards such as earthquakes, typhoons, wildfires, landslides, or floods – cause exorbitant human, environmental, and economic losses globally. Each year, disasters cause hundreds of billions in damages and kill, injure, or displace hundreds of thousands of people (UNISDR & CRED, 2018). Yet, the nature of disaster loss across the globe varies by economic development; fewer developed countries experience more disaster deaths and fewer economic loss, while more developed countries experience fewer disaster deaths and greater economic loss (Kahn, 2005). Recent examples highlight this inverse relationship – Hurricanes Katrina (2005) and Harvey (2017) resulted in 125 billion USD in losses (Hartwig, 2010; NOAA, 2017) and resulted in under 2,000 deaths, while the Indian Ocean Earthquake and Tsunami killed over 220,000 people and resulted in 10 billion USD in losses for the entire Indian Ocean region (NOAA, 2014). Despite this inverse relationship - for some hazards, fatalities have declined globally, but disaster risk - the potential for a disaster to occur - is increasing across the globe. Within the last forty years, the frequency of hazards has increased almost three-fold, with researchers attributing some of the increase to unsustainable urbanization patterns and climate change (Neumayer & Barthel, 2010; Field et al, 2012; Thomas & López, 2015). However, disasters and disaster risk are not merely the result of hazard events.

Disaster risk occurs when *vulnerable* populations are *exposed* to a hazard. Vulnerability determines people's degree of susceptibility to harm, and consists of both social and physical properties (Wisner, 2004). Certain populations are more vulnerable than others due to social inequities caused by policies or structures that favor certain demographics over others (Oliver-smith, 1996; Wisner, 2004). Depending on the structural form of inequality, vulnerability often

disproportionately manifests itself based upon demographic characteristics such as sex, race, age, and income (Hamza & Zetter, 1998; Cutter et al, 2003; Sørensen, Vedeld, & Haug, 2006; Pelling & Uitto, 2011). The final variable, exposure, is human's presence in the physical environment when hazards are present. Combined, disaster is the outcome of a hazard event, experienced by groups of people physically exposed to that hazard and vulnerable to it.

Disaster risk can be further distinguished by *intensive* (high impact) and *extensive* (low impact) risk. Intensive risk is the 'risk associated with the exposure of large concentrations of people and economic activities to intense hazard events, which can lead to potentially catastrophic disaster impacts involving high mortality asset loss' (UNISDR, 2009a). The 2004 Indian Ocean tsunami that killed over 220,000 people is an example of intensive risk. Conversely, extensive risk is the 'widespread risk associated with the exposure of dispersed populations to repeated or persistent hazard conditions of low or moderate intensity, often highly localized, which can lead to cumulatively debilitating effects' (UNISDR, 2009a). Perennial seasonal flooding in rural Philippine villages is an example of extensive risk. Distinguishing between these types of risk supports the disparate (and overlapping) child-centered planning required for both.

While 'natural' hazards wreak havoc worldwide -- due to socio-economic practices that undermine people's ability to understand their risks, avoid hazardous areas, create built environments that can accommodate or resist hazard impacts, and develop policies and practices for effectively responding during disasters -- human-induced climate change has begun to destabilize the very climatological systems upon which societies have been structured. Climate change continue to acidify oceans, redistribute rainfall patterns, recede or entirely

eliminate glaciers and ice caps, increase desertification, and result in the mass migrations of potentially hundreds of millions of people. As a result, it will also increasingly affect the frequency, intensity, magnitude, and duration of hazards such as droughts, wildfires, cyclones, sea level rise, and floods (Masson-Delmotte et al, 2018). Worse, a recent report commissioned by the United States federal government found that at the current rate of carbon emissions, unfewer a rapid decarbonization of the world's energy systems occurs within the next decade, stabilization of the climate under 2 degrees Celsius will not be possible (Wuebbles et al, 2018). With this in mind, protecting children's education from disaster impacts should be a global moral imperative.

In time, climate change will have serious implications for most if not all people on the planet, but will especially affect the developing world and those made vulnerable. Hazard impacts will continue to be pronounced and acute in countries where government is weak, corruption widespread, capacity is limited, and funding scarce. To reduce the impacts to the education sector, especially when confronted with climate change, there is an urgent need for governments to address the underlying causes of education sector vulnerability.

Addressing and ameliorating the conditions of vulnerability is conducted through the process of 'disaster risk reduction' (DRR). DRR is "the concept and practice of reducing disaster risks through systematic efforts to analyze and manage the causal factors of disasters, including through reduced exposure to hazards, vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events" (UNISDR, 2009a).

This thesis focuses on disaster risk reduction policies as they relate to the education sector. While several case studies have qualitatively analyzed disaster risk curriculum and

policies across a handful of countries, none have quantitatively done so. The findings of this

thesis help identify the frequency by which national governments have adopted certain

education sector disaster risk reduction policies, the facilitators and blockers of policy

development based upon the experience of staffers working in disaster management and

education sector governmental and non-governmental agencies in each countries context, and

the relationship between facilitating variables and the presence of policy.

The remainder of this following chapter reviews previous research on the implications of

disasters on the education sector and children and youth. It also considers, the historical

context of the emergence of disaster risk reduction in international initiatives, and ends with a

discussion on Comprehensive School Safety (CSS).

Disaster Risk in the Education Sector

Globally, the growth of disaster risk and disasters pose significant implications for the

wellbeing of school-aged children and youth. School-aged children and youth are among the

most vulnerable demographic groups (UNISDR, 2011a). Their high level of vulnerability is due to

their physical fragility, their developing mental and emotional capacity, and their dependency

on adults for care (Peek, 2008; Kar, 2009). 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 (Save the Children, 2007; Kousky, 2016). The disaster risk

for school-aged children and youth is especially pronounced in low and middle income where

they make up almost half or more than half of the population (Back et al, 2009; Bastidas, 2011;

Delicado et al, 2017).

Children and youth, especially those residing in countries without enforced policies on construction standards, are often at risk while attending school. 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 is a litany of high-profile school disasters triggered by hazard events. Between the years 1988 and 2010, tens of thousands of students and educators lost their lives in collapsed school buildings (Petal, 2008; Bastidas & Petal, 2012). Even larger numbers of school-aged children and youth were unable to attend classes when their school facilities were inaccessible or damaged. For example, the 2010 M_w 7.0 Haiti wreaked havoc on Haiti's education system. The earthquake, combined with shoddy construction practices, led to the deaths of 4,000 students in collapsed school buildings (Bastidas & Petal, 2012). School closures across the country interrupted education for 2.9 million students, and the reconstruction of Haiti's education system amounted to over $450 million USD (World Bank, 2010; UNICEF, 2010).

However, death, injury and lost school days are only a few of the cascading consequences that disasters have on children and youth. Children and youth experiencing educational disruption are susceptible to short and long-term compounding psychosocial impacts such as depression, anxiety, sleeping disorders, and behavioral problems (Peek, 2008; Fothergill & Peek, 2015). Further, destroyed or damaged school buildings stymie or deny children and youth's access to education (Tong et al, 2012; Bastidas & Petal, 2012). School closures increase drop-out rates and children and youth in the workforce. They also decrease content coverage, test scores, and students' academic confidence and perception of themselves (Mudavanhu, 2014; Fothergill & Peek, 2015; Dwiningrum, 2017). Access to

education is correlated with higher income and better mental and physical health (Ross & Van Willigen, 1997). Thus, when children and youth are unable to attend school for long periods of time, or when disaster displacement leads to educational discontinuity, their future quality of life may be undermined.

While reducing the hazard exposure of school facilities and strengthening their ability to resist hazard forces protects student and staff from physical harm and educational discontinuity, schools have another important function. As educational institutions, schools can educate students and communities about hazards and ways to reduce their vulnerability to them.

Education in disaster risk reduction broadly refers to the dissemination of knowledge through both formal and informal engagement, such as school-based curriculum and community-based activities. The focus of DRR education is to support children and youth in "building understanding of the causes, nature and effects of hazards and threats, [and] also fostering a range of competencies and skills to enable [children and youth] to participate and take leadership roles in disaster prevention and mitigation" (Kagaway & Selby, 2012). Primary and secondary schools are the principal institutions targeted to for DRR education due to their central purpose as facilities of learning. In most countries, primary school enrollment is compulsory. In many countries attendance at secondary school is also mandatory. As a result, schools are an extremely effective avenue for communicating to a large portion of the population about DRR.

Muttarak and Lutz (2014) argue that the relationship between education and vulnerability reduction is both direct and indirect. First, DRR education can directly increase

students' intellectual capacity on hazards. Second, DRR in education can protect the continuity of education and thus decrease the instances of poverty.

DRR education can directly influence vulnerability reduction through intellectual advancement. First, the primary function of formal education is to build problem solving, cognitive, abstract thinking, numerical, and literacy skills. These skills are necessary for understanding risk information (UNISDR, 2009). Education about hazards can change behaviors so that appropriate actions are considered before, during, after hazards occur (Shaw et al, 2009). Children and youth who learn about hazards have demonstrated the ability to protect themselves and others during times of emergency (Shiwaku et al, 2011). Thus, education, and DRR education can increase children and youth's intellect and provide them with direct knowledge about hazards and vulnerability to enhance their own agency.

DRR education can indirectly influence vulnerability reduction by ensuring the continuity of education through the physical protection of school infrastructure. Drop-out rates increase when hazards keep students out of education for extended periods of time (Peek, 2008; Fothergill & Peek, 2015). At the same time, educational attainment is positively correlated to poverty reduction (Juster, 1975), and poverty is positively linked to vulnerability (Hamza, 1998; Cutter et al, 2003; Sørensen et al, 2006). Thus, because DRR protects the continuity of education, it also ensures the capacity to which a population can attain educational status and as a consequence, their ability to receive adequate income and a higher standard of living. Thus, protecting the education sector from hazards indirectly reduces vulnerability.

The role of children and youth in education sector disaster risk reduction has also become a growing emphasis. Despite their vulnerability and exposure to risk while attending

school, researchers, practitioners, and children and youth themselves have argued they are not passive victims but active agents in risk reduction (Peek, 2008; Fothergill & Peek, 2015; Sakurai & Sato, 2016). Researchers have found that children and youth can actively engage with parents, educators, and community in reducing risk. Children and youth can be supported in identifying hazard risk and incorporating preparedness into their own lives (UNISDR, 2008; Apronti et al, 2015; Fernandez & Shaw, 2015; Fothergill & Peek, 2015; Delicado et al, 2017). Indeed, international efforts focused on education sector DRR have underscored the active participation of children and youth, and engaged their participation during the 2015 Third World Conference on Disaster Risk Reduction (Cumiskey et al, 2015).

Pedagogy in disaster risk reduction teaches children and youth about societal vulnerability, and safe construction practices protect children and youth attending school, but disaster management enables government officials and school managers to plan and prepare for hazards that might affect the continuity of education.

In sum, children are among the most vulnerable and the most affected, especially as it relates to their access to education in times of disaster and emergency. Children who attend schools that were not built to sustain their regions local hazard are at risk of physical harm, disruption of their education, and reduced likelihood of a higher standard of living. These circumstances have prompted disaster risk reduction advocates to develop and evolve a conceptual framework for protecting children's welfare while attending school and beyond. The framework address disaster impacts in the education sector from several angles: 1) *physically,* in the hazard resistance of schools sites and facilities; 2) *managerially,* in the way school occupants plan for and act during emergencies and disasters; and 3) *pedagogically* – in how

hazards and risk are taught formally and informally. The development and evolution of this school safety framework emerged out of several decades of international efforts to articulate that disaster impacts were not inevitable, but could be reduced through risk identification, policy and planning. This history is discussed in the next section, followed by a discussion of the conceptual framework that emerged for addressing disaster risk reduction in the education sector.

Development of the CSS Framework

Over the last three decades, an international coalition of advocates, practitioners, and experts have coalesced to address the health and security of children and youth's access to education in countries affected by hazards across the globe. Supported by the work of local, regional and international coalitions, this movement has been formalized within the United Nations through several global strategies and frameworks, both specific to the education sector and more broadly related to DRR. Beginning with the International Decade on Natural Disasters Reduction Education as a vector for advancing disaster risk reduction has been an emphasis in global development since the 1990's. The International Decade was the impetus for a series of global frameworks that progressively refined and affirmed the role of education in disaster risk reduction, namely the Yokohama, Hyogo and Sendai frameworks. These DRR frameworks have underscored education as a strategy to both disseminate risk reduction and resilience knowledge and to make the education sector resistant to hazards itself, and have led to international cooperation that have engendered political propulsion into incorporating disaster risk reduction into policy and development practices. Each consecutive iteration of these strategies has built on the last, and has increasingly become more refined as practitioners and

researchers learn from successes and challenges. Over this period, CSS emerged as a tangible framework to reduce disaster risk within the education sector. Below, the section discusses how these international initiatives evolved over time and the organizations that began to address education sector DRR.

International Initiatives on Disaster Risk Reduction

The United Nations designated the 1990's as the International Decade for Natural Disaster Reduction (IDNDR). This designation was the first globally coordinated effort to address the societal impacts of hazards, and had a significant role in positioning education as a strategy to reduce the societal risk to hazards. In its official proclamation, education was listed among five goals, and was recommended as a national policy measure. However, the IDNDR's approach to education differed significantly from subsequent initiatives. At the beginning of the decade, 'education' referred broadly to public awareness campaigns whose audience consisted primarily of adults – and was operationalized as public demonstrations on hazards or the dissemination of technical knowledge targeted at decision-makers and emergency managers. The suggested vector through which natural hazard reduction education was promoted was through film, videos, print material, "alternative forms of media", and "internet technology" (United Nations General Assembly, 1990). Although the broader guiding principles of the IDNDR called for national governments to enact policies that reverse the unsustainable practices at the root cause of societal vulnerability, the role of education seemed to support that individuals alone, if educated, could themselves reduce the impact of hazards. Largely absent from the dialogue was the role of school-based education, the importance of safeguarding school facilities, and the role of children and youth.

During the same decade, the First World Conference on Natural Disaster Reduction was held, and led to the adoption of the 1994 – 2005 Yokohama Strategy and Plan of Action for a Safer World: Guidelines for Natural Disaster Reduction and Mitigation Yokohama Strategy. Like the goals of the IDNDR, the Yokohama Strategy reaffirmed education as a strategy to develop disaster resilient communities in the face of disaster; the third principle stated that 'vulnerability can be reduced…through education' (United Nations General Assembly, 1994). Regarding its implementation, it recommended that governments 'establish and implement education and informational programmes aimed at generating general public awareness, with special emphasis on policymakers…" through the vector of "…the media as a contributing sector in awareness raising and education…" (United Nations General Assembly, 1994). Thus, the Yokohama Strategy was largely modeled after the language used in the IDNDR, which emphasized education specifically for policymakers and the public through traditional and alternative media.

While the shortcomings of the IDNDR and Yokohama Strategy are evident, they positioned education as a central element of the global disaster risk reduction movement. As incipient initiatives that significantly emphasized a technocentric approach to DRR, the IDNDR and Yokohama strategies weakly addressed the role of education and the importance of its safekeeping. Both initiatives failed to explicitly address schools or children and youth as a vector through which risk reduction and resilience education can be disseminated, let alone seeing them as active agents in risk reduction. Instead, the populace targeted for education were policymakers, adults, or the general public. While the IDNDR and Yokohama Strategy only

vaguely allude to education, its inclusion initiated a cascading effort that resulted in an

increasingly robust strategy to mainstream disaster risk reduction within the education sector.

The current context of disaster risk reduction in the education sector evolved out of the

analysis of achievements, gaps, and challenges as identified from earlier practice and research,

of which the IDNDR and Yokohama Strategy were integral to initiating (Sakurai & Sato, 2016).

Thus, while the IDNDR and Yokohama Strategies was seminal to expanding disaster risk

reduction globally, subsequent initiatives more comprehensively addressed and developed the

role of disaster risk reduction in the education sector.

The Hyogo Framework for Action (2005 – 2015), often referred to simply as the HFA,

was agreed upon at the terminus of the Yokohama Strategy and again identified education as a

remaining gap in the implementation of DRR initiatives across the globe. It addressed the gap

by providing explicit instructions on the actors and actions involved in promoting education.

The HFA stated that DRR knowledge should be included in "…school curricula at all levels and

the use of other formal and informal channels to reach youth and children and youth…", and

that "development practices [should] protect and strengthen critical public facilities and

physical structure, particularly schools…through retrofitting and re-building, in order to render

them adequately resilient to hazards…" (UNISDR, 2005). The Millennium Development Goals,

which underscored providing all children and youth with access to primary education, was a

guiding document for proceeding agreements on children's rights and education in the context

of DRR (Bastidas, 2011). The HFA became an "obligatory reference point" for current disaster

risk reduction policies and practices (Benadusi, 2014). A mid-term review of the HFA identified

significant progress to the development and implementation of disaster risk reduction

education in school curriculum and teacher training (UNISDR, 2011b).

At the completion of the HFA period, the United Nations facilitated a global consultation

process to develop goals and priorities for a post-HFA planning period. In 2015, signatory

nations agreed upon the Sendai Framework for Disaster Risk Reduction (2015 – 2030) at the

conclusion of the HFA. In the SFDRR, as the Sendai Framework was called, risk reduction and

resilience education was reaffirmed as a global imperative with an emphasis on promoting the

protection of school facilities through both construction and education, as well as the central

role of the State as the enforcer of the agenda. The SFDRR calls for "substantially reduce[ing]

disaster damage to critical infrastructure and disruption of basic services, among

them…education sector facilities…through developing their resilience by 2030" (UNISDR, 2015,

Target 4). Compared to prior initiatives, the SFDRR communicates specific objectives for

disaster risk reduction in education (Sakurai & Sato, 2016).

What separates the IDNDR and the Yokohama Strategy from the Hyogo and Sendai

Frameworks is that the latter emphasized the inherent rights of children and youth and

acknowledges school-based education as the most efficient way to inculcate current and future

generations on DRR. Because the former was the first of its kind, the only guiding examples

were experiences from emergency management and civil defense, which largely emphasize the

response and preparedness.

The HFA and SFDRR complement and support other legally binding human rights

agreements that emphasize children and youth's inalienable right to education, such as the UN

Convention on the Rights of the Child (CRC). Article 3, 6, and 28 of the CRC state that all

children and youth have an inherent right to life and education, and that actions should be taken to ensure their safety and regular school attendance and the minimization of drop-out rates (United Nations General Assembly, 1989). These articles are particularly salient in the context of disaster risk reduction because hazards often compromise children and youth's lives and their development. Thus, governments are duty-bearers responsible for ensuring the protection of children and youth, especially in the context of hazards. To uphold their legal and moral obligation, governments must make the education sector resistant to hazards, thereby protecting children and youth's lives while safeguarding their promise to education.

As the importance of disaster risk reduction grew with each iteration of the international strategies on DRR, formal organizations emerged to oversee its progress globally. Several of these dealt specifically with DRR in the education sector.

Organizations Dedicated to DRR in the Education Sector

The importance of disaster risk reduction has been formalized within the United Nations. The United Nations Office for Disaster Risk Reduction (UNISDR) was created in 1999, and tasked as the focal point in the United Nations for the coordination of disaster risk reduction efforts (UNISDR, 2009b). The UNISDR is responsible for hosting the World Conferences on Disaster Risk Reduction, and organizing global agreements on disaster risk reduction that succeeded the Yokohama Strategy such as the HFA and SFDRR.

The UNISDR also established an interagency platform known as the UNISDR Thematic Platform for Knowledge and Education (TPKE). The platform became a means for UN agencies and international non-governmental organizations to collaborate and jointly advocate for the role of education in disaster risk reduction. Organizations within TPKE produced literature

highlighting hazard impacts in the education sector, the need for risk reduction, and the initial successes in education sector risk reduction (Wisner, 2006; Petal, 2008). As the platform strengthened, the UNISDR launched the One Million Safe Schools and Hospitals initiative in 2013.

UNISDR and TPKE efforts were buttressed by advocacy outside formal government and intergovernmental structures. During the 1990s and onward, a growing grassroots movement of technical experts, parents, and education specialists coalesced around a loosely defined concept of school safety. Some formed informal information sharing strategies, such as the Coalition for Global School Safety. Together, these efforts helped build consensus around the importance of school safety and child and youth participation in the process (Wisner, 2006; Petal, 2008).

Despite a growing consensus around school safety, the concepts remained ill-defined during the 2000s. During this period, a report was commissioned to develop a framework to assess the progress of safe school initiatives. The findings of the report revealed that "there remain[ed] no comprehensive systemized methodology or process to assess school safety globally" (Bastidas, 2011). In response, advocates from engineering, emergency management, education, and policy organized to identify a framework to assess school safety. The insights from the distinct disciplinary perspectives were slowly unified through the development of the a framework that evolved out of South Asian grassroots efforts, outcomes of baseline studies and practitioner dialogue (Bastidas & Petal, 2012), and efforts to systematically conceptualize the relationship between what had traditionally been discipline-specific approaches (Petal & Green, 2010).

Comprehensive School Safety (CSS) Framework

In 2012, a formal Comprehensive School Safety (CSS) Framework was first introduced to the UNISDR platform at the Asian Ministerial Conference on Disaster Risk Reduction. It was later endorsed by the Southeast Asian Ministers of Education Organization (ASEAN, 2016). Subsequently, the TPKE was reformed as the Global Alliance for Disaster Risk Reduction and Resilience in the Education Sector (GADRRRES); member organizations, and the alliance adopted CSS as their guiding framework for school safety.

Comprehensive School Safety conceptualizes school safety as three overlapping "pillars" embedded within the "Enabling Environment":

Pillar 1: Safe Learning Facilities,

Pillar 2: School Disaster Management, and

Pillar 3: Risk Reduction and Resilience Education.

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 (UNISDR & GADRRRES, 2017).

While the CSS framework identified clear goals for school safety and articulated school safety as involving three broad and overlapping efforts, achieving school safety is premised on national and local governments making political, financial and human resource commitments to addressing safe school facilities, school emergency management practice, and DRR education. With the adoption of the CSS Framework, GADRRRES began advocating for the development of CSS indicators and the global assessment of existing policy as an important next step.

The three pillars of CSS are situated within an Enabling Environment, which is composed of national and sub-national legal frameworks and policies. Examples of these legal frameworks include national education and disaster management policies. These policies define rights and responsibilities, create structures for leadership, and defines organizational arrangements. They may also designate specific units or positions with authority over aspects of school safety, such as designating a focal point positions within organizations with whom others can coordinate their education sector school safety activities. It may also establish financial mechanisms for funding CSS activities, including data management and collection systems and staffing.

Pillar 1 (Safe Learning Facilities) is a area of action aimed at ensuring that school facilities are constructed and continually maintained to withstand a regions' local hazards. This includes building performance standards, structural and non-structural engineering, continuous monitoring and assessment, and builder training. The legal and policy frameworks for Pillar 1 initiatives are often located within national building codes, national education policies, and supported by safe school policy guidance. The language included in national education policies and guidance often dictates that schools will be constructed with safe site selection, design, construction, and monitoring of construction in mind, while national building codes identify the technical and engineering specifications of those elements. In some contexts, school facilities and other public facilities must be built to higher standards than other forms of construction.

Pillar 2 (School Disaster Management) involves planning to maintain safe learning environments and the continuity of education. It relies on channels of communication between education and disaster management authorities dedicated to safe school and education initiatives at the local, sub-national, and national levels. Actors involved in school disaster

management are tasked with strategic planning on/for education continuity, contingency, preparedness training, hazard drilling, hazard identification, alternative learning facilities, and stakeholder engagement. These comprehensive planning efforts helps ensure that when emergencies do occur, occupants of school have the skills, training, and tools to respond in ways that reduce loss of life, injury and property damage. Simultaneously, such planning helps to ensure continuity of education.

Pillar 3 (Risk Reduction and Resilience Education) focuses on formal and non-formal education on disaster risk reduction, climate change, and resilience. Its purpose is to develop competencies and knowledge of hazards, how societal vulnerability can lead to disasters, and how disaster risk can be reduced.. Risk reduction and resilience education encompasses national curriculum and continuous curriculum assessment, teacher training and the development of learning materials, and public messaging campaigns that target the general public.

Together, the Enabling Environment and the three Pillars of CSS address risks within the education sector. They do so by ensuring that school infrastructure is built to withstand regional hazards, planning for risk reduction and education continuity, and teaching students and educators about disaster risk. These three elements are then grounded within national policies that allot funding, staffing, and data collection towards CSS.

Problem Statement and Thesis Questions: The Role of Governance and CSS Policy

Implementing meaningful and far-reaching reform to reduce disaster risk in the education sector requires multi-stakeholder coordination and investment beyond the command or capability of individuals, collective action, or the market. Instead, responsibility is

more appropriately vested in centralized governments that have regulatory authority over national agencies that distribute public goods, the capacity to communicate with complex vertical and horizontal bureaucratic systems, and access to resources. It is commonly accepted that interventions or strategies to secure children's rights must be accounted for and based in the policy (Back et al, 2009).

National governments can enact policies that set a legal precedent for protecting the education sector from hazards and bolstering DRR education within formal education. First, losses due to building collapse or damage is avoidable when safety measures are comprehensively considered during the planning and construction phases (Neumayer et al, 2013; Raschky & Weck-Hannemann, 2007). National policies can enforce strict development practices that consider the impacts of the region's local hazards. These structural policies can enforce building codes, ban development or settlement of hazardous areas, verify the integrity of construction, require mason and engineer certification, and apply delimitations on inappropriate building material incompatible with the region's local hazards (Paci-Green et al, 2015). Second, policies can enforce the creation and implementation of risk reduction and resilience education into national curriculums, its standardization, and review.

In the absence of national policies and their strict enforcement, the burden of risk reduction decision-making is transferred to individuals and non-stage agents, such as the public, private, and non-profit sectors, who may not act in the interest of the public. Several issues arise with this scenario. First, it may not be in the interest of the market to implement disaster risk into construction practices if profits outweigh the potential for future loss or mitigation, because it is sometimes costlier to construct hazard-proof buildings than it is to

construct non-resistant buildings (Kenny, 2009). The behavioral corruption that inclines profits over safety may incentivize contractors or developers to engage in substandard construction practices (Neumayer & Barthel, 2010). Because markets fail to restrict and enforce themselves, governments must take authoritative measures to do so. Thus, governments must be involved in designing and enforcing disaster risk reduction policies to limit market deficiencies, especially in the built environment.

When the state capacity is weak and regulations are lax, non-governmental organizations (NGOs) fill gaps by working one-on-one with individual schools or communities. Though considerable progress has been made by such organizations, their limitations are many; it is often the case that the most vulnerable schools and communities are the first to be worked with, leaving other schools behind (Akram et al, 2012; Jones et al, 2014; Amri et al, 2017). NGOs have limited resource capacities, and cannot provide coverage to all schools within a given country. The mosaic of resilience created by the disjointed efforts on behalf of NGOs, combined with the absence of national policy, leaves many schools at risk.

DRR occurs in a broader neoliberal climate that both reduces the responsibility of the state and is offered as a panacea to the symptoms of the prevailing global economic forces at the root causes vulnerability in the first place. Tierney (2015) argues that resilience discourse positions at-risk populations as 'increasingly pressured to adapt to depredations that are the direct result of the historic and contemporary forces on neoliberalization'. Jones et al (2014) identify the DRR neoliberalization as process as a system of *governance* rather than *government*, where "functions of national governments are redistributed 'upwards' to international institutions, 'downwards' to regional and local authority, and 'outwards' to non-

state actors". Benadusi (2014) describes the phenomenon of previous and contemporary DRR educational strategies that emphasize individual children and youth to reduce their own vulnerability phenomenon as "governance through the responsibilization of children and youth". Thus, the importance of governments as exactors and enforcers of policies is central to addressing disaster risk in the education sector.

In the efforts towards DRR in education across the world, a variety of agents and actors emerge. NGOs often operate at the local level to fill gaps where national governments fall short. Multi-lateral and bi-lateral institutions, such as the United Nations and the World Bank, offer large-scale investment towards a "culture of resilience". The scientific community offer technical expertise, especially as it related to construction and retrofitting. Lastly, national governments themselves act as the duty-bearers and ultimate arbiters of change.

Research Questions

While an abundance of literature, grey literature, and case studies report on elements of CSS at the individual school level and at the national level, no research to date measures and compares CSS policies across multiple national settings. The literature revealed that there has not yet been an effort to estimate the presence of CSS policies. This thesis will address this gap. Thus, the overarching research question guiding this thesis is:

(1) Regionally and combined, to what extent have nations developed policies to reduce disaster impacts in the education sector?

The sub-questions guiding this research include:

(A) Which part of the CSS Framework is most well addressed by these policies and which is least well addressed?

(B) *What are the facilitators and blockers of CSS policy development, and how can they*

be grouped into overarching themes?

(C) *Is there a statistical relationship between the facilitators of policy development and*

certain policies? If so,

(D) *What is the nature of that relationship?*

Organization of Thesis

Chapter 2 discusses the research methodology, including the creation of the CSS

Baseline Survey, the process of creating the CSS Baseline Dataset, the types of data involved

within the analysis, and the three analysis procedures. Three different analyses were

conducted: first, the reporting of simple percentages on the presence of policies/activities. The

second set of analyses qualitatively investigate potential facilitating and blocking variables of

policy development, and how these variables are supported by the literature. The third analysis

investigates how facilitating and blocking variables influence the presence of policy. These

variables include Gross National Income per Capita (GNIPC), Evidence, Advocacy, Lack of

Funding, Lack of Capacity, and two regional identifiers.

Chapter 3 reports the presence of CSS policies as percentages within each of the three

geographic regions, as well as a combined result. The results are divided into five sub-sections;

a general overview, the Enabling Environment, and Pillars I through III. A discussion of the

results and examples of these policies from the responding countries is woven throughout the

chapter to aid reader understanding the importance and function of CSS policy under scrutiny.

Chapter 4 discusses the results of the themes that emerged from the analysis of the

facilitating and blocking variables, as well as the results of the regression analysis conducted on

them. The top two facilitating and blocking themes are discussed qualitatively. Accompanied at the end of each qualitative discussion of each of the four themes are the results and discussion of the regression analysis.

Chapter 5 presents the results and discussion of the four regression analyses.

Finally, Chapter 6 provides recommendations for policy advocacy, future research, and future iterations of the CSS Baseline Survey. The recommendations for policy advocacy are based upon the results of the CSS Baseline Survey, which exposed areas of improvement. The recommendations for future research suggests lines of inquiry that could support a more in-depth understanding of the impact of CSS policies. The final section includes recommendations for future iterations of the CSS Baseline Survey based upon lessons learned during the analysis of the data.

Chapter 2: Methodology

In 2017, Save the Children, in consultation with international and regional partners, developed a CSS Baseline Survey to take stock of CSS policies in 68 countries. The results of the survey were compiled and organized into a singular dataset, which was analyzed in this thesis.

The next four sections of Chapter 2 discuss (1) the creation and administration of the CSS Baseline Survey, based upon communications with Kate McFarlane, a representative from Save the Children who managed the development, distribution, and data collection for the CSS Baseline Survey; (2) the creation of the dataset used within the analysis; (3) the properties of the data; (4) and the types of analyses used within the thesis.

CSS Baseline Survey Creation

In 2017, Save the Children in partnership with the Global Facility for Disaster Risk Reduction (GFDRR) distributed a survey to collect baseline data on national CSS policies and programs. The overall objective of the survey was to advance the global agenda on CSS, and to promote monitoring of progress towards risk reduction and resilience in the education sector.

Survey questions were designed by a 'pracademic' from Save the Children. The 'CSS Targets and Indicators' – a document developed by UNESCO to guide policy and program development – was the basis of the survey questions. Survey questions covered existing national polices on school safety, as well as any enablers and blockers to their development and implementation. It included: (1) Enabling environment and risk indicators (policies for disaster management in the education sector, school safety focal points, budget, access to hazard/risk data, data collection about hazard impacts), (2) Pillar 1 Safer Learning Facilities (new school construction, maintenance, and use of schools as temporary shelters), (3) Pillar 2 – School

Disaster Management (disaster management plans at national and sub-national levels,

response preparedness procedures and drills, and capacity development), (4) Pillar 3 – Risk

Reduction and Resilience Education (public awareness, formal curriculum). The factors that

facilitate or block policy development or implementation were selected by the drafting teams

and reviewers based upon case studies, literature, and their own field practice.

The survey questions were vetted by experts First, the questions were shared with the

GADRRRES steering committee and Save the Children advising academics. Certified translators

translated the survey questions into Spanish, Arabic, French, and Russian.

The survey was completed using one or more of the following methodologies. First,

three consultants were contracted to populate survey responses based upon countries'

'Education Sector Snapshot for Comprehensive School Safety' and Education in Emergencies

(EiE) documents. Second, Save the Children staff working within respective countries populated

responses. Third, surveys were e-mailed to the countries' Ministry of Education focal point.

Fourth, interviews were conducted face-to-face or over the phone with Save the Children staff

or consultants. In countries without a Save the Children representative, the survey was sent

directly to the DRR focal point within each Ministry of Education (MoE). Some surveys were

validated by the respective countries' MoE or national disaster management organization

(NDMO) key personnel or designated focal point. This data collection process spanned eight

months (August 2016 to March 2017).

The 68 countries selected to receive the survey were chosen based upon two factors;

their high disaster risk ranking as cited in the 2015 World Risk Report, and Save the Children

and/or partners having an established relationship with the country's government. Countries that were members of the Worldwide Initiative for Safe Schools (WISS) were also prioritized.

Dataset Creation

The data generated from Save the Children's CSS Baseline Survey and previous analysis of subsets of the data generated four Excel files that contained the raw data in differing formats. These files were merged together to create a single file that contained all responses. Some responses were in French, Spanish and Portuguese, which were converted into English. Each response was assigned a coded value that corresponded with a specific response type. Coding was performed in Excel. The original CSS Baseline Survey was composed of 37 survey questions. Many questions were composed of several questions or sub-questions at a time (See Table 2.1). Because many of the survey questions asked several questions at once, many variables were created from a single survey question. The final dataset consisted of information on 68 countries and 195 distinct variables. Upon the organization, translation, and coding of the data in excel, the dataset was transferred to Statistical Package for the Social Sciences (SPSS). Because SPSS treats blank cells as unknown, all "Unknown" responses selected by respondents were converted into blank cells.

Figure 2.1 Survey question that asks several things at once

22. Does your government have a policy requiring the multi-hazards assessment of all schools and the prioritization for the replacement, or strengthening of safety issues identified in unsafe schools (for example, retrofit, remodel, rehabilitation)?

To allow geospatial variation to emerge, we grouped these 68 countries into three regions: Africa, Latin America and the Caribbean (LAC), and the Asia Pacific. Table 2.1 shows the countries organized by geographic region. One East European country did not fit in these

Table 2.1: Countries organized by geographic region

Africa (25)	Asia Pacific (24)	LAC (18)	Europe (1)
Algeria[1]	Afghanistan[1,2]	Antigua and Barbuda[1]	Croatia[1]
Angola	Bangladesh[1,2,3]	Bolivia[1,2]	
Burkina Faso[1,2]	Bhutan[1,2,3]	Brazil[2]	
Chad[2]	Cambodia[1,2]	British Virgin Islands[1]	
Democratic Republic of the Congo[2]	Fiji[2,3]	Chile[1,2]	
Republic of the Congo[1]	India[2,]	Colombia[1,2]	
Cote d'Ivoire[2]	Indonesia[1,2,3]	Costa Rica[1,2]	
Ethiopia[1,2]	Japan[2]	Dominican Republic[1,2]	
Ghana[1,2]	Kiribati[1]	Ecuador[4]	
Kenya[2]	Laos[2,3]	El Salvador[1,2]	
Madagascar[2]	Malaysia[1]	Guatemala[2]	
Malawi[1,2]	Maldives[1]	Honduras[1,2]	
Mali[2]	Myanmar[1,2,3]	Panama[1,2]	
Namibia[1]	Nepal[2,3]	Paraguay[1,2]	
Niger[2]	Pakistan[1,2]	Peru[2,4]	
Nigeria[1,2]	Papua New Guinea[1,2]	Saint Kitts and Nevis[1]	
Rwanda[2]	Philippines[1,2,3]	Saint Lucia[1]	
Senegal[1,2]	Solomon Islands[2,3]	Saint Vincent and the Grenadines[1]	
Sierra Leone[2]	Sri Lanka[2]		
South Africa[1,2]	Thailand[2,3]		
Sudan[1]	Tonga[1]		
South Sudan	Tuvalu[1]		
Tanzania[1]	Vanuatu[1,2,3]		
Togo[1]	Vietnam[1,2,3]		
Uganda			

1. Country data was verified by relevant government agency in country.

2. Save the Children has a country office, member office or implementing partner.

3. Country has an Education Sector Snapshot for Comprehensive School Safety and Education in Emergencies, which was used to prepopulate surveys.

4. Croatia was included in global averages only. Monserrat was removed from the analysis due to lack of responses.

regions and was only included when reporting global averages. One country, Montserrat, was removed from analysis due to a lack of responses.

Data Types

Survey questions asked both 'overarching' questions – those that asked about the presence of a policy or activity, and 'dimensionality' questions – those that asked about details of the policy or activity. Dimensionality questions were concerned with the range of topics covered within a policy, the amount of text dedicated to the topic within the policy, the amount of budgeting allocated towards an activity, and the frequency and type of data collected.

Most of the survey questions were categorical – where response types did not have an ordered or numeric values. These questions mostly consisted of "yes", "no", "other", "unknown", or blank response types (See Table 2.2). Some questions were ordinal – where response types did have an ordered scale. These questions often quantified the 'dimensionality' of a policy.

Figure 2.2: An example of a nominal question within the CSS Baseline Survey


```
5. Does your national government have a disaster management policy?
Select one.
A disaster management policy is a policy focused on improving systems and structures to reduce the
impact of hazards, and disasters, and to manage response and recovery.


  ◯  Yes

  ◯  No

  ◯  Other

  ◯  Unknown
```

Analysis Procedures

This thesis uses a mixed-methods approach to conduct inductive analysis and scoping of the CSS Baseline Dataset and collected disaster risk reduction policy documents. Through inductive analysis, themes based on the exploration of the raw data were developed, allowing

"research findings to emerge from the frequent, dominant, or significant themes inherent in raw data, without the restrains imposed by structured methodologies" (Thomas, 2006). However, while this research used inductive analysis as a guiding research principle, the themes and ideas present in the minds of the survey designers informed the inquiry of this research. Furthermore, the approach allows for scoping, the "mapping" or summarization of a range of evidence to reveal the breadth and depth of a field (Levac et al, 2010).

The survey results were reported in three ways. First, percentages were used to express the proportion of positive policy presence, and segments of policy documents were used to support the results. Second, themes were calculated by grouping like facilitating and blocking variables. Lastly, regressions were run on facilitating and blocking variables against combined policy scores and individual policy variables.

Percentages

Positive responses were reported as percentages (the total of positive responses over total responses). Segments of relevant policy documents that were uploaded to the Survey Monkey, and those publicly available on the internet, were used as examples to give context to the results.

Mean percentages of CSS policy coverage were calculated per region and broken out by Enabling Environment, CSS Pillar, and by the total amount of policies present combined. This was done by taking the sum of each overarching policy question, and dividing it by the total number of variables being summed.

Themes

The original survey offered 15 variables that facilitate policy development and 20 variables that block policy development. Respondents selected all variables that applied in their country context. This process resulted in a series of binary "yes" (1) or "no" (0) values per each country per facilitator or blocker.

As shown in Table 2.3 – themes were conceptually created from the facilitators and blockers of policy development by grouping like variables, or items. Four facilitative themes and six blocking themes emerged from the grouping process. The themes that emerged for the facilitators of development were 'Advocacy', 'Evidence', 'Capacity', and 'Culture'.

Theme scores were obtained by computing a score using the binary values making up each "item" – which refers to any of the facilitating or blocking variables. The binary values were first summed (*item sum)*, and the *item sum* was divided by the number of times each factor in a theme was selected (*count of items*). Table 2.4 shows the process to achieve the final scores for each theme. A higher score indicates the greater degree of influence.

For example, the theme "Evidence" is composed of 3 "items" – 'professional journalists report', 'there is evidence on the impacts of CSS', and 'there has been large disasters or frequent hazard impacts'. The binary values of each of these three items were summed, and the sum was then divided by the 3 items. The final value represents an indicator for the combined frequency of which these items were selected by the respondents.

Nearly a third of responding countries did not provide answers in this section of the survey, thus 44 countries remained in the analysis.

Table 2.3: Facilitators and Blockers of development organized by theme

Theme	Facilitator of Development (15)	Blocker of Development (20)
Advocacy	Elected officials involved Civil Society involved Education sector officials Disaster management officials involved Continued advocacy on CSS for a long period	Government leaders do not support Government leaders have not shown commitment Civil Society not involved Education sector officials are not committed to CSS Disaster management officials are not committed to CSS
Capacity	Government has a clear framework Government has good technical capacity The government is part of regional or global efforts to promote CSS The government coordinates with international and national agencies on CSS	Government staff are too busy to conduct CSS The government does not have a framework for CSS The government does not have a sufficient technical capacity
Culture	Education is valued by the public Private sector supports CSS financially There has been a focus on post-disaster response	The public is not focused on CSS The private sector is not interested in CSS Public policy is focused on disaster response The culture does not value education
Evidence	Professional journalists report on CSS There is evidence on the impacts of CSS There has been large disasters or frequent hazard impacts	There is not strong evidence that supports CSS Professional journalists do not report on CSS
Funding		Funding has not been sufficiently allocated Funds are not distributed on time
Strategy		The National government doesn't have jurisdiction over sub-nationals There is no strong guidance for sub-nationals provided The policies are not aligned well with other policies The policies were implemented too quickly

The two themes that scored the highest (F: Evidence and Advocacy; B: Funding and Capacity) among the facilitators and blockers were selected to discuss qualitatively using the literature.

Table 2.4: Theme score calculation

	Theme	Item Sum	Count of Items	Theme Score
Facilitators	Evidence	59	3	19.7
	Advocacy	92	5	18.4
	Capacity	57	4	14.3
	Culture	32	3	10.7
Blockers	Funding	46	2	23.0
	Capacity	51	3	17.0
	Culture	35	4	8.8
	Advocacy	39	5	7.8
	Evidence	15	2	7.5
	Strategy	28	4	7.0

Regression

Four regression analyses (referred to as models) were conducted in this thesis. Their purpose was to confirm or reject relationships between the facilitators and blockers of policy development and certain policies.

The CSS Baseline Survey was used to generate all dependent variables, and all but one of the independent variables. Each of the dependent variables represent an 'indicator', one for the Enabling Environment and three CSS Pillars. The dependent variable used in Model 1 represents the Enabling Environment, the dependent variable in Model 2 represents Pillar 1, the dependent variables in Model 3 represents Pillar 2, and the dependent variable in Model 4 represents Pillar 3.

The facilitators and blockers of policy development from the CSS Baseline Survey went through a process to transform them into the independent variables. First, the facilitators and blockers were conceptually grouped together to produce overarching "themes". Then, a scoring

process revealed which of the themes was most frequently selected (as discussed in the above "Themes" section). Composite variables were generated from the two themes with the highest scores in both facilitating and blocking categories. A reliability analysis was conducted post-ante on the validity of the theme constructs.

Dependent Variable Creation

Prior to the calculation of the dependent variables, each survey response was reviewed against the supporting qualitative information to minimize the number of blank or unknown responses. The written qualitative information often provided further context, and often even links to guidance, policies, or reports. When evidence was found to suggest that a policy or activity was or was not present, blanks or unknowns were changed to match the evidence. After this data cleaning was completed, dependent variables were generated for the analysis.

Four dependent variables were generated from the dataset. The 'DRR in National Education Policy' variable captures whether a country includes language on DRR in their national education policy. 'DRR in National education Policy' was a binary variable that measured whether a country includes language on 'disaster risk reduction' within their national education policies, where 'yes' equaled 1 and 'no' equaled 0. The 'School Risk Assessment' variable was a binary variable that measured whether a country funded their hazard risk assessment or replacement of their identified unsafe building stock. Where respondents indicated that the government had allotted funding to hazard risk assessment and replacement, a value of '1' was assigned, and a value of '0' was assigned when it was not. The 'Guidance' variable captures the amount of guidance provided by a country. Guidance was calculated by taking the sum of five guidance topics. The final variable, 'Teacher Training Topics', captures the

amount of topics covered in teacher training programs (disaster risk reduction, resilience, and climate change). Teacher Training Topics was calculated by taking the sum of the three topics.

Independent Variable Creation

Seven independent variables were used within the analysis. They include the top two identified facilitative and blocking themes (Evidence, Advocacy, Lack of Funding, and Lack of Capacity), a LAC dummy variable, an Africa dummy variable, and Gross National Income per Capita (GNIPC). All but one of the independent variables were generated from the CSS Baseline Survey. The remaining variable, GNIPC, was downloaded from the World Bank database.

A composite variable was created from the two highest scoring themes for both the facilitators and blockers of policy development. The composite variables were calculated by taking the sum of each variable organized under the theme, and dividing it by the number of variables within the theme. Thus, the final independent variables generated from this process included Advocacy and Evidence (Facilitators) and Lack of Capacity and Lack of Funding (Blockers). A reliability analysis using Cronbach's Alpha was conducted to calculate the internal consistency of the items grouped within each theme.

Further, two other dummy variables were created to account for geographic region. The first, "LAC" – a dummy variable that accounts for countries that are, or are not, those within the Latin America or Caribbean region. The second, "Africa" – a dummy variable that accounts for countries that are, or are not, those within the African region.

The final variable, GNIPC, was downloaded from the World Bank. GNIPC is defined as the domestic and foreign earning claimed by habitants of a country divided by the number of individuals within that country for the year 2018.

Regression Model Characteristics

Different types of regressions were run based upon the nature of the dependent variables. A binary logistic regression was used for the DRR in National Education Policy and School Risk Assessment variables. Because Guidance and Teacher Training Topics were counts variables, and because their variances did not match their means, a negative binomial regression was used in the analysis. A negative binomial regression is a generalized poisson regression, and is used when the dependent variable is a non-negative count of observations.

Model 1 refers to the analysis of 'DRR in National Education Policy,' Model 2 refers to 'School Risk Assessment', Model 3 refers to 'Guidance', and Model 4 refers to 'Teacher Training'.

Countries were removed from analysis when the respondents did not respond to the survey questions associated with the independent variables. Forty-four out of the 68 countries were included in the analysis. A p-value of .1 was considered statistically significant.

Tables A.1 in the appendix shows the basic summary statistics of the variables used within the analysis. Basic summary statistics, or descriptive information was generated for each of the dependent and independent variables (mean, median, standard deviation, minimum, and maximum). Those Tables can be found in Appendix A.

Limitations

This study suffers from several potential limitations. These include the lack of prior research on the same subject, an unsystematic sampling, small sample size, self-reported data, the measures used to collect the data, and the reliability of the data.

An incomplete sample size reduced the efficacy of the results when discussing themes emerging from geographic regions. The dataset is composed of 68 countries predominantly located in the LAC, Africa, and the Asia Pacific. However, data was not collected on many countries within those regions, and are therefore absent from the dataset. Thus, the results and themes generated from the analysis may not be representative of the entire region.

The dataset is composed of self-reported data that, while validated with government focal points in many cases, was not corroborated or peer-reviewed by independent sources. The dataset is a result of the CSS Baseline Survey completed by Save the Children staff who worked, to varying degrees, alongside relevant government officials to indicate whether CSS-related policies exist, and what facilitates the development of those policies. Thus, policies and facilitators as expressed in the dataset may be over or under reported and may not be an accurate representation of a country's policy presence. Further, respondents appear to have a bias toward "unknown" over "no" responses. These unknowns could reflect difficulty interpreting the meaning of the questions across vastly different national political contexts; they may also indicate an aversion to publicly admitting that a policy related to school safety did not exist. Independent reviewers may have been more inclined to select negative answers when criteria are found to be unmet.

Another limitation of the survey, and thus the dataset, is the method that was chosen to measure the depth of policies in some questions of the survey. The measurement used to

capture the depth of policies is by the length of the written policy. However, the length of a

written policy may not be a true measure of its depth. For example, an education sector policy

that only discussed disaster management in one sentence, may, or may not, be fewer effective

than one that discusses disaster management in a full paragraph. Therefore, in this thesis,

analysis focuses on whether the policies exists, rather than on the depth or effectiveness of

those policies. Furthermore, the dataset may not fully capture the concept of CSS in its entirety,

and may be wanting of certain indicators.

It is out of the scope of this study to evaluate the effectiveness of CSS policies, which is

an important gap for future research. To conduct future research, data that is currently

unavailable or that does not exist must be collected. Data relating to education sector deaths,

injuries, collapse and damage must be made uniformly publicly available. In its absence, the CSS

Baseline survey may be a starting point; most helpful might be the survey questions that

indicate whether countries collect information on deaths, injury, or loss to the education

sector. Countries that do collect data may be amenable to sharing this information for future

research.

Chapter 3: Results and Discussion of CSS Policy Presence

This section reports on the results of the CSS Baseline Survey, and the themes and trends that emerge from the data. This sections first discusses the Enabling Environment, followed by Pillars 1, 2, and 3.

National structures and policies around education and emergency management creates an important context, or enabling environment, in which stakeholders for school safety must work. Beyond policy, the presence or absence of personnel, funds, 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. Below, I explore the results of the CSS Baseline Survey in more detail by examining responses to specific questions within the survey sections on Enabling Environment, and each of the three pillars of the CSS Framework. I do so by reporting the frequency in percentages at which the respondents reported positively to all variables reported in the CSS Baseline Survey. To add context to some of the variables in the analysis, extracts from national policies are included within the discussion and reporting of the results and the end of each section.

Overview

The mean percentages of CSS policy coverage are presented in Table 3.1. Mean percentages are presented for all countries and by the 3 regions. Mean percentages are also broken out by the Enabling Environment, CSS Pillar, and by the total amount of policies present. The results indicated that all responding countries combined on average have adopted about 48% of CSS policies (see Table 3.1). However, the percent of average policy coverage varies widely by the three surveyed regions, with African countries considerably below the global

average, and with LAC countries most likely to have adopted policies, on average. The Enabling

Environment policies are the most frequently present policies in comparison to the CSS specific

policies. This trend can be explained by the relative necessity of Enabling Environment policies,

which consist of national education or disaster management policies – of which most countries

already have.

Table 3.1: Mean percent and S.D. of policies by EE, P1, P2, P3, and combined

	Africa		Asia Pacific		LAC		Global	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Enabling Environment	48%	26%	76%	20%	69%	20%	64%	25%
Pillar 1	29%	25%	46%	23%	59%	20%	44%	26%
Pillar 2	19%	20%	48%	25%	70%	31%	44%	32%
Pillar 3	25%	28%	56%	30%	52%	34%	44%	33%
CSS Total Percent	33%	16%	52%	15%	62%	18%	48%	20%

Enabling Environment

This section reports and discusses the results of the Enabling Environment questions

from the Comprehensive School Safety Global Baseline Survey, and how results vary regionally

and combined. The 'Enabling Environment' in the CSS framework is defined as the baseline

national structures, initiatives, and policies that should exist as beginning points for CSS

initiatives.

Regarding the Enabling Environment, the survey assessed national policies, budgeting,

staffing, and data collection. Survey questions asked both 'overarching' questions about the

presence of a policy or activity and 'dimensionality' questions that measure details about the

policy or activity. Dimensionality questions are concerned with the range of topics covered

within a policy, or the amount of text dedicated to the topic within the policy, or the amount of budgeting allocated towards an activity, or the frequency and type of data collected.

On average, countries have adopted approximately 64% of the overarching enabling policies or activities that had been included in the survey (See Table 3.1). Asia Pacific countries are most likely to have adopted Enabling Environment policies. On average, Asia Pacific countries have adopted 76% of overarching Enabling Environment policies. Responding countries in The LAC followed the Asia Pacific region, with an average of 69% adoption of overarching policies.

The majority of responding countries (88%) indicate that they have a national disaster management policy. National disaster management policies deal with organizing preparedness, response, recovery, and mitigation, efforts, as well as the vertical coordination between government echelons, and the horizontal coordination across agencies, and their myriad roles and responsibilities prior to and after disasters occur (Gerber, 2007). A smaller subset (74%) of countries' national disaster management policy refer to the education sector (see Table 12). The education sector is mentioned within national disaster management policies at varying degrees; 43% indicate that a section or a paragraph is dedicated to the education sector, 15% indicate that only a sentence is dedicated to the education sector, and 7% indicate that the education sector is mentioned throughout the policy.

Table 3.2: Percentages of responding countries with enabling policies and resources

	Global	Africa	Asia Pacific	LAC
	N=68	N =25	N=24	N=18
	%	%	%	%
Nat'l disaster management policy	88	72	100	9
references education sector	74	64	75	83
Education sector policy	93	96	100	78
references DRR	59	64	54	56
references disaster response	46	52	46	33
references DRR or disaster response	39	64	50	55
Ed sector EM or EiE policy	56	24	83	61
Personnel allocated	63	44	79	72
Ex-ante budget	44	24	58	50
Disaster impacts data collected	63	40	67	89

While the presence of a national disaster management policy is high among each of the three regions, Asia Pacific (100%) and LAC (94%) countries are most likely to have adopted national disaster management policies. Similarly, each region has a high frequency of mentioning the education sector within their disaster management policies. LAC countries are most likely to mention the education sector within their policies. About 83% of LAC countries mention the education sector within their disaster management policy (See Table 3.2).

The majority of countries dedicate about a section or a paragraph to the education sector. While African countries fewer frequently have national disaster management policies relative to Asia Pacific and The LAC, African countries that do have national disaster management policies more frequently mention the education sector in them.

An overwhelming majority (93%) of countries have a national education policy. National

education policies deal with the structure, organization, and rules that govern education

systems with a state. Over half of responding countries (56%) had either an education sector

disaster management policy or an education in emergency (EiE) policy. A quarter (25%)

indicated that they have 'both' an education sector disaster management policy and EiE policy.

Fewer responding countries had only a disaster management policy (21%), and even fewer had

only an EiE policy (10%).

Respondents were also asked if their countries have education sector disaster

management or education in emergencies policies. An education sector disaster management

policy focuses on improving systems and structures to reduce the impacts of hazards and to

manage response and recovery, while education in emergencies policy establishes the

structures for education to continue during times of emergency. Over half of responding

countries had either an education sector disaster management policy or an education in

emergency (EiE) policy (56%). Of the responding countries, 25% indicated that they have 'both'

an education sector disaster management policy. Fewer responding countries had only a

disaster management policy (21%), and even fewer had an EiE policy (10%) . Some countries

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 (see Antigua and

Barbuda and Saint Kitts and Nevis). Only a quarter of countries have both an education sector

disaster management policy as well as an education in emergencies policy. These countries

were Antigua and Barbuda, Bhutan, Cambodia, Chile, Croatia, Dominican Republic, Ecuador, Fiji,

Guatemala, India, Indonesia, Malaysia, Namibia, Peru, Philippines, Solomon Islands, and

Vietnam.

Governments were asked about the dimensionality of their national education sector

disaster management or education in emergencies policies. Specifically, countries were asked if

their policies covered topics such as risk assessment, safe school facilities, school disaster

management, risk reduction and resilience education, risk reduction, standard operating

procedures, fire and hazard drills, response preparedness, continuity planning, student

volunteers, and teacher qualifications (see Table 13).

Table 3.3: Topics covered within Disaster Management or EiE policies

	Global	**Africa**	**Asia Pacific**	**LAC**
	N=68	N=25	N=24	N=18
	%	%	%	%
Risk assessment	56	40	63	67
Safer school facilities	41	24	54	44
School disaster management	59	40	71	67
Risk reduction and resilience education	62	40	71	78
Risk Reduction	59	36	71	72
SOPs for disasters and emergencies	46	24	58	56
Regular fire/hazard drills	46	20	58	61
Response Preparedness	46	28	50	61
Education Continuity Planning	54	44	50	72
Role of student/youth volunteers	24	8	29	39
Teacher qualifications for safe schools	22	5	5	5

The three most frequently included topics national education sector disaster

management policy or education in emergencies policy were risk reduction and resilience

education (62%), disaster management (59%), and risk assessment (56%) were the most frequently included topics within plans. The topics least frequently included were teacher qualifications for safe schools (22%), and the role of student or youth volunteers in emergencies (24%), and safer school facilities (41%). Most countries dedicate a section or a paragraph to each topic.

Fiji's Education in Emergency policy stood out for its breadth and depth of topic coverage. The policy discusses multi-hazard risk assessment, safe school facilities, risk reduction and resilience education, risk reduction, drills, response preparedness, continuity planning, and teacher training (Fiji Ministry of Education, 2014)

Governments were asked if their national education authority employs someone to oversee disaster risk reduction or education in emergencies. Survey results indicate that a little over half (56%) of countries employ someone to oversee disaster risk reduction, and 57% employ someone to oversee education in emergencies. A little over a quarter (31%) of countries staff the position part-time, and a quarter (25%) staff the position full-time (See Table 14).

The respondents were asked to what extent the disaster risk reduction or education in emergencies position covers risk assessment as well as Pillars I through III of CSS. On average, countries indicated that the position is responsible for about three out of the four of topics. Pillar II, school disaster management, is the most frequently covered topic is risk reduction and resilience education (63%), followed by Pillar III (57%), Pillar I, safe school facilities (34%), and lastly, education sector risk assessment (49%) (See Table 3.4).

Table 3.4: Personnel Allocated to DRR and their attributes

	Global	Africa	Asia Pacific	LAC
	N=68	N=25	N=24	N=18
	%	%	%	%
Person assigned to disaster risk reduction?	56	36	7	67
DRR Person part time	31	28	38	28
DRR Person full time	25	8	33	39
Person assigned to EiE?	57	36	7	67
EiE Person part time	35	20	54	33
EiE Person full time	22	16	21	33
Does they look after education sector risk assessment?	49	32	50	72
Does they look after Pillar 1?	50	28	58	72
Does they look after Pillar 2?	63	36	75	89
Does they look after Pillar 3?	57	36	58	89

Much of the effectiveness of CSS policies is premised on sufficient funding to carry out risk assessment, risk reduction and resilience programming. Combined, fewer than half of governments allocate budgeting towards CSS. Combined, 44% of governments allocate funding towards risk reduction and resilience programming, and 32% allocate budgeting towards education in emergencies (See Table 15). Survey results indicate that a higher percentage of countries only partially fund these programs. A higher percentage of governments (53%) indicated that they are able to access "other" funding sources during times of emergency.

Regionally, Asia Pacific countries are most likely to in allocate budgeting for risk reduction and resilience programming.

Table 3.5: Budgeting for DRR and EiE

	Global	Africa	Asia Pacific	LAC
	N=68	N=25	N=24	N=18
	%	%	%	%
Budgeting for risk reduction and resilience programming	44	24	58	50
Inconsistent Funding	26	16	36	22
Regular Funding	18	8	21	28
Budgeting for education in emergencies	32	20	42	33
Inconsistent Funding	16	8	25	11
Regular Funding	16	12	17	22
Funding available during emergencies	69	64	75	72
Sometimes	16	8	17	28
Yes	53	56	58	44

Combined, the majority of countries indicated that their education authorities collect risk data to support planning for school safety. About 63% of education authorities collect risk data (See Table 3.6). Over half of countries (59%) collect data using both the education sector as well as government agencies. Fewer countries solely use data collected by either government agencies (15%) or the education sector (4%) alone. The results indicate that while many countries collect risk data, they do not update the data on a consistent basis. Only 16% of countries update their risk data on a yearly basis, 9% on a half-yearly basis, and 4% on a monthly basis.

Table 3.6: Risk data collection, source, and frequency of update

		Global	Africa	Asia Pacific	LAC
		N=68	N=25	N=24	N=18
		%	%	%	%
	Risk data used to support school safety	63	4	67	89
Source of	Education Sector	4	8	4	0
	Government agencies/research institutions	15	4	21	22
	Education Sector/Research Institutions	44	28	42	67
Frequency risk	Monthly	4	0	4	11
	Half-Yearly	9	12	4	0
	Yearly	16	8	21	11
	Every 5 years	2	0	4	22

Combined, governments were asked about the type of risk data they collect, as well as the frequency the data is updated. Specifically, governments were asked if they collect data on school deaths, injuries, infrastructure damage, education outcomes, days lost to school closure, and school attendance pre and post disaster. On average, governments collect data on four out of the six data topics. The most commonly collected topics are on school infrastructure damage (74%) and school deaths (71%). conversely, countries indicated that the least commonly collected topic is long-term educational outcomes (46%) (See Table 3.7).

Table 3.7: Collected risk data topics

	Global	Africa	Asia Pacific	LAC
	N=68	N=25	N=24	N=18
	%	%	%	%
Deaths	71	44	88	83
Injuries	66	40	88	72
Infrastructure damage	74	40	88	100
Long-term educational outcomes	46	40	42	56
Days of school closure	65	40	75	83
School attendance pre/post disaster	63	40	71	83

Certain risk data variables are more systematically collected on than others. Across the three surveyed regions, infrastructure damage (34%) and deaths that occur after disasters within schools (34%) are the variables most frequently collected upon within the surveyed countries (See Table 3.7). The least commonly systematically collected variables are long-term educational outcomes (26%) and school attendance pre/post disaster (28%).

Table 3.8: Risk data collection methodology ('Systematic' or 'Limited')

	Deaths		Injuries		Infrastructure Damage		Long-term educational outcomes		Days of school closure		School attendance pre/post disaster	
	L	S	L	S	L	S	L	S	L	S	L	S
Global N=68	37	34	37	29	40	34	19	26	32	32	35	28
Africa N=25	28	16	828	12	20	20	8	32	20	20	20	20
Asia Pacific N=24	38	50	42	46	46	42	17	25	38	38	33	38
LAC N=18 %	50	33	44	28	56	44	33	22	44	39	56	28

* L = Limited, S = Systematic

Discussion

In sum, survey results indicate that almost half of the surveyed countries have only adopted half of the eight overarching Enabling Environment policies or activities. An overwhelming majority of countries have a national disaster management policy and an education policy. The overwhelming presence of these policies can best be explained by the common understanding that education is a fundamental requisite for functional society, and that a common framework must be in place to protect life, the environment, and property when emergencies occur. Only two countries, Cambodia and Myanmar, mention disaster risk reduction and disaster response throughout their national education policy. The prevalence at which Cambodia and Myanmar include disaster risk reduction and disaster response within

their national education policies may be attributed to the strong presence of non-governmental and inter-governmental agencies such as Save the Children and the United Nations that have worked in tandem with their Ministries of Education to institutionalize and embed disaster risk reduction into education (Action Aid, 2015; Lim et al, 2016).

However, less frequently do countries have education-sector specific disaster management or education in emergencies (EiE) policies. The low frequency of such policies might be explained by the high presence of national disaster management policies, and the assumption that the national disaster management policy includes provisions for the education sector in times of emergency, and thus negates the need for a stand-alone education-sector specific disaster management policy. Indeed, the results indicate that countries without an education-sector specific disaster management or EiE policy have a high frequency of a national disaster management policy that refers to the education sector.

At the same time, almost half of all surveyed countries indicate that they cannot locate funding in times of an emergency – but even less frequently do national education budgets set aside provisions themselves for education in emergencies or risk reduction and resilience programming. A lower percentage of governments allocate funding towards ex-ante disaster risk reduction programs, but at a minimally higher number are able to secure outside funding sources when emergencies occur. This is consistent with global trends, whereby spending on disaster risk reduction is largely on response and reconstruction (Kellett & Caravani, 2013).

Lastly, the majority of countries indicated that they collect some type of risk data. The data most frequently collected on is infrastructure damage and hazard frequency as opposed to death or injury. 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 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 (Baez et al, 2010; Willis Towers Watson, 2017).

Pillar I: Safe School Facilities

This section reports and discusses the results of Pillar I from the Comprehensive School Safety Global Baseline survey, and how results vary regionally and combined. Pillar I addresses school safety through hazard-resilient design and construction of new and existing schools. Governments were asked to respond to questions about regulations and guidance on school construction, multi-hazard assessment, maintenance, and schools as temporary shelters. Death, injury, and economic loss due to school building collapse or damage is avoidable when safety measures are comprehensively considered during the planning and construction phases of school facilities. School construction planning must include provisions on safe site selection, hazard-resilient design, builder training, and construction supervision.

On average, governments have adopted fewer than half (44%) of the fourteen Pillar I policies and activities (see Table 3.1). Combined, the most progress has been made in incorporating safe design practices into school construction. However, funding for hazard assessment and the retrofit and replacement of existing schools, ensuring the maintenance of school buildings, and guidance on good practices for schools as temporary shelters lags behind.

Survey results indicate that LAC countries are most likely to adopt Pillar I policies. On average, responding LAC countries have adopted about 59% of the Pillar I policies covered in the survey.

Respondents were asked if their school construction policy includes safe site selection, design, construction, and monitoring of construction. On average, governments incorporate three out of the four of the safe construction elements into their policies, with safe design and safe construction as the most widely incorporated topics. Almost three quarters (74%) of countries have both safe design and safe construction written into their school construction policies (see Table 3.9). Conversely, safe site selection and monitoring of school construction are the least covered topic, with only about two-thirds of the countries (66%) including both respectively in their school construction policies.

Table 3.9: National school construction policies

	Global	**Africa**	**Asia Pacific**	**LAC**
	N=68	N=25	N=24	N=18
	%	%	%	%
Safe site selection	66	56	63	83
Safe design	74	60	88	72
Safe construction	74	56	83	83
Monitoring of construction	66	60	58	83
Guidance support safe construction	78	68	83	83

The survey asked respondents if their country had regulation or guidance to support safe school construction. Of the 50 countries that have a policy requiring all new construction have safe construction provisions, 90% of those countries indicated that guidance exists to

support safe school construction. Regionally, Asia Pacific and LAC countries are most likely to have adopted such guidance.

While the majority of countries have policies to support structural mitigation of school buildings, it is fewer common for fewer countries to adopt policies to support non-structural mitigation. Non-structural mitigation involves 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. Approximately 34% have policies to support the maintenance and non-structural mitigation of school buildings. Regionally, LAC countries are most likely to have adopted (56%) non-structural mitigation policies (see Table 3.10).

Table 3.10: Structural and non-structural mitigation and maintenance

	Global	Africa	Asia Pacific	LAC
	N=68	N=25	N=24	N=18
	%	%	% (n)	%(n)
Routine maintenance	43	20	46	67
Non-structural mitigation	34	16	33	56
Annual maintenance	22	12	21	39

Although most countries have policies that cover safe site selection, design, construction, and monitoring of construction as well as guidance to support those policies, policies that fund multi-hazard risk assessment and the retrofit and replacement of schools are less common. Approximately 31% of governments indicate that they fund multi-hazard assessment of all school facilities (see Table 3.11). Even fewer (19%) of countries fund policies for the retrofit and replacement of unsafe schools.

Table 3.11: Funding for hazard risk assessment and retrofit of schools

	Global	Africa	Asia Pacific	LAC
	N=68	N=25	N=24	N=18
	%	%	%	%
Hazard risk assessment funded	31	12	33	50
Retrofit and replacement funded	19	8	17	39

Maintenance inspections ensure that school facilities continue to perform optimally (Hertz et al, 2009). The natural wear and tear of school buildings resulting from heavy usage often necessitates regularly planned maintenance. Maintenance inspections have dual functions; they ensure that necessary repairs or replacements occur, and also audit informal building modifications. Fewer than half (43%) of countries have a policy that requires the routine maintenance of school buildings, and fewer than a quarter of countries have a policy that requires the annual maintenance of school buildings. Further, of the thirty-four countries that do have policies that guide safe site selection, design, construction, and monitoring of construction, only one requires the routine maintenance of school buildings. Thus, both school facilities that have been built with the consideration of their region's local hazards, and school facilities that have not, are underserved by a lack of routine maintenance.

Respondents were asked about their governments' policies and guidance on the use of schools as temporary shelters. Specifically, respondents were asked if their policy or guidance includes limitations on schools as shelters, selecting appropriate shelters, managing shelters, and reimbursements to schools used as shelters. On average, governments include only one of these topics in their policies or guidance. Approximately 37% of governments include

limitations on schools as shelters, 32% include guidance on how to manage schools as temporary shelters, 27% include guidance on how to appropriately select schools as temporary shelters, and only 13% include language on reimbursement for damages and costs for use of schools as temporary shelters (see Table 3.12).

Table 3.12: Guidance on the use of schools as temporary shelters

	Global	Africa	Asia Pacific	LAC
	N=68	N=25	N=24	N=18
	%	%	%	%
Limitations on schools as temporary shelters	3	12	38	67
Selecting schools to be used as temporary shelters	2	1	29	39
Managing schools as temporary shelters	32	12	3	50
Reimbursing schools used as temporary shelters	13	8	13	2

Discussion

In sum, countries have adopted less than half of the fourteen Pillar 1 policies and activities. Many countries have policies that require school facilities be constructed to withstand their region's local hazards. However, far fewer countries have conducted multi-hazard risk assessment of existing facilities and replacement of their identified unsafe schools.

An overwhelming majority of countries do have provisions for safe site selection, design, construction, monitoring of construction. Of particular note is Vanuatu's school construction policy. Vanuatu's 'Minimum Quality Standards for Primary Schools' outlines fifteen strategic goals and educational reforms. Standard 9 deals with safe school infrastructure, and explicitly includes languages on safe design, site selection, monitoring of construction, and maintenance and upkeep. Specifically, the policy mandates that school buildings must be designed to

withstand the region's local hazards. Thus, schools must be both wind and seismically resistant to withstand cyclones and earthquakes. Safe site selection is also an explicit provision. The policy requires that schools must not be located in areas that are prone to hazards such as landslides, floods, or areas expected to be inundated by sea level rise. Further, the planning requires provisions on monitoring of construction and facility maintenance. The planning, construction, and post-construction phases are supervised by the Province's Facility officer. Lastly, the policy states that 'heads of schools', as well as the Provincial Facility Officer, must conduct an official inspection of school infrastructure at the start of each academic year. This safer construction policy will be further strengthened when implementation is supported by robust building codes and other technical guidance that can support communities as they implement this new policy.

On top of a high frequency of safe construction policies, the majority of have guidance to support safe school construction. Of particular note is Nepal's school construction guidance, titled *Guidelines for developing type designs for school buildings in Nepal*. The document is an official guideline for Nepal's Department of Education, and focuses on the planning and design of new schools. The guidance emerged from the government's response to widespread school building collapse triggered the 2015 Ghorka earthquake. To streamline reconstruction, the guideline offers a selection of tailored school designs to fit a range of social, physical, and environmental contexts. It incorporates a multi-hazard approach for safe site selection, design, construction, and monitoring of construction (Nepal Ministry of Education, 2016a).

Despite the high presence of building standards, few countries have policies that mandate routine structural and non-structural maintenance of school buildings. The lack of

non-structural mitigation policies in over half of the responding countries indicates a pressing area for action. Many classrooms have large objects such as chalkboards, projectors, screens, bookshelves, furniture, signage, and lighting that may become projectile during hazard events. Blunt force trauma caused by projectiles can be fatal or can cause complex, life-threatening medical conditions when medical care is already limited (Bartels & VanRooyen, 2012). To prevent death or injury from unsecured projectiles, governments, advocates, and practitioners must encourage school facilities managers to carry out non-structural mitigation. Education sector policies and guidelines can support that work.

While many countries have developed policies to protect the structural and non-structural integrity of future school buildings, school facilities constructed prior to these building codes may still be sub-standard. Indeed, the results indicate that the majority of countries have not yet conducted the multi-hazard risk assessment or replacement of identified unsafe schools. In many countries, the structural integrity of school buildings built prior to the standardization of building codes remain structurally substandard, and may pose a threat to students and educators. To reduce loss of life and infrastructure damage, policymakers will need to not only update national building codes so that all new buildings can resist their region's hazards, but create policies that help identify and strengthen, or replace, existing unsafe school buildings.

Some countries have already prioritized and executed the multi-hazard risk assessment of their school building stock. In 2016, Paraguayan officials enacted a series of policies that resulted in the hazard assessment for all school facilities in the country. The results indicated that 541 (15%) of Paraguay's 3,504 schools are at risk of collapse (Paraguay Ministry of

Education, 2017). However, actions have yet to be taken to replace the schools identified for retrofit or reconstruction.

Other countries have also successfully completed the reconstruction of their unsafe school building stock upon the identification from the commissioned multi-hazard risk assessment. Over the course of fourteen years, Japan's government increased their earthquake-resistant school building stock from 45% to 98% (Miscolta, 2017).

The majority of governments indicate that they do not include limitations on the use of schools as emergency shelters. Even less provide guidance to schools on how to operate as an emergency shelters, and even fewer governments provide reimbursements to schools used as shelters. Because schools are often buildings equipped with kitchens, restrooms, and large classrooms that are spacious enough to house multiple families, they are often selected as places of refuge during emergencies, and may stay occupied for weeks or months after a hazard occurs (Paci-Green & Pandey, 2016). However, the absence of policies to guide the use of schools as shelters presents challenges to the quality and continuity of education.

Although schools may be the only resort in times of emergency, unchecked school occupancy has deleterious consequences on the access and quality of children and youth's education as well as to the structural and non-structural integrity of school facilities themselves. 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 (Anderson et al, 2017).

Schools used as shelters are often operated beyond the constraints of their intended purpose, physical constraints, or design. In Cambodia, principals from several provinces whose

schools were used as shelters over several years reported that evacuees house their farm animals inside the facility, rendering the floors unusable (Bhatia et al, 2008). Further, reports from schools used as temporary shelters suggest that some schools used as shelters often experience missing or damaged school supplies, furniture, restrooms, as well as structural damage (Bhatia, et al, 2008; Anderson et al, 2017)

Schools that were not designed to also serve as evacuation centers should not be used as shelters. However, in times of emergency, schools may be the only option for internally displaced people. Thus, governments should provide and enforce Education in Emergencies policies and guidance on the use of schools as shelters to safeguard children and youth's access to education.

The Philippines provides a good example of enacting policy that underscores the educational rights of children and youth, especially during times of emergency. The Department of Education and Save the Children worked together to pass the 2016 Children and youth's Emergency Relief and Protection Act (CERPA). The legislation mandates the protection of children and youth during periods of endangerment that affect their development and survival, consistent with the United Nations Convention on the Rights of the Child (Yap, 2016).

In the context of education, CERPA underscores two key priorities; the continuity of education and the use of schools as shelters. Following an emergency, education must be promptly resumed. Secondly, schools should only be used as shelters as a last priority. According to CERPA, if schools must be used as shelters, classroom spaces (as opposed to the gymnasium, auditorium, or lunch room) should be occupied last to ensure students access to safe and distraction-free learning environments.

Pillar II: School Disaster Management

This section reports and discusses the results of Pillar II from the Global Baseline survey, and how results vary regionally and combined. Pillar II addresses school safety through ongoing disaster management planning. Governments responded to questions about their national and sub-national education-sector policies, plans, and guidance regarding fire and hazard drills and teacher training.

On average, governments have adopted about half (44%) of the Pillar II policies and activities (See Table 11). Survey results indicate that LAC and Asia Pacific countries in adopting Pillar II policies. On average, LAC countries have adopted about 70% of Pillar II policies, while Asia Pacific countries have adopted about 48% of Pillar II policies.

Across each surveyed country, most respondents (75%) indicate that their education authority has a risk reduction or disaster management plan at the national level (See Table 23). Of the countries with national plans, only 21 are publicly available. Notably, the region with the strongest presence of education sector risk reduction and/or disaster management plans at the national level was Asia Pacific, followed by The LAC. In those regions, 88% and 72%, respectively, had plans, but fewer than half were publicly available.

In the CSS Baseline Survey, countries indicated whether their plans included risk assessment, risk reduction, and risk preparedness. Of the majority of countries that had plans, 80% had at least three or more of these topics within their plans. Countries with plans indicated that the plans included risk assessment (80%), risk reduction (90%), and risk preparedness (84%). Fewer frequently covered was the topic of education continuity (71%). The topic least

covered was guidance on active child participation (33%). As shown in Table 3.13, coverage in sub-national plans follow a similar pattern.

Table 3.13: Education sector disaster management plan and topics

	Global	Africa	Asia Pacific	LAC
	N=68	N=25	N=24	N=18
	%	%	%	%
Disaster management plan	75	64	88	72
Risk assessment	62	40	75	72
Risk reduction	69	56	79	72
Risk preparedness	65	52	75	67
Education continuity	54	40	6	67
Active child participation	25	1	8	61
Publicly available	31	12	29	61

Though most countries have national risk reduction or disaster management plans, fewer have hazard drills as well as guidance and procedures to support the organization of hazard drills are common. Almost half (47%) of surveyed governments have a fire drill policy, and 47% have an "other" hazard drill policy (earthquake, tsunami, etc.). See Table 3.14 for a break-down between regions.

Table 3.14: Fire and hazard drills

	Global	Africa	Asia Pacific	LAC
	N=68	N=25	N=24	N=18
	%	%	%	%
Fire drill	4	8	58	78
Hazard drill	47	16	50	83

A little over a quarter of responding countries indicated that they provide guidance to schools. About 34% provide guidance on "other" hazard drills, and 29% provide guidance on fire drills.

Fewer 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 (See Table 3.15). Requirements that schools do regular fire drills is particularly high in the Pacific countries, where almost half of the countries require more than one drill a year.

Table 3.15: Frequency of fire and hazard drills among responding countries

	Global N = 68 %		Africa N = 25 %		Asia Pacific N = 24 %		LAC N = 18 %	
	Fire drill	Hazard drill	Fire drill	Hazard drill	Fire drill	Hazard drill	Fire drill	Hazard drill
Mentioned (no frequency)	21	19	0	8	29	25	39	28
Once a year	6	6	0	8	8	8	6	6
More than once a year	19	22	8	0	21	17	33	50

Across the three surveyed regions, most governments provide 'other' types of guidance on disaster management. Over half, 62%, provide guidance on emergency response, 54% provide guidance on risk reduction, and 44% provide guidance on recovery (See Table 3.16)

Almost a quarter (24%) of countries indicate that they include school disaster management in teacher training curriculum (See Table 27). While almost a quarter of countries include disaster risk reduction topics in teacher training curriculum, fewer prevalent are countries that make professional development on school disaster management mandatory for educators and school administrators.

Table 3.16: Policy guidance

	Global	Africa	Asia Pacific	LAC
	N=68	N=25	N=24	N=18
	%	%	%	%
Risk reduction	54	24	63	83
Emergency response	62	28	75	89
Recovery	44	24	46	72
Conducting fire drills	29	4	25	67
Conducting hazard drills	34	8	33	67

Of all the Pillar II policies, the area of the greatest potential for improvement is teacher training. Only 17 (25%) of countries indicate that they include school disaster management in teacher training, and six (9%) reported that they do not (See Table 27). Fifteen education authorities (22%) require staff to complete professional development in school disaster management; three reported that they do not (4%). The remaining countries were unsure or indicated another response.

Table 3.17: Teacher training and professional development on disaster risk reduction

	Global	Africa	Asia Pacific	LAC
	N=68	N=25	N=24	N=18
	%	%	%	%
Teacher training on disaster management	25	12	25	39
Professional development on disaster management	22	0	21	50

In sum, countries have adopted a little less than half of the Pillar II policies and activities. Across each surveyed country, the most progress has been made in incorporating risk reduction and disaster management plans within the education sector. However, education and training of teachers and staff lags behind.

Most countries have an education sector disaster management plan at the national level. Many of these plans also include language on key topics such as risk assessment, reduction, and preparedness. However, fewer countries include language on education continuity and active child participation. Nepal's 'School Sector Development Plan' has among the highest coverage, which includes all topics. The plan was produced out of the contexts of high earthquake risk and vulnerability, historically high human and infrastructure losses, a reorientation of the national government with an emphasis on the importance of education, and an acknowledgement of the Sustainable Development Goals (Nepal Ministry of Education, 2016b). The plan demonstrates a committed effort to reduce hazard risk and safeguard children and youth in education.

"The government and its development partners have committed to the construction, reconstruction and retrofitting of schools to standards that ensure they are earthquake resistant, and to promoting school safety and DRR. Schools are to be (re) constructed and/or retrofitted in line with national guidelines and specifications to ensure safe learning places. This entails safe site selection, adherence to building codes, disaster resilient designs, retrofitting, construction supervision and quality control.

The following strategic intervention are thus called for: [the] strengthening [of] the preparedness and risk reduction capacity of the education system from national to

school levels through multi-hazard risk assessment and mapping for disaster

management (structural and non-structural), action planning to reduce risks at the

school level, the incorporation of school safety into school improvement plans, planning

for educational continuity, and by building response and preparedness capacities"

(Nepal Ministry of Education, 2016)

One of the least frequently included topics within national disaster management

plans is language on active child participation in disaster risk reduction. The paucity of

children and youth as active participants is likely due to the 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"

(Fernandez & Shaw, 2015).

Though most countries have national risk reduction or disaster management plans,

fewer have hazard drills as well as guidance and procedures to support the organization of

hazard drills are common. For example, according to Bangladesh's Standing Orders on

Disasters, it is the responsibility of the Ministry of Education to 'organize disaster safety,

evacuation, first aid, and drills at least twice a year in all educational institutes.' Conversely, the

Philippines drill policy, S.B. 2992, establishes that fire and earthquake drills must be held in

schools at least once a month, and that students must practice the use of emergency exits and

fire escapes, fire extinguishers, and evacuation on buses used to transport students (Republic of

the Philippines, 2009).

The lack of fire drill policy in over half of the responding countries indicates an

important and urgent area for immediate action. School fires can cause injury, death, and

property destruction. Fire is a hazard to which all schools are exposed, especially those with on-site cooking facilities, science labs, and indoor heating. In countries with active conflict, a history of school violence, or potential for industrial accidents to rapidly impact schools, policies on shelter-in-place may also be equally important.

A little over a quarter of responding countries indicated that they provide guidance to schools. Without guidance to support school administrators on drilling procedures, the efficacy of school drills varies (Bastidas & Petal, 2012). Requiring drills, without providing both guidance and teacher training may lead to teachers and staff instructing students to act in unsafe ways during emergencies.

Robust guidance for school drills includes concise, hazard-specific instruction on actions before, during, and after drills occur. Depending on the region's hazards, guidance may include instruction for fire on person (drop, cover, roll), protective action during earthquakes (drop, cover, and hold), safe building evacuation, shelter in place, and protocols for student release (Petal, 2008). Robust drill guidance also instructs school administrators on how to prepare for drills before-hand as well as on how to debrief and update procedures based on the lessons learned. Students and staff should practice stop-drop-roll procedures for persons on fire. For fire and some other hazard, like earthquakes, building evacuation drills are also important to reinforce the four good practices of evacuation – Don't talk! Don't push! Don't run! Don't turn back!

Beyond providing guidance, safe action under a range of situations is important to practice. Regular drills builds muscle memory, simulates preparedness behavior, and build awareness and response capacity (Petal, 2008; Akram et al, 2012; Benadusi, 2014).

The low frequency that drills are conducted for the remaining three quarters of countries with drill policies reveals an area for improvement, as schools should conduct at least three drills per year (World Bank, 2010). Drills should be periodic because students and staff are regularly replaced, and newcomers may not be aware of emergency protocols.

Most countries have not explicitly integrated disaster management into teacher training curriculum. Qualitative survey responses indicate that teacher training for school disaster management is often ad-hoc, experimental, and often supported by non-governmental organizations. However, some countries have taken alternative approaches to educate teachers and principals in disaster management. 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 disaster risk reduction education can be delivered without training (Alayo, 1999).

Bhutan's Ministry of Education and Department of Disaster management together 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. The teacher training document includes photos, videos, PowerPoint presentations, and an activity guide. Specifically, the document guides teachers through 'five steps towards safer schools', and covers the formation and upkeep of school disaster management committees; hazard, vulnerability, and capacity assessments; preparing for educational continuity; and school disaster management planning (Bhutan Ministry of Education, 2016).

In Angola, UNICEF, in partnership with the Angolan Ministry of Education and the National Commission for Civil Protection together trained over six hundred teachers throughout

several provinces on promoting and integrate disaster risk reduction and emergency preparedness in formal and non-formal education, specifically though clubs and activities (UNICEF, 2016).

Pillar III: Risk Reduction and Resilience Education

This section reports and discusses the results of Pillar III from the Global Baseline survey, and how results vary regionally and combined. Pillar III focuses on advancing knowledge and skills in disaster risk reduction through formal and non-formal education. Respondents answered questions about risk reduction and resilience education in national curriculum, teacher training, and public messaging campaigns.

On average, governments have adopted fewer than half (44%) of Pillar III policies (see Table 3.1). Survey results indicate that Asia Pacific and LAC countries are most likely to have adopted Pillar III policies; on average, Asia Pacific countries have adopted about 56% of Pillar III policies. Combined, the most progress has been made in the development of targeted public messaging campaigns, followed by the inclusion of risk reduction and resilience education into national curriculum, with a specific emphasis on climate change and disaster risk modules. Although governments have made substantial improvements in incorporating risk reduction and resilience topics into national curriculum, fewer progress has been made in training teachers to deliver risk reduction and resilience education. Thus, some students are receiving risk reduction and resilience education by teachers who have not been trained on the subject matter.

Respondents were asked if their national curriculum includes risk reduction and resilience modules such as climate change, disaster risk reduction, and resilience. Combined,

more than half (56%) of governments include at least one module in their national curriculum;

62% include climate change, 60% include disaster risk reduction, and 40% include resilience

(see Table 3.18). Asia Pacific countries are most likely to have included 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.

Respondents were asked whether their countries conduct consistent, action-oriented

public messaging campaigns about household disaster risk reduction. Of the responding

countries, 68% indicate that they conduct public awareness campaigns (see Table 28). Asia

Pacific countries are most likely to have implemented public awareness campaigns. About 88%

of Asia Pacific countries have national public awareness campaigns.

Table 3.18: Public awareness campaigns and curriculum for students and teachers

			Global	Africa	Asia Pacific	LAC
			N=68	N=25	N=24	N=18
			%	%	%	%
		Public awareness campaigns	68	48	88	67
Student	Curriculum	Climate change	62	40)	75	72
		DRR	60	32	79	72
		Resilience	40	16	50	56
Teacher	Curriculum	Climate change	27	12	38	33
		DRR	28	12	42	33
		Resilience	22	16	25	28

Discussion

In sum, governments have adopted less than half of pillar three policies and activities. The majority of countries facilitate public messaging campaigns. Similarly, many countries indicate that they incorporate Risk Reduction and Resilience topics within the national education curriculum. However, less consistently do countries match that national curriculum with teacher training on the same topics.

Since the development of the Hyogo Framework, many countries have progressed in developing school-based disaster risk reduction curriculum programs to some capacity. Mid-term reviews of the HFA support that the full implementation of risk reduction and resilience education into national curriculum remains to be a significant challenge. Curriculum implementation is challenged because of "strong national political will, a systematic approach and sustained action" and that "the institutional and technical capacity in many countries [to do this] is still weak, and the financial resources needed to build these capacities are limited." (UNISDR, 2011).

Countries rely on different institutions, either state or non-state, to manage the development and dissemination of risk reduction and resilience curriculum. Some governments rely on relevant government agencies (such as Afghanistan's Curriculum Department, or Brazil's National Institute for Investigation and Development of Education) to develop curriculum, while other rely on non-governmental organizations (such as Red Cross or Plan International to name a few) that may either work with MoEs at the national level, or that instead are involved in grassroots pilot-projects. While pilot-projects do good work in extending risk reduction and resilience education to children and youth who previously did not have access to it, pilot

projects led by NGOs are critiqued for often having 'thin' lines of communication with national governments, and state-led pilot projects are critiqued for being 'smoke screens' of avoidance for substantive curriculum change (Wisner, 2006; Kagawa et al, 2012).

Similarly, the method used to incorporate risk reduction and resilience education into curricula differs between countries. Curriculum format often depends on the policies created by educationalists (ADPR, 2007). Risk reduction and resilience education is often delivered through a combination of three approaches; curriculum integration, infusion, or stand-alone courses. Curriculum *integration* is the 'units, modules, or chapters that fit into course curricula at specific grade levels', curriculum *infusion* 'distributes content throughout the curriculum', and stand-alone courses are 'specialized courses that focus on disaster risk reduction' (Petal & Izadkhah, 2008).

Survey results indicate that the predominant method of incorporating risk reduction and resilience education into national curriculum is through a mixed limited infusion approach, whereby topics are joined to existing courses. Many countries have developed modules or chapters to fit into geography or natural science courses, usually for lower grade levels. The finding that infusion into geography courses as the predominant vector of DRR integration is consistent with a similar study conducted by the Kagawa et al (2012).

Although most surveyed countries have not fully infused the three risk reduction and resilience topics into their national curriculum, many have sustained efforts to do so. Take the case of Indonesia. It launched the 'Mainstreaming of Disaster Education at School' strategy, which seeks to standardize risk reduction and resilience education at all grade levels (Sardjunani, 2010). One of the initiatives under the strategy spurred the creation of an eight-

month long pilot program in nine primary, secondary, and senior high schools. The program integrated disaster risk reduction into school curriculum.

Indonesia's Mainstreaming of Disaster Education at School strategy provided policy, framework, guidance, planning, institutional structure, facilities and infrastructure towards risk reduction and resilience education. Following the development of the strategy, the Indonesian Ministry of National Education issued a 'Circular Letter' to all governors and mayors in support of risk reduction and resilience curriculum development and implementation (Amri et al, 2017). While most surveyed countries have included risk reduction and resilience modules in their national curriculum to some degree, teachers are offered training in these subjects at a lower rate. Of the responding countries, 28% include disaster risk reduction, 22% include resilience, and 27% climate change within their teacher training colleges. Of the countries that include resilience in the national curriculum, 52% provide teacher training on the subject; of the countries that provide disaster risk reduction in the national curriculum, only 44% of countries provide teacher training on the subject; and of the countries that include climate change in their national curriculum, only 38% provide teacher training on the subject.

Sierra Leone has made efforts to provide teacher training on risk reduction and resilience education. 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 if offered in teacher training colleges and teacher certification programs (UNICEF, 2012).

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, as opposed to curriculum-based teacher training courses. Respondents also indicate that while teacher training is strongly emphasized as an objective in the Hyogo Framework for Action, fewer frequently has it been meaningfully implemented in the national education system.

Teachers delivering risk reduction and resilience education without having first been trained on the subject matter themselves compromises the efficacy and communication of risk reduction and resilience education to students. Untrained teachers are fewer adequately equipped to deliver feweron plans, which reduces students' uptake of disaster risk reduction behavior and competency, and can impede students' reduction of their own vulnerability (Izadkhah & Heshmati, 2007; UNDP, 2010; Apronti et al, 2015). Training must be provided if teachers are to become 'reflective practitioners' instead of 'technically adept deliverers of a prescribed curriculum' (Kagawa et al, 2012).

Teachers themselves are aware that they are unprepared to teach risk reduction and resilience curriculum. The absence of training is often identified as a deterring factor that comes out of teachers' needs assessments (Amri et al, 2015; Dwiningrum, 2017; Akram et al, 2012; Shiwaku & Shaw, 2008).

Thus, governments seeking to develop teacher training should provide systematic and sustained programs that build pedagogical and reflective skills. Because teacher training is a precondition for the effective delivery of risk reduction and resilience education, governments, especially those that have already implemented it into their national curriculum without also

matching it with teacher training, should consider how to best support their teachers in delivering disaster risk reduction education to students.

Although information on the challenges of developing and implementing teacher training programs is combined limited, we infer that the gap between the presence of national curriculum and teacher training may be explained by the disparate resources and coordination required to implement each. Developing and implementing teacher training programs requires more capital and coordination than does writing student learning modules and integrating risk reduction and 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 fewer frequently allocate investments into teacher training programs than into curricula development.

Public awareness campaigning is another strategy used to spread risk reduction and resilience information beyond the classroom. Campaigns 'strengthen public awareness and education, promote a culture of disaster prevention, resilience and responsible citizenship, and generate understanding of disaster risk and support mutual learning and experience sharing' (UNISDR, 2016). Campaigning communicates information through flyers, pamphlets, posters, television ads, texts, social media, and interpretative art.

Respondents were asked whether their countries conduct consistent, action-oriented public messaging campaigns about household disaster risk reduction. Of the responding countries, 68% indicate that they conduct public awareness campaigns (see Table 28). Asia

Pacific countries are most likely to have implemented public awareness campaigns. About 88% of Asia Pacific countries have national public awareness campaigns.

The Maldives, an Indian Ocean nation particularly susceptible to rising sea levels, recognized the need for a sustained public messaging campaign. The National Disaster Management Centre, in partnership with the Broadcasting Commission, began public campaigning efforts to promote public preparedness about natural hazards. The agencies also created a memorandum of understanding that prioritizes public messaging in media when hazards do occur. While public messaging campaigns are challenged by Maldivian geography – an archipelago of 1,200 islands – national authorities are committed to building island resilience (Maldives National Disaster Management Centre, 2012).

Qualitative survey responses indicate that a popular form of public messaging is through flyers, often developed with the support of non-governmental organizations. Other strategies use radio to distribute disaster risk reduction messaging. Kenya's national government, in collaboration with the UNISDR, organizes dialect-specific radio talk shows to raise awareness of hazards (Karanja, 2016). Some countries have also developed creative public messaging strategies, such as South Africa. South Africa developed 'climate change and smart living' plays in schools across Western Cape Province. The purpose of the plays is to 'convey key environmental and social issues using multi-lingual and multi-cultural styles through music, dance, song, and comedy' (Western Cape Government, 2012).

Chapter 4: Qualitative Discussion of Facilitating and Blocking Themes

This chapter discusses the factors that facilitate or block Comprehensive School Safety policy development. Developing CSS policies is supported or challenged by a variety of factors that are commonly shared between countries and regions. Understanding these factors permits current and future policymakers to make informed decisions that can better support the development and implementation of CSS policy. As discussed under the "Themes" subsection of the Methodology chapter, two themes with the highest scores were selected for discussion.

Respondents overwhelmingly chose the same facilitating themes for both policy development and implementation. These facilitating factors largely focused on themes of **evidence** and **advocacy**. Blocking factors for policy development and implementation largely concerned inaccessible and insufficient **funding** as well as staffing deficits in knowledge and human **capacity** (see Table 4.1). As would be expected, factors that were least frequently selected as facilitators were often the same factors that were most frequently selected as blockers.

Table 4.1: Theme score calculation

	Theme	Factor Sum	Count of Items	Number of Countries	Theme Score
Facilitators	Evidence	59	3	45	**0.44**
	Advocacy	92	5	45	**0.41**
	Capacity	57	4	45	**0.32**
	Culture	32	3	45	**0.24**
Blockers	Funding	46	2	44	**0.52**
	Capacity	51	3	44	**0.39**
	Culture	35	4	44	**0.20**
	Advocacy	39	5	44	**0.18**
	Evidence	15	2	44	**0.17**
	Strategy	28	4	44	**0.16**

* Blocking variables to be interpreted as "Lack of…"

Facilitators Discussion

Respondents were asked to select factors that facilitate, or positively influence, the development and implementation of Comprehensive School Safety policy. Results indicate that policy development and implementation are both facilitated by overlapping or shared factors that revolve around themes of evidence of impacts and government official advocacy. The most frequently selected factor, or, the primary facilitator of both policy development and implementation, was the presence of strong evidence and proof of the impacts that hazards have on education. A secondary contender for policy development (but not as influential for implementation) was external advocacy. Another secondary influencing theme was the presence of continued advocacy and support from government officials, both those in disaster management and in the education sector. Both themes are discussed in more depth below.

Theme 1: Evidence and Proof of the Impacts on Education

Respondents indicate *evidence* was among the top facilitators of CSS policy development and implementation. Specifically, respondents indicated that 'strong evidence (proof) on the impacts of disasters on education, the dangers of unsafe schools, and the benefits of safe schools', 'School safety has become important for the government and public because of large disasters or frequent hazard impacts', and 'professional journalists report on CSS' are factors for policy development. Respondents selected evidence as a facilitator of policy development 66%, 52%, and 14% of the time. While respondents most frequently selected evidence as a facilitating factor, evidence is often used as a political tool to stymie the policymaking process. However, evidence is central to informing action towards CSS.

In theory, evidence is important to political and action-based decision-making because it allows policymakers and practitioners to make decisions informed by the best available research and experience. Decisions made to solve societal issues that are informed by research and experience can help identify interventions that most effectively address the problem, avoid unnecessary harms, and save limited resources (Shaxson, 2005; ODI & INSAP, 2016; Justin, 2017). Specific to the case of advancing CSS policy, government leaders representing ministries of education and disaster management from fifteen different countries met in Istanbul at the First Meeting of Safe School Leaders; they described evidence as a requirement to convince decision makers to prioritize school safety initiatives as a part of their national education plans and budgeting (UNISDR, 2014). 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.

Because evidence can help ensure that actions adequately address and respond to needs, it is used in all aspects of CSS. Evidence provides the basis for CSS planning and action (GADRRRES, 2017a). As noted by the World Bank, "The dialogue between decision-makers and stakeholders is strengthened with evidence based arguments throughout the policy process" (World Bank, 2017). For example, when governments choose to retrofit or replace unsafe schools, they must first collect evidence through a multi-hazard risk assessment, which allows them to identify and prioritize the replacement of the most unsafe facilities (UNISDR & GADRRRES, 2017). When schools are to be constructed to withstand their region's local hazards, evidence is needed to accurately identify those hazards and to prescribe hazard-resistant construction practices (Paci-Green et al, 2017). Evidence can also inform appropriate

pedagogical approaches to disseminate risk reduction and resilience education, while tracking of disaster impacts on the education sector can help identify when and where CSS policy implementation is leading to desired outcomes (Ronan, 2015).

While respondents most frequently selected evidence as a facilitating factor of policy development and implementation, research suggests that evidence alone does not 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 (Pielke, 2007; Farrell, 2017). Further, evidence supporting CSS-based policies already exists and has existed for some time – if governments were influenced by evidence alone, they would have already adopted such policies. Respondents may over-rely on evidence to engender policy change because of its emphasis and frequency in the Yokohama, Hyogo, and Sendai Frameworks. Thus, the reliance on evidence as the most frequent factor to engender CSS policy may be overestimated.

Decision-makers use evidence to create strategies based on grounded data and experience to most effectively solve issues. Evidence plays a central role in informing CSS-based policies and activities in all CSS Pillars. While evidence can play a central role in decision-making, a large body of literature indicates that it is often not the impetus or driver for policy change. Practitioners should use evidence in CSS-based activities, but should also be familiar with their government's institutional, cultural, and social context in which the policymaking process occurs to best promote CSS policies.

Theme 2: External Advocacy

Respondents indicated that external advocacy was a secondary facilitator of CSS policy development and implementation. Responding countries indicated that being a part of 'Senior and mid-level education sector officials use their position to advance school safety publicly and in the education sector' (50%) and 'Senior and mid-level disaster management officials use their position to advance school safety publicly' (48%)', 'There have been continued advocacy about school safety for a long period of time' (48%), and 'Civil society groups use their position to advance school safety publicly' (41%), 'Elected officials use their position to advance school safety publicly and within government' (25%) were factors that most supported the development of CSS policies within their countries.

International strategies, such as the Yokohama, Hyogo, and Sendai frameworks, and the missions or UN agencies, as well as NGOs and INGOS have made great contributions in advancing disaster risk reduction initiatives within countries. Government offices, departments, and agencies not traditionally involved with disaster risk reduction are also integral to the advancement of the development of disaster risk reduction policies and their implementation (UNISDR, 2015).

While Comprehensive School Safety is an education-sector based initiative, actions towards safe school initiatives rely on the coordination and input from a variety of national ministries. At minimum, governments' national ministries of development, education, and disaster management (or their equivalents) are often involved in the CSS policy development and implementation process. Ministries that have authority over development and public works, as well as those that conduct environmental monitoring, often deal with multi-hazard

risk assessments of school facilities and developing standard building codes. Ministries of education are often involved with developing risk reduction and resilience education materials for students and teachers. Ministries of disaster management address education-specific disaster management planning.

Governments may ascribe to any of the myriad global agreements or strategies on education sector disaster risk reduction that make available international resources towards safe school initiatives. As it relates to disaster risk reduction in the education sector, governments may be signatory to or participate in initiatives such as the UNISDR's *Disaster Risk Reduction Begins at School* 2005 – 2006, Sendai Framework for Disaster Risk Reduction 20015 – 2030 (preceded by the Hyogo Framework for Action 2002 – 2015), the UNISDR's Worldwide Initiative for Safe Schools 2014 (WISS). At the regional level, countries may take part in coalitions such as the Association of Southeast Asian Nations' Safe Schools Initiative (ASSI) or the Group for the Management of Disaster Risk in the Education Sector in The LAC and the Caribbean. As signatories of these initiatives, governments may be able to leverage support in CSS policy enactment and attract financial, technical, and organizational support from a range of development partners. This support can supplement existing internal resources to carry out multi-hazard risk assessments, school reconstruction, and risk reduction and resilience curriculum development.

Safe school initiatives, particularly in low and middle income, rely heavily on the support of non-state actors. According to the Sendai Framework, disaster risk reduction requires involvement from "public and civil society organizations…" as well as "international, regional, sub-regional, and transboundary cooperation" (UNISDR, 2015). In form with the Sendai

Framework, non-state actors such as bilateral organizations, United Nations agencies, and international and domestic non-governmental organizations, are heavily involved in assisting governments to develop and implement safe school initiatives across the globe. Non-state actors are particularly involved in CSS initiatives in low and middle-income countries to assist with capacity building, staffing, technical, and financial assistance (United Nations, 2015).

However, governments' reliance on international agencies and global initiatives is not without critique. First, efforts to reduce disaster risk occurs in a both neoliberal climate as well as a shift away from 'government' to 'governance' (Jones et al, 2014; Tierney, 2015). The 'governance landscape' occurs within a neoliberal climate of reduced responsibility of the state, and an increasing responsibility of non-state agents and individuals (Jones et al, 2014). In other words, advancing DRR at the state level relies heavily on global initiatives and international development agencies that fill gaps created by states that would not be involved if those entities were not present to assist them. Concomitantly, low and middle-income countries are forced into perpetual debt due to the exorbitant development loans by the very international agencies offering DRR support (Chussudovsky, 1998). Low and middle income' debt makes it impossible for them to invest in DRR initiatives themselves, and exacerbates their hazard vulnerability (Hamza & Zetter, 1998). Additionally, some programs and investments made by these agencies have been successful on a "pilot scale", but have not yet influenced political leaders to make meaningful policy changes (Kagawa et al, 2012). With the neoliberal context in mind, international institutions have played an important role in supporting national governments with developing and implementing DRR initiatives across the globe.

Blockers Discussion

Respondents were asked to select variables that block, or negatively influence, the development and implementation of Comprehensive School Safety policy. Results indicate that policy development and implementation are both blocked by overlapping or shared factors that revolve around themes of funding and capacity. Insufficient, inaccessible, and untimely distribution of funding emerged as primary policy obstructions. A secondary theme of policy obstruction revolved around the absence or paucity of knowledge about technology and of the policies themselves, resulting in staffing capacity deficits.

Theme 1: Funding

While the threats to education from hazards are evident, secured and perennial investments into safe school initiatives remains a real challenge for governments. Respondents indicated funding was among the top blockers of CSS policy development and implementation. Specifically, respondents indicated that 'the government has not allocated sufficient funds to be able to carry out policy activities' and 'funds to implement the policy are hard to access and not distributed on time' are blockers for policy development and implementation. Respondents selected these variables for both variables respectively 27% and 16% of the time.

The meaningful implementation of CSS policies requires exorbitant sums of money that are often not available, especially in low and middle income. Large sums of funding are required because the meaningful implementation of CSS policies involves redeveloping or reconstructing already established national systems, especially when efforts include addressing Pillar I issues of safe learning facilities.

The replacement or retrofit of unsafe schools begins with a multi-hazard risk assessment. Multi-hazard risk assessments involve taking stock of existing school facilities and assessing their structural integrity. Once schools have been identified for retrofit or replacement, governments must then allocate funding and resources towards construction. However, depending on the number of schools needing renovation or replacement, construction costs can amount from 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 is required to entirely replace or retrofit almost 140,000 school facilities at high risk of collapse (World Bank, 2017). While the Peruvian government has made steps to illuminate how many and which schools are unsafe, securing such funding will be challenging.

The re-development of existing national curricula to accommodate risk reduction and resilience education as a standardized core subject 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 for both children and youth. To accompany risk reduction and resilience curriculum, a curriculum must also be created for teachers in teacher training colleges so that they may learn how to effectively teach the subject. Teacher training must also be made available for the thousands of teachers who may already teach risk reduction and resilience education but who have not received any formal training. Once developed, resources must also be put towards continual curriculum evaluation on a scheduled basis for upkeep and maintenance. All of these efforts and the costs associated

with them will inevitably require large sums of funding that have yet to be fully realized for most 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 (Hockrainer-Stigler et al, 2011).

Example – Funding

Since 2011, Turkey has accepted millions of refugees who escaped civil war in Syria. Of the 3.5 million Syrian refugees residing in Turkey, 1.5 million are children and youth under the age of 18, (Ineli-Ciğer, 2017). Refugee children and youth have missed out on many days of education. To address Syrian children and youth's access to education, the Turkish government, along with international development agencies, have placed a particular emphasis on integrating Syrian refugee children and youth back into school. At the end of the 2017-2018 academic year, over 600,000 refugee children and youth were enrolled in either temporary education centers or Turkish public schools (UNICEF, 2018). Particularly noteworthy is the Turkish legal framework that grants all refugee children and youth access to free education under a 'temporarily protected' status (UNICEF, 2018).

While Turkish legal framework is amenable to providing education to refugees, and while good efforts have been made to expand access to education to Syrian refugee children and youth, completely integrating refugee children and youth into Turkey's education system is challenged by the absence of school facilities to accommodate new

children and youth, along with the region's earthquake risk that threatens the nation's school building stock. Many Turkish public schools are already overwhelmed by the influx of refugee students (Ineli-Ciger, 2017).

Thus, new school facilities must be constructed to accommodate the influx of refugee children and youth needing to access education. However, Turkey's geographic context atop seismically active faults makes the region prone to high-magnitude earthquakes. Historically, high-magnitude earthquakes, coupled with an absence of earthquake-resistant building design, has resulted in the collapse of thousands of Turkish buildings and the death of tens of thousands of people (Bruneau, 2002). Thus, considerations must be made to safeguard future school facilities from collapse or damage to prevent death or injury and reduce further traumatization of refugee families. International inter-governmental agencies, such as the GFDRR, have worked closely with the Turkish government to address the construction of safe school facilities for Syrian refugees. The GFDRR facilitates large-scale investments into the construction of new and existing schools at risk from hazards, specifically within low and middle income (GFDRR, 2017). In 2016, the GFDRR recognized the immediate need for the construction of new, earthquake-resistant schools to accommodate Syrian refugee children and youth. To respond to the need for more school facilities, the GFDRR allotted $160 million towards the construction of 56 earthquake-resistant schools to accommodate 40,000 refugee children and youth (Ayhan, 2018). New schools will be 'constructed to comply with Turkey's updated regulations regarding seismic safety, energy efficiency, land use planning, shelter, fire, and disability access' (Ayhan, 2018).

With support from the GFDRR, Turkey is committing to the advancement of children and youth's human rights through both the extension of education to refugees as well as the physical protection of children and youth through school seismic design considerations.

Theme 2: Capacity

Respondents indicated *capacity* was among the top blockers of CSS policy development and implementation. Specifically, survey results indicate that staffing and technical capacity are particularly absent; respondents indicated that 'the departments and staff are too busy, or change too often, to be able to conduct the activities to implement the policy', 'the government does not have sufficient technical capacity or access to sufficient technical support for school safety', unrelated duties obligated by their position that occupy their time, 'the government has no clear framework, ideas, approaches or steps on how to make schools safer'. These variables were selected 28%, 29%, and 18% respectively.

Capacity as a blocker is in accordance with a growing body of literature that has identified it as a deterrent in the greater disaster risk reduction movement. Discussions between representatives from different countries' Ministries of Education and Disaster Management during the First Meeting of Safe School Leaders identified government capacity as a leading blocker in the effort to achieve safer schools (UNISDR, 2014).

The capacity acknowledged by respondents can be grouped into two overarching categories – 'technical and 'and functional'. Functional capacity refers to activities such as resource management, implementation, monitoring and evaluation, stakeholder engagement,

and mainstreaming development plans, and technical capacity refers to engineering, computer science, or geographic information sciences (GIS) (UNISDR, 2018).

In the context of disaster risk reduction, capacity is the 'process of systematic and continued development of capabilities to achieve social goals through improvement of knowledge, skills, systems, and institutions'. 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 (Hagelsteen & Burkey, 2016). These International agreements cannot be achieved unfewer governments have adequate capacity (UNDP, 2010; UNISDR, 2018).

In the context of safe school initiatives, technical capacity may refer to conducting multi-hazard risk assessments, evaluating the structural integrity of school buildings, making decisions about building codes best suited for a regions' hazards, or hazard risk mapping. Countries seeking to conduct these activities are often supported by INGOs. For example, the World Bank assisted Peru in analyzing results from the country's school building stock hazard risk assessment (Yamin et al, 2017).

Chapter 5: Multivariate Analyses of Facilitators and Blockers of CSS Policy

This chapter discusses a series of multivariate analyses that test the effects of Evidence, Advocacy, Lack of funding, Lack of Capacity, GNI, and geographic region on the presence of CSS policy by pillar. First, a reliability analysis using Cronbach's Alpha was conducted to demonstrate the internal consistency of the themes used as independent variables. Then, a correlation matrix is presented to determine the degree of multicolinearity between the independent variables. Lastly, the models and their results are presented and discussed.

Four separate models were used within the regression analyses. Model 1 deals with the dependent variable, "DRR in National Education Policy". Model 2 deal with the dependent variable "School Risk Assessment". Model 3 deals with "Guidance". Finally, Model 4 deals with "Teacher Training".

Each of the models consisted of four equations. Equation 1 only included the three control variables; GNIPC, LAC, and Africa. Equation 2 included five variables; GNIPC, LAC, Africa, Advocacy, and Evidence. Equation 3 included five variables; GNIPC, LAC, Africa, Lack of Capacity, and Lack of Funding. Equation 4 included all variables.

A reliability analysis using Cronbach's Alpha was conducted to calculate the internal consistency of the items grouped within each theme. The results indicate whether the grouped items measure the same construct. Results may range between 0 and 1, with values closer to 1 having greater internal consistency. George and Mallery (2003) interpret the values as follows: "X > .9 – Excellent, X > .8 – Good, X > .7 – Acceptable, X > .6 – Questionable, X > .5 – Poor, and X < .5 – Unacceptable".

Table 5.1 shows the results of the reliability test. The results indicate that none of the themes score at or above the threshold of acceptability (X > .5). Thus, the grouped items within each theme do not measure the construct they are attempting to define. A factor analyses was conducted to identify any "natural" themes that emerged from groupings of the facilitators and blockers items. However, no themes emerged.

Table 5.1: Cronbach's Alpha Score

	Theme	Cronbach's Alpha	Cronbach's Alpha Interpretation
Facilitators	Evidence	0.244	Unacceptable
	Advocacy	0.102	Unacceptable
Blockers	Funding	0.472	Unacceptable
	Capacity	0.258	Unacceptable

While the internal consistency of the items used to create each theme have produced poor results, the themes were used in the regression analyses nonetheless.

Table 5.2 presents the correlations between the independent variables. This test was conducted to determine the associations, or multicolinearity, between the independent variables. A high level of multicolinearity undermines the reliability of the inferences made about the data. A value under -.7 and above .7 indicates a high level of multicolinearity. None of the independent variables used in this analysis exist above this threshold. Thus, none of the independent variables used within the analyses have demonstrated multicolinearity.

Table 5.2 Correlations among Independent Variables

	1	2	3	4	5	6	7
1. EVIDENCE	-						
2. ADVOCACY	0.111	-					
3. LACK OF CAPACITY	.355*	0.031	-				
4. LACK OF FUNDING	-0.256	0.202	-0.069	-			
5. GNIPC	-0.052	.332*	-0.256	-.301*	-		
6. LAC	0.112	0.205	-0.161	-0.17	.620**	-	
7. AFRICA	-0.252	-.394**	-0.269	0.043	-.365*	-.357*	-

* Correlation is significant at the 0.05 level, **

significant at .01 level

Results

Table A.1 in the Appendix presents basic summary statistics of the four dependent and seven independent variables. Overall, 66% of countries have mentioned DRR in the national education policy, 59% have funded either the multi-hazard risk assessment or replacement of their identified unsafe school building stock. Further, on average, countries have 3 out of 5 of guidance on school safety, and include 0 out of 3 of the DRR teacher training topics. Binary logistic and negative binomial analyses were used to predict the probability that a country would positively respond to the outcome variables. Model 1 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%. Model 2 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, with an overall success rate of 78%. These values are not reported for Models 3 and 4, which were run using a different regression analysis.

Tables 5.3 through 5.6 present the logistic regression coefficient, the odds ratio (expB), and the significance for each of the predictor variables for each of the four equations in each of

the four models. Models 1, 2, and 4 – where the dependent variables were related to the Enabling Environment, Pillar 1 and 3 -- resulted in significant values using a statistical significance criteria of .10. For Model 1 concerning the Enabling Environment, GNIPC and Evidence had significant effects. However, these significant values were produced in the equations that did not include all predictor variables (Equations 1 and 2). For Model 2 concerning Pillar 1 Safe Learning Facilities, GNIPC, LAC, Lack of Capacity, and Lack of Funding produced significant effects in the full model (Equation 4). For Model 4 concerning Pillar 3 Risk Reduction and Resilience Education, GNICP and Advocacy had significant effects in the full model (Equation 4). The significant effects will be discussed per Models 1, 2, and 4.

The results of Model 1 indicate that GNPC and Evidence had significant effects on the inclusion of DRR in the education sector policy. Such significant effects were in equations 1 and 2. The odds ratio for GNIPC (1.000) indicates that the odds that a lower or higher income country will have included disaster risk reduction in the national education policy is equal (1:1). Therefore, the odds ratio for Evidence in equation 2 indicates that each point increase in Evidence was associated with a 9.1 multiplicative factor increase in the odds of having mentioned DRR within the national education policy. However, neither GNIPC nor Evidence continue to be statistically significant in the full model.

Table 5.3: Logistic Regression Predicting DRR in National Education Policy with Blocking Factors, Facilitating Factors, Controlling for National Income and Region

	Equation 1			Equation 2			Equation 3			Equation 4		
	B	Exp(b)	Sig.	B	Exp(b)	Sig.	B	Exp(b)	Sig.	B	Exp(b)	Sig.
GNIPC	-2.32E-04	1.000	0.067*	-2.20E-04	1.000	0.094*	-2.23E-04	1.000	0.106	-2.16E-04	1.000	0.137
LAC	1.590	4.906	0.141	1.365	3.914	0.202	1.681	5.373	0.133	1.468	4.339	0.179
AFRICA	0.517	1.677	0.588	1.115	3.050	0.309	0.955	2.599	0.373	1.309	3.703	0.255
ADVOCACY				0.435	1.545	0.803				0.773	2.165	0.697
EVIDENCE				2.210	9.116	0.082*				1.659	5.255	0.234
LACK OF CAPACITY							1.595	4.928	0.255	1.128	3.088	0.444
LACK OF FUNDING							-0.844	0.430	0.396	-0.553	0.575	0.638

The results of Model 2 indicate that GNPC, LAC, Lack of Capacity, and Lack of Funding produced significant effects on the funding of risk assessment and retrofit/replacement of weak school facilities. This effect was visible in the full model (Equation 4). The odds ratio of GNIPC indicates that with each additional yes response to the funding index variable reduces the odds of having funded Hazard Risk Assessment by 86%. The odds ratio for LAC (14.321) indicates that the odds of Latin American and Caribbean countries having funded the hazard risk assessment or replacement of identified unsafe schools are increased by a factor of 14.321 in comparison to Asia Pacific countries. The odds ratio for Lack of Capacity indicates that for each one point increase in Lack of Capacity, there is a .05 factor increase in the odds that a country will not have funded the hazard risk assessment or replacement of identified unsafe schools. The odds ratio for Lack of Funding indicates that for each one point increase in Lack of Funding, there is a .05 factor increase in the odds that a country will not have funded the hazard risk assessment or replacement of identified unsafe schools.

Table 5.4: Logistic Regression Predicting Funded Hazard Risk Assessment/Replacement with Blocking Factors, Facilitating Factors, Controlling for National Income and Region

	Equation 1			Equation 2			Equation 3			Equation 4		
	B	Exp(b)	Sig.	B	Exp(b)	Sig.	B	Exp(b)	Sig.	B	Exp(b)	Sig.
GNIPC	-6.28E-05	1.000	0.621	0.000	1.000	0.484	-1.87E-04	1.000	0.242	-3.42E-04	1.000	0.088*
LAC	2.011	7.470	0.070*	2.214	9.152	0.070*	1.974	7.202	0.094*	2.662	14.321	0.068*
AFRICA	-0.791	0.453	0.359	-0.651	0.521	0.487	-1.822	0.162	0.105	-1.590	0.204	0.179
ADVOCACY				1.252	3.497	0.478				3.766	43.186	0.101
EVIDENCE				-0.305	0.737	0.797				-1.064	0.345	0.484
LACK OF CAPACITY							-2.491	0.083	0.107	-2.971	0.051	0.082*
LACK OF FUNDING							-1.939	0.144	0.070*	-2.981	0.051	0.027*

The results of Model 4 indicate that GNIPC and Advocacy had significant effects on *Teacher Training* for DRR and climate change in the full model (Equation 4). For every one unit increase in GNIPC, the difference in the logs of the expected counts of the amount of teacher training topics is expected to change by a value of 0.000162. This as an almost negligible, yet slightly positive effect. For every one unit increase in Advocacy, the difference in the logs of the expected counts of the amount of teacher training topics is expected to change by a value of 2.346. Thus, Advocacy has a stronger effect than GNIPC for teacher training.

Table 5.6: Negative Binomial Regression Predicting Teacher Training Topics with Blocking Factors, Facilitating Factors, Controlling for National Income and Region

	Equation 1			Equation 2			Equation 3			Equation 4		
	B	Exp(b)	Sig.	B	Exp(b)	Sig.	B	Exp(b)	Sig.	B	Exp(b)	Sig.
GNIPC	3.09E-01	1.362	0.556	-1.43E-04	1.000	0.102	-8.37E-05	1.000	0.290	-1.62E-04	1.000	0.088*
LAC	-0.315	0.730	0.598	0.455	1.575	0.411	0.410	1.507	0.465	0.453	1.573	0.436
AFRICA				0.051	1.052	0.937	-0.579	0.560	0.368	-0.194	0.824	0.775
ADVOCACY				2.501	12.199	0.027*				2.346	10.445	0.055*
EVIDENCE				0.084	1.088	0.909				0.267	1.306	0.745
LACK OF CAPACITY							-1.038	0.354	0.255	-1.077	0.341	0.255
LACK OF FUNDING							0.393	1.482	0.520	0.022	1.022	0.975

Table 5.5: Negative Binomial Regression Predicting Guidance with Blocking Factors, Facilitating Factors, Controlling for National Income and Region

	Equation 1			Equation 2			Equation 3			Equation 4		
	B	Exp(b)	Sig.	B	Exp(b)	Sig.	B	Exp(b)	Sig.	B	Exp(b)	Sig.
GNIPC	2.14E-05	1.000	0.726	6.28E-06	1.000	0.921	1.87E-05	1.000	0.771	2.94E-06	1.000	0.966
LAC	0.309	1.362	0.511	0.350	1.419	0.467	0.284	1.329	0.562	0.292	1.339	0.559
AFRICA	-0.095	0.909	0.848	0.070	1.073	0.893	-0.203	0.816	0.722	-0.074	0.929	0.902
ADVOCACY				0.900	2.461	0.310				0.827	2.286	0.391
EVIDENCE				-0.040	0.961	0.947				0.098	1.103	0.885
LACK OF CAPACITY							-0.331	0.718	0.665	-0.393	0.675	0.623
LACK OF FUNDING							0.183	1.201	0.729	0.051	1.052	0.932

Discussion

The dependent variables *DRR in National Education Policy* (Model 1) and Guidance (Model 3) are actions that do not necessarily require an abundance of resources. *DRR in National Education Policy* only requires that government staffers write DRR into policy. For this to occur, proponents of school safety and DRR may need to advocate for language on DRR to be included within the text. While, Advocacy did have a positive effect, it did not have significant effect. However, according to the model results (Model 1, Equations 1 and 2), Evidence had a positive correlation with *DRR in National Education Policy*. Similarly to writing DRR into policy, policy guidance on school drills is also a task that might not require an abundance of resources. But, successful policy guidance might require some familiarity with disaster management or some technical capacity to be able to adequately describe the policy procedures. However, according to the regression results, none of the independent variables were significantly correlated.

The funding of multi-hazard risk assessments and retrofit and replacement of identified unsafe schools is an action that requires a substantial coordination between government agencies, technical capacity, funding, political will, and advocacy from major actors in each

relevant agency. Therefore, it is expected that advocacy and funding would have positive effects on the presence on retrofit and replacement policies. The results (Model 2, Equation 4) indicate that countries that selected Lack of Capacity and Lack of Funding as a blocker had a greater probability of not having funded the multi-hazard risk assessment or replacement of identified unsafe schools. This suggests that Lack of Capacity and Lack of Funding do play an important role in retarding Pillar 1 policies and activities. Furthermore, a country's decision to pursue the funding of a multi-hazard risk assessment and retrofit and replacement of identified unsafe schools might also depend on the frequency, nature, propensity, and characteristics of the hazard within the region. Certainly, risk assessment and retrofit/replacement is most crucial where sudden onset disasters like earthquakes and landslides can cause school collapse without warning. The results indicate that there is a regional effect. Latin American and Caribbean countries have a greater probability than Asia Pacific and African countries to have funded such policies.

While the models produced significant correlations between the predictor and outcome variables, interpretation of these results should be preceded with caution. First, the independent variables Evidence, Advocacy, Lack of Funding, and Lack of Capacity are not true measures of these phenomenon. These variables are concepts selected by individuals working within each responding countries' MoEs. The interpretation of the results must take this into account.

Chapter 6: Conclusions

This section offers a set of recommendations for policy advocates, future research, and future iterations of the CSS Baseline Survey.

Recommendations for Policy Advocacy

This chapter discusses recommendations to improve school safety based upon the results of the CSS Baseline Dataset. While a good effort has been placed on integrating DRR into the education sector through national policy, there are areas for improvement. Building school safety involves a coordinated and systematic political effort. 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. These recommendations intend to guide national leaders to protect children and youth and educators livelihoods, the continuity of education, and education-sector investments.

- Governments should establish focal points within their national, sub-national, and local Ministries of Education and National Disaster Management Organizations to coordinate education-sector disaster risk reduction efforts. These agencies (and other institutions that deal with disaster risk reduction), in the context of DRR, currently and historically deal primarily with emergency management and response, but future efforts should focus on all elements of CSS. These agencies, and other relevant institutions, should collaborate to execute all tasks related to developing comprehensive school safety initiatives.

- Respondents indicated that evidence was among the most influential factors of policy development. However, many countries do not systematically collect, update, or

publicly share education-sector risk data. Thus, governments should collect and share

non-sensitive data on education-sector loss publicly. Important data include variables

such as number of deaths, injuries, infrastructure, and education days lost. An online

open-access portal should be created to act as central repository for the data, similar to

EM-DAT. Baseline data on student performance should also be collected so that analysis

can be performed on pre and post-disaster data to identify trends.

- Risk data should be disaggregated by demographic, geographic, and institutional

  characteristics such as sex, ethnicity, disability and district, sub-national, and national

  levels, and pre-school, primary, secondary, technical, and university institutions.

  Disaggregated data plays an important role in the development of interventions by

  supporting the creation of evidence-based policies that target demographics or regions

  that are predominantly or overwhelmingly affected by hazards, revealing previously

  unobserved underlying trends or patterns, and providing the basis for monitoring and

  implementation of education-sector DRR trends longitudinally (Education New York,

  2012).

- The Yokohama, Sendai, and Hyogo frameworks all list the creation, cataloging, and

  public distribution of risk data as an important goal and benchmark for NGOs, national

  governments, and global institutions (United Nations General Assembly, 1994; United

  Nations General Assembly, 2005; United Nations General Assembly, 2015). The scale-up

  of disaster risk reduction is hamstrung by the absence of raw data (World Bank, 2018).

  Risk data is important because it generates evidence used to support CSS or DRR-based

initiatives, such as multi-hazard risk assessments used to identify unfit school building stock for retrofit or replacement.

- Drills are a major component of building children's competency in emergency response. Despite its importance, over half of countries do not conduct periodic fire and hazard drills, and even fewer provide guidance on how to conduct them. At the same time, a majority of countries do not offer training to school faculty and staff on the principles of disaster management. To fill this gap, governments should require that all schools conduct periodic fire and hazard drills, so that they know how to react when hazards do occur. Furthermore, disaster management development programs should be offered to teachers and faculty so that they can effectively develop drills and simulations for their students.

- While over half of governments have included language on education sector risk assessment in their education sector disaster management policies, few governments have funded the hazard risk assessment of their school building stock, and even fewer have funded the retrofit and replacement of the identified unsafe schools. Thus, governments should conduct multi-hazard risk assessments of their school building stock to identify schools not structurally equipped to handle the region's local hazards. Upon the completion of the multi-hazard risk assessment, governments should also fund the retrofit or replacement of those 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 when hazards do occur. Governments that

protect the physical safety of schools also can save on infrastructure investments and ensure a quicker societal recovery.

- While many respondents indicate that DRR and climate change are included within the national curriculum, many countries have yet to comprehensively embed these subjects into the curriculum. Furthermore, fewer frequently are DRR and climate change subjects included in teacher curriculum, and thus teachers are teaching these subjects without previous academic preparation. Thus, governments should incorporate DRR and climate change education into national curriculum, and national curriculum should be matched with teacher training and professional development opportunities to develop teacher capacities in those subjects. A larger effort is spent on understanding extreme natural events rather than social vulnerability (Briceño, 2015). 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. Lastly, as suggested by Merchant (2015), DRR curriculum should also be matched with student assessments to ensure that they meet performance expectations, and that they retain information from the curriculum.

Recommendations for Future Research

Two 'strains' of recommendations for future research emerged over the course of completing this study: (1) improved research design methods and (2) future research topics.

Improved Research Design Methods

Because future iterations of the CSS Baseline Policy Survey are expected, the following

suggestions should be considered to improve the efficacy of the research that may emerge

from future surveys.

- **Independent verification of the data.** Verification of the survey was conducted by

  government officials themselves. Research based upon future iterations of the CSS

  Baseline Policy Survey may benefit from a systematic methodology for independent

  verification of the dataset. Verification might increase the accuracy, completeness, and

  consistency of the responses, and will thus produce more meaningful and

  representative results. In the current version of the CSS Baseline Survey, each of the 68

  survey respondents had a varying degree of knowledge (and perhaps bias) about their

  country's policies, demonstrated by the abundant 'unknown' or blank responses –

  which amounted to 2,876 values, or 37% of the total dataset. To achieve accuracy,

  completeness, and consistency, future researchers might consider reviewing each

  country's policy documents provided by survey respondents themselves. Another

  benefit of an independent verification process is that the researcher may capture data

  on countries that did not participate in the CSS Baseline Survey, because many of the

  required policy documents are already public.

  Or, perhaps, the reliance on survey responses could be entirely eliminated. Instead, a

  small team of researchers, or maybe as the research focus of a doctoral student, could

  use the questions within the CSS Baseline Survey as an index against the provided policy

  documents. This team or individual would themselves read through each policy

document and fill out the index accordingly. This method could reduce the instances of blank responses, improve accuracy, and increase the reliability of the data. A challenge to this approach is that policies are written in official languages of each country and, thus, verification would require a team of researchers with fluency in a large number of languages.

Previous research that relied on analyzing policy documents using an index as a data collection method might provide insights on methods to populate survey responses. Although unrelated to the field of disaster risk reduction, a study by Alciati et al (1998) developed an index (based on a set of six indicators) that evaluated the 'extensiveness' of policies limiting youth access to tobacco in 50 U.S. states. The authors collected tobacco policies for all 50 states, and rated the six indicators dependent on the content of each states' tobacco policy. The results allowed them to extract a policy robustness measure. A similar principle could be applied to future CSS policy research.

- **Provide a rubric for what counts as yes/no/unknown**. A rubric might help respondents to distinguish whether or not their policies/strategies/activities (or lack of) qualify for certain response types. For instance, many respondents selected 'yes' to questions about DRR topics included within their national curriculum, but then in the qualitative responses indicated that DRR curriculum was often developed or disseminated by NGOs as pilot curriculum or for certain regions of the country. Other countries took the question to mean that the topic was embedded in national, mandated curriculum. These differences in interpretation reduce the reliability of the data. While the survey team did consult with each other and address interpretation of questions during the

administration of the survey, embedding a rubric in the survey will be important as future surveys may not have dedicated survey teams or where countries are completing the survey independently.

- **Research on the relationship between education sector losses due to hazards and countries CSS policies.** Another area worth exploration is the relationship between countries with varying degrees of CSS policies and their propensity for hazard impacts to their education sectors. A potential research question could be, "Do countries with more robust CSS policies have a lower propensity for hazard impacts to their education sector?" Such research can help confirm the benefits of CSS policies.

  However, this research cannot yet be conducted because no such database exists that quantifies deaths, injuries, and damages to the education sector on a global scale. A team of researchers could potentially take on the task of compiling a dataset by prodding UN agencies and other international aid organizations that may track such data, or by scanning and then compiling the relevant data reported in the hundreds of thousands of peer reviewed articles and white literature that report on education sector losses after 'disasters' occur. Another beginning point could be to examine the responses to the current version of the CSS Baseline Dataset to confirm the countries that answered 'yes' to survey questions that asked about their education sector data collection strategy in times of emergency. Positive responses to those questions might provide future leads of inquiry, and perhaps certain governments may be willing to share such data publicly.

Future Research Topics

This study relied on an abundance of literature that focused on disaster risk reduction topics relating to the education sector. These topics included (but not limited to) case studies on school disaster management, the efficacy of school curriculum, student and teacher perception of DRR curriculum, psycho-social disaster impacts on children, and post-disaster effects on school buildings. However, much of this research was conducted at the local or individual school level. Only two known case studies report on aspects of CSS at the multi-national level; the <u>2012 UNICEF document by Selby & Kaga titled "Disaster Risk Reduction in School Curricula: Case Studies from Thirty Countries</u>, and the <u>2011 UNISDR School Safety Baseline Study by Pedro Bastidas</u>. Thus, more research should focus on national or multi-national policies, with a specific concentration on country's progress towards commitments made in the Sendai Framework for Disaster Risk Reduction. Second, commonly repeated in the literature, as well as UN and NGO reports is the idea that disaster risk reduction education can help children reduce their own vulnerability to hazards. However, it is commonly understood that vulnerability is a product of structural inequalities and poor planning that disproportionately affect different classes and demographics over others (Hamza & Zetter, 1998; Cutter et al, 2003; Sørensen, Vedeld, & Haug, 2006; Pelling & Uitto, 2011). Future research could further examine how students benefit from disaster risk reduction curriculum, and how they use it to reduce their vulnerability.

Recommendations for Future Surveys

The following are recommendations for future iterations of the CSS Baseline Dataset.

Recommendation A: Collect data on education sector impacts. In addition to CSS-related policies, the CSS Baseline Survey could ask questions that capture data about education sector impacts, loss, and disruption. Data should be disaggregated by demographic, institutional, hazard, and geographic characteristics. Such questions are justified because the Yokohama, Hyogo, and Sendai Frameworks explicitly underscore the importance of data in advancing disaster risk reduction globally (See HFA Priority 2 [j], [l], [m] [f]; SFDRR Priority 1, #25, [a]). Designers of the survey might consider revising it so that it captures information on school infrastructure damage, collapse, deaths, injury, economic losses, and hazard risk assessments. Data should be disaggregated by sex, age, institution type (early childhood, primary, secondary, and post-secondary), hazard characteristic, student/staff, etc. Doing so will allow researchers, advocates, and practitioners to better monitor the advancements or regression in school safety, and to better tailor interventions and strategies based upon the needs of specific demographics.

The bulleted points below are questions that could be included in future versions of the survey. Some of the questions were collected from or inspired by indicators from the Rollout Manual for Operationalization of ASEAN Common Framework for Comprehensive School Safety document (Page 9), and the GADRRRES CSS Targets and Indicators and Concept Note for Phase Two (Page 3).

Questions that capture information on school infrastructure damage and injury:

- Does the government collect (pre-disaster) baseline education data (enrollment, number of schools, grade point averages, etc.). If yes, is it made publicly available?

- Number of schools and/or classrooms completely destroyed due to impact of hazards

- Number of schools and/or classrooms partially-damaged due to impact of hazards

- Number of schools located in hazard-prone area

- Number of school being retrofitted with hazard-resistant features

- Number of academic days lost or learning periods lost due to hazard impacts

- Number of casualties of students and school staff by hazard types

- Number of students and school staff injured

- Number of school, students affected by disasters by region, by province, by hazard type in the past years

- Number of dropouts due to disaster impacts

Additional questions:

- (P1) Does the building code specifically mention schools?

- (P3) Is there a committee at the national level that designs and reviews DRR curriculum?

- (P3) Through which channels are DRR curriculum delivered? (Grade level, subject, etc.)

- (P3) Do pilot projects (organized by NGOs or civil society) have a significant presence in delivering DRR curriculum?

The following table is an example of how survey questions could be formatted.

Q#	Pillar	Question
Q1	P1	Has your government conducted a multi-hazard risk assessment (MHRA) of school infrastructure? * With an option to upload their MHRA report/document

Q1a	P1	If yes to Q1, how many schools in total were examined in the MHRA?
Q1b	P1	If yes to Q1, how many schools remain to be examined in the MHRA?
Q1c	P1	If yes to Q1, how many schools were identified that must be retrofitted?
Q1d	P1	If yes to Q1, how many schools were identified that must be replaced?
Q1e	P1	If yes to Q1, what is the projected cost of the MHRA? (To fully retrofit/replace all schools as identified in the MHRA)
Q1f	P1	If yes to Q1, has your government funded the retrofit/replacement of identified schools (as outlined in the MHRA)?
Q1g	P1	If your government has not conducted a multi-hazard risk assessment of school infrastructure (No to Q1), does your government have plans to do so in the future?

Recommendation B: Ask only one question at a time. Some questions ask several questions at once, and some response options respond to more than one question. Some response options mix different scales – for instance, frequency scales as well as yes/no scales. However, survey questions should not be combined where the respondent may wish to answer affirmatively for one part, but negatively for another (Glasgow, 2005). Response options should be mutually exclusive (no overlap between options), inclusive and exhaustive, easily interpreted, and easily

distinguishable (UC San Diego, 2015). Therefore, questions and responses should be formatted so that they only ask or respond to one question at a time.

Formatting questions so that they ask and respond to one item at a time will improve clarity and efficiency, for both the respondent and the analyst. When multiple questions are asked at once, it welcomes respondent error and may force the interpretation of the results upon the analyst. Further, it unnecessarily complicates the organization of the dataset. Untangling these questions is burdensome, unnecessarily complicates data analysis, and invites user error.

For example, take question 22:

Does your government have a policy requiring the multi-hazard assessment of all schools and the prioritization for the replacement, or strengthening of safety issues identified in unsafe schools?

- No

- Yes, but not funded or implemented

- Yes, funds allocated for assessment only, but not implemented yet

- Yes, funds allocated for assessment only, and assessment implemented

- Yes, funds allocated for assessment and replacement/strengthening of safety issues, but not implemented fully yet

- Yes – complete or almost complete

- Other

Instead, the question could be broken out into a series of questions that each ask one question at a time, and their responses can be yes/no/other/unknown.

Q_i: *Does your government have a policy requiring the multi-hazard assessment of all schools?*

Q_i: *Does your government have a policy requiring the multi-*

hazard assessment of all schools?

Q_{ii}: *Has your government funded the multi-hazard assessment?*

Q_{iii}: *Has your government conducted the multi-hazard*

assessment?

Q_{iv}: *Has your government allocated funds for the replacement of*

school buildings (as identified in the MHRA)? If yes, what portion

of the facilities have been funded?

Q_v: *Has your government completed the replacement of school*

buildings as identified in the multi-hazard risk assessment?

Questions 6, 8, 9, 10, 11, 13, 14, 16, 19, 22, and 27 should be examined for re-write.

Recommendation C: Remove all questions that ask about the amount of text dedicated to a topic. The amount of text dedicated to a topic may not be an effective measure of the efficacy of a policy. Instances of these types of questions can be found in questions 6, 8, 1.

Recommendation D: Add a time specification for all questions. Many qualitative responses gave outdated examples of the activities that were occurring in terms of DRR in their country. To keep responses relevant, perhaps a time specification should be added to questions – (Within the last 5 years).

Recommendation E: Remove 'evidence' as a facilitator and blocker. There is a large body of research that demonstrates that evidence does not influence policy development or implementation. Respondents most frequently selected evidence as a facilitating variable, and

took opportunity away from other variables that might actually be influencing the development or implementation of policy.

Recommendation F: Add a Likert scale to each facilitating and blocking variable. Adding a Likert scale will expand the opportunities for statistical analysis.

EX: On a scale from 1 to 5, 5 being the most, how much does X facilitate policy development/implementation?

Recommendation G: Remove language about only selecting 3-5 facilitating or blocking variables. Despite the instruction to only select 3 – 5 variables, many respondents selected over five, or all, variables. If this criteria must be kept, then force the rule into the Survey Monkey code so that respondents can *only* select 3 – 5 variables. Otherwise, they may select more, or all of the available variables.

Recommendation H: Force answers. Do not allow respondents to submit the survey with blank responses.

Works Cited

ActionAid. (2015). *Joint Action Group Positions: Disaster Risk Reduction in Cambodia* (p. 36). Retrieved from

ActionAid, ACTED, AVSF, CARE, Caritas, DanChurchAid, IFRC, Life with Dignity, Oxfam, Plan, People in

Need, Save the Children, World Vision Regular Observers: CHF/ ADPC - UNDP website:

https://www.humanitarianresponse.info/sites/www.humanitarianresponse.info/files/documents/files/k

hm_0801_drrpos_alljagpositions_en_.pdf

Akram, O., Chakma, J., & Mahbub, A. (2012). Continuing Education in Disaster-Affected Schools in

Bangladesh: An Evaluation of the Education in Emergencies Project. *Children, Youth and Environments*,

22(2), 249–262. https://doi.org/1.7721/chilyoutenvi.22.2.0249

Alayo, L. B. (1999). *Disaster education*. Retrieved from Centro de Capacitación y Prevención para el Manejo de

Emergencias y Medio Ambiente: S.O.S Vidas Per website:

http://www.preventionweb.net/publications/view/7560

Amri, A., Bird, D. K., Ronan, K., Haynes, K., & Towers, B. (2017). Disaster risk reduction education in Indonesia:

challenges and recommendations for scaling up. *Nat. Hazards Earth Syst. Sci.*, *17*(4), 595–612.

https://doi.org/1.5194/nhess-17-595-2017

Anderson, A., McFarlane, K., Petal, M., & Moli, S. (2017). *Limiting and planning for schools as temporary

evacuation centres in emergencies*. Retrieved from Save the Children, Australian Aid, Asia Pacific

Coalition for School Safety website:

https://reliefweb.int/sites/reliefweb.int/files/resources/55716_55716stc01439schoolsasevacuationcen.

pdf

Apronti, P. T., Osamu, S., Otsuki, K., & Kranjac-Berisavljevic, G. (2015). Education for Disaster Risk Reduction

(DRR): Linking Theory with Practice in Ghana's Basic Schools. *Sustainability*, *7*(7), 1–27.

ASEAN. (2016). *Common Framework for Comprehensive School Safety*. Association of South East Nations.

Ayhan, E. (2018). *Building safer schools in Turkey*. Retrieved from Global Facility for Disaster Reduction and Resilience, World Bank website: https://www.gfdrr.org/sites/default/files/publication/Turkey-final_.pdf

Aysan, Y., & Lavell, A. (2015). *Disaster risk governance during the HFA implementation period* (p. 57). United Nations Office for Disaster Risk Reduction.

Back, E., Cameron, C., & Tanner, T. (2009). *Children and Disaster Risk Reduction: Taking stock and moving forward*. Retrieved from United Nations Children's Fund, Institute of Development Studies website: https://www.preventionweb.net/files/15093_12085ChildLedDRRTakingStock1.pdf

Baez, J., de la Fuente, A., & Santos, I. (2010). *Do Natural Disasters Affect Human Capital? An Assessment Based on Existing Empirical Evidence* (IZA Discussion Paper No. 5164). Retrieved from Institute for the Study of Labor (IZA) website: https://econpapers.repec.org/paper/izaizadps/dp5164.htm

Bangladesh Ministry of Education. (2010). *National Education Policy*. Retrieved from People's Republic of Bangladesh website: https://reliefweb.int/sites/reliefweb.int/files/resources/02.National-Education-Policy-2010-English.pdf

Bartels, S. A., & VanRooyen, M. J. (2012). Medical complications associated with earthquakes. *The Lancet*, *379*(9817), 748–757. https://doi.org/1.1016/S0140-6736(11)60887-8

Bastidas, P. (2011). *School Safety Baseline Study*. Retrieved from United Nations International Strategy for Disaster Reduction website: https://www.unisdr.org/files/23587_doc18766contenido.pdf

Bastidas, P., & Petal, M. (2012). *Assessing School Safety from Disasters a Global Baseline Report: ISDR Thematic Platform for Knowledge and Education 2012* (No. UNISDR/GE/2013/4 – ICLUX – V1 – 1,000). Retrieved from United Nations International Strategy for Disaster Reduction website: https://www.unisdr.org/files/35274_2012schoolsafetyglobalbaseline.pdf

Benadusi, M. (2014). Pedagogies of the Unknown: Unpacking 'Culture' in Disaster Risk Reduction Education. *Journal of Contingencies and Crisis Management*, n/a-n/a.

Bhatia, S., Gyi, M. M., Rahman, A., & Hossain, Z. (2008). *A Study on Impact of Disasters on the Education Sector in Cambodia*. Retrieved from http://www.preventionweb.net/files/15375_mdrdeducationcambodiafinalmar08.pdf

Bhutan Ministry of Education. (2014). *Bhutan Education Blueprint*. Retrieved from https://www.globalpartnership.org/download/file/fid/62934

Briceño, S. (2015). Looking Back and Beyond Sendai: 25 Years of International Policy Experience on Disaster Risk Reduction. *International Journal of Disaster Risk Science*, *6*(1), 1–7. https://doi.org/1.1007/s13753-015-0040-y

Bruneau, M. (2002). Building damage from the Marmara, Turkey earthquake of August 17, 1999. *Journal of Seismology*, *6*(3), 357–377. https://doi.org/1.1023/A:1020035425531

Chossudovsky, M. (1998). [Review of *Review of The Globalisation of Poverty: Impacts of IMF and World Bank Reforms*, by J. R. Mandle]. *The Journal of Developing Areas*, *32*(3), 415–417. Retrieved from JSTOR.

Cumiskey, L., Hoang, T., Suzuki, S., Pettigrew, C., & Herrgård, M. M. (2015). Youth Participation at the Third UN World Conference on Disaster Risk Reduction. *International Journal of Disaster Risk Science*, *6*(2), 150–163. https://doi.org/1.1007/s13753-015-0054-5

Cutter, S. L., Boruff, B. J., & Shirley, W. L. (2003). Social Vulnerability to Environmental Hazards*. *Social Science Quarterly*, *84*(2), 242–261. https://doi.org/1.1111/1540-6237.8402002

Delicado, A., Rowland, J., Fonseca, S., de Almeida, A. N., Schmidt, L., & Ribeiro, A. S. (2017). Children in Disaster Risk Reduction in Portugal: Policies, Education, and (Non) Participation. *International Journal of Disaster Risk Science*, *8*(3), 246–257. https://doi.org/1.1007/s13753-017-0138-5

Dwiningrum, S. I. A. (2017). Developing school resilience for disaster mitigation: a confirmatory factor

analysis. *Disaster Prevention and Management: An International Journal*, *26*(4), 437–451.

https://doi.org/1.1108/DPM-02-2017-0042

Education New York. (2012). *The Importance of Disaggregating Student Data*. Retrieved from Education New

York website:

http://www.educationnewyork.com/files/The%20importance%20of%20disaggregating_.pdf

Farrell, J. (2015). *The Battle for Yellowstone: Morality and the Sacred Roots of Environmental Conflict*.

Retrieved from https://muse.jhu.edu/book/47725

Fernandez, G., & Shaw, R. (2015). Youth participation in disaster risk reduction through science clubs in the

Philippines. *Disasters*, *39*(2), 279–294. https://doi.org/1.1111/disa.12100

Field, C., Barros, V., Stocker, T. F., Dahe, Q., Dokken, D. J., Ebi, K. L., … Midgley, P. M. (2012). *Managing the

Risks of Extreme Events and Disasters to Advance Climate Change Adaptation*. Retrieved from

Intergovernmental Panel on Climate Change website:

https://www.ipcc.ch/site/assets/uploads/2018/03/SREX_Full_Report-1.pdf

Fiji Ministry of Education. (2014). *Education in Emergencies and School Safety Policy*. Retrieved from Republic

of Fiji website:

https://teams.unesco.org/ORG/fu/bangkok/public_events/Shared%20Documents/IQE/2017/11-

DRR%20Workshop/Documents/EiE_Policy.pdf

Fothergill, A., & Peek, L. (2015). *Children of Katrina*. Retrieved from

https://utpress.utexas.edu/books/fothergill-peek-children-of-katrina

George, D., & Mallery, P. (2003). *SPSS for Windows step by step: A simple guide and reference*. 11.0 update

(4th ed.). Boston: Allyn & Bacon.

GFDRR. (2017). *Bringing resilience to scale*. Retrieved from World Bank, Global Facility for Disaster Reduction

and Recovery website: https://www.gfdrr.org/sites/default/files/publication/GFDRR-Annual-Report-

2017.pdf

Hagelsteen, M., & Burke, J. (2016). Practical aspects of capacity development in the context of disaster risk

reduction. *International Journal of Disaster Risk Reduction*, *16*, 43–52.

https://doi.org/1.1016/j.ijdrr.2016.01.010

Hamza, M., & Zetter, R. (1998). Structural adjustment, urban systems, and disaster vulnerability in developing

countries. *Cities*, *15*(4), 291–299. https://doi.org/1.1016/S0264-2751(98)00020-1

Hartwig, R., & Wilkinson, C. (2010). *Hurricane Katrina: The Five Year Anniversary*. Retrieved from Insurance

Information Institute website: https://www.iii.org/sites/default/files/1007Katrina5Anniversary.pdf

Herts, D., Bhatia, S., Anderson, A., & Garcia, M. (2009). *Guidance Notes on Safer School Construction* (p. 143).

Retrieved from InterAgency Network for Education in Emergencies website:

https://toolkit.ineesite.org/resources/ineecms/uploads/1005/INEE_Guidance_Notes_Safer_School_Con

str_EN.pdf

Hockrainer-Stigler, S., Kunreuther, H., Linnerooth-Bayer, J., Mechler, R., Michel-Kerjan, E., Muir-Wood, R., …

Young, M. (2011). The Costs and Benefits of Reducing Risk from Natural Hazards to Residential

Structures in Developing Countries. *Wharton University of Pennsylvania*.

Ineli-Ciğer, M. (2017). Protecting Syrians in Turkey: A Legal Analysis. *International Journal of Refugee Law*,

29(4), 555–579. https://doi.org/1.1093/ijrl/eex042

Izadkhah, Y. O., & Heshmati, V. (2007). *Applicable methods in teaching earthquakes to preschool children*.

Retrieved from International Institute of Earthquake Engineering and Seismology website:

http://citeseerx.ist.psu.edu/viewdoc/download?doi=1.1.1.517.3909&rep=rep1&type=pdf

Jones, S., Oven, K. J., Manyena, B., & Aryal, K. (2014). Governance struggles and policy processes in disaster

    risk reduction: A case study from Nepal. *Geoforum*, *57*(Supplement C), 78–9.

    https://doi.org/1.1016/j.geoforum.2014.07.011

Juster, T. (1975). The Influence of Education and Ability on Salary and Attitudes. *NBER*, *0-07-010068–3*, 365–

    396.

Kagawa, F., & Selby, D. (2012). Ready for the Storm: Education for Disaster Risk Reduction and Climate

    Change Adaptation and Mitigation1. *Journal of Education for Sustainable Development*, *6*(2), 207–217.

    https://doi.org/1.1177/0973408212475200

Kagawa, F., Selvy, D., & Geeta, R. G. (2012). *Disaster Risk Reduction in School Curricula: Case Studies from*

    Thirty Countries (No. 978-92-3-001087–4; p. 209). Retrieved from United Nations Children Fund, United

    Nations Educational, Scientific and Cultural Organization website:

    http://gadrrres.net/uploads/files/resources/DRRinCurricula-Mapping30countriesFINAL.pdf

Kahn, M. E. (2005). The Death Toll from Natural Disasters: The Role of Income, Geography, and Institutions.

    The Review of Economics and Statistics, *87*(2), 271–284. https://doi.org/1.1162/0034653053970339

Kar, N. (2009). Psychological impact of disasters on children: review of assessment and interventions. *World*

    Journal of Pediatrics: WJP, *5*(1), 5–11. https://doi.org/1.1007/s12519-009-0001-x

Karanja, E. (2016). Radio in Times of Disaster. *United Nations Office for Disaster Risk Reduction*. Retrieved

    from

    https://www.google.com/search?q=Radio+in+Times+of+Disaster+unisdr&rlz=1C1GCEA_enUS825US825

    &oq=Radio+in+Times+of+Disaster+unisdr&aqs=chrome..69i57.1535j0j4&sourceid=chrome&ie=UTF-8

Kellett, J., & Caravani, A. (2013). *Financing Disaster Risk Reduction: A 20 year story of international aid*.

Retrieved from Overseas Development Institute website: https://www.odi.org/sites/odi.org.uk/files/odi-

assets/publications-opinion-files/8574.pdf

Kenny, C. (2009). *Why Do People Die in Earthquakes? The Costs, Benefits and Institutions of Disaster Risk*

Reduction in Developing Countries (No. WPS 4823). Retrieved from World Bank website:

https://www.preventionweb.net/files/8462_WPS48231.pdf

Kousky, C. (2016). Impacts of Natural Disasters on Children. *The Future of Children*, *26*(1), 73–92.

Levac, D., Colquhoun, H., & O'Brien, K. K. (2010). Scoping studies: advancing the methodology.

Implementation Science: IS, *5*, 69. https://doi.org/1.1186/1748-5908-5-69

Lim, B., Co, R., Riesmasari, C., Chanphearum, K., Pimmata, O., & Berandi, R. (2016). *Comprehensive School*

Safety Practices in Asia (p. 114). Retrieved from World Vision International website:

https://www.wvi.org/sites/default/files/Comprehensive%20Sch%20Safety%20Practices%20Asia_Web.p

df

Maldives National Disaster Management Centre. (2012). *Maldives national progress report on the*

implementation of the Hyogo Framework for Action (2011-2013). Retrieved from Republic of Maldives

website: http://ndmc.gov.mv/assets/Uploads/HFA-Report-Maldives-2011-2013.pdf

Masson-Delmotte, V., Pörtner, H.-O., Skea, J., Pirani, A., Pidcock, R., Chen, Y., … Waterfield, T. (2018). *Global*

warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial

levels and related global greenhouse gas emission pathways, in the context of strengthening the global

response to the threat of climate change, sustainable development, and efforts to eradicate poverty (No.

ISBN 978-92-9169-151-7). Retrieved from Intergovernmental Panel on Climate Change website:

https://report.ipcc.ch/sr15/pdf/sr15_spm_final.pdf

Merchant, A. (2015). *Children and Disaster Education: An Analysis of Disaster Risk Reduction within the School Curricula of Oregon, Texas, and the Philippines*. Concordia University, Portland.

Miscolta, A. (2017). *Guiding Local Governments to Strengthen Unsafe Schools in Japan*. Retrieved from Global Alliance for Disaster Risk Reduction in the Education Sector website: https://www.preventionweb.net/files/61551_csspolicycasestudyjapanguidinglocal.pdf

Mudavanhu, C. (2014). The impact of flood disasters on child education in Muzarabani District, Zimbabwe. *Jàmbá: Journal of Disaster Risk Studies*, *6*(1), 8.

Muttarak, R., & Lutz, W. (2014). Is Education a Key to Reducing Vulnerability to Natural Disasters and hence Unavoidable Climate Change? *Ecology and Society*, *19*(1). Retrieved from https://www.jstor.org/stable/26269470

Nepal Ministry of Education. (2016a). *Guidelines for developing type designs for schools buildings in Nepal*. Retrieved from Republic of Nepal website: http://www.moepiu.gov.np/downloadfile/School%20Design%20Guidelines_FINAL_1474869069.pdf

Nepal Ministry of Education. (2016b). *School Sector Development Plan*. Retrieved from Republic of Nepal website: http://moe.gov.np/assets/uploads/files/SSDP_Book_English_Final_July_5,_2017.pdf

Neumayer, E., & Barthel, F. (2010). *Normalizing Economic Loss from Natural Disasters: A Global Analysis* (SSRN Scholarly Paper No. ID 1720414). Retrieved from Social Science Research Network website: https://papers.ssrn.com/abstract=1720414

Neumayer, E., Plümper, T., & Barthel, F. (2013). The Political Economy of Natural Disaster Damage. *Global Environmental Change*, *24*. https://doi.org/1.2139/ssrn.1884827

NOAA. (2014). *December 26, 2004 Sumatra, Indonesia Earthquake and Tsunami - Tenth Anniversary Update*.

Retrieved from National Oceanic and Atmospheric Administration website:

https://www.ngdc.noaa.gov/hazard/data/publications/2004_1226.pdf

NOAA. (2017). *Tropical Cyclone Report: Hurricane Harvey* (No. AL092017). Retrieved from National Oceanic

and Atmospheric Administration website: https://www.nhc.noaa.gov/data/tcr/AL092017_Harvey.pdf

Oliver-Smith, A. (1996). Anthropological Research on Hazards and Disasters. *Annual Review of Anthropology*,

25(1), 303–328. https://doi.org/1.1146/annurev.anthro.25.1.303

Paci-Green, R., & Pandey, B. (2016). School Construction as Catalysts for Community Change: Evidence from

Safer School Construction Projects in Nepal. *Ake Special Issue*, 34(3): 32-54.

Paci-Green, R., Pandey, B., & Theberge, J. (2015). *Towards Safer School Consutrction: A community-based*

approach (p. 104). Retrieved from Global Alliance for Disaster Risk Reduction & Resilience in the

Education Sector website:

http://www.preventionweb.net/files/45179_towardssaferschoolconstruction2015.pdf

Paraguay Ministry of Education. (2017). *Lic. Elena Caballero Ministerio de Educación y Ciencias. Experiencia*

Paraguay. Retrieved from Republic of Paraguay website:

https://cdn.crefal.org/CREFAL/convocatorias/MESA2%20Elena%20Mabel%20Caballero.pdf

Peek, L. (2008). Children and Disasters: Understanding Vulnerability, Developing Capacities, and Promoting

Resilience — An Introduction. *Children, Youth and Environments*, *18*(1), 1–29.

Pelling, M., & Uitto, J. I. (2001). Small island developing states: natural disaster vulnerability and global

change. *Global Environmental Change Part B: Environmental Hazards*, *3*(2), 49–62.

https://doi.org/1.3763/ehaz.2001.0306

Petal, M. (2008). *Disaster Prevention for Schools Guidance for Education Sector Decision-Makers*. Retrieved

from http://www.preventionweb.net/files/7344_DPforSchoolssm.pdf

Petal, M., Green, R. (2010). Disaster and emergency preparedness: Guidance for schools. International

Finance Corporation, Washington, D.C. Retrieved from

https://openknowledge.worldbank.org/handle/10986/17669

Petal, M., Ireland, N., Wade, D., Robinson, G., Garaelulu, M., Nelson, T., … Kani, S. (2013). *Participatory School

Disaster Management Handbook*. Retrieved from Save the Children website:

https://resourcecentre.savethechildren.net/sites/default/files/documents/309._sc_participatory_school

_disaster_management_toolkit_2016_06_ltr.pdf

Petal, M., & Izadkhah, Y. O. (2008). *Concept Note: Formal and Informal Education for Disaster Risk Reduction

(PDF Download Available)*. Retrieved from

https://www.researchgate.net/profile/Marla_Petal/publication/237409235_Concept_Note_Formal_and

_Informal_Education_for_Disaster_Risk_Reduction/links/55752df208ae7536374ff64a/Concept-Note-

Formal-and-Informal-Education-for-Disaster-Risk-

Reduction.pdf?_sg%5B0%5D=NbhT24H75ReO8UjYyXXq5MtOVOYuFReS2gnJbvAVmAvi7AmRe_9GFRTB5

ZMUf0yLAC_2m5KdMZTEIR2A8nj0XQ.PQm3ZikWmE7bt5IW4_sUhjzQ90-

Ghd0qVI9qg0DsqBlYDvlLM8VQR73CLLsTo1LOtW1IIthpywyjDeWnTLK9kA&_sg%5B1%5D=DAoxPTIr1L4tm

vzcS8hNvllHKfNR_2zLAzowhUPZDLW7RmrWH_FKERD1GJ9_4abw3eI4X3bNqGXv-

CDqmgYILNOmWyIaWf06-az7m4mcDZVZ.PQm3ZikWmE7bt5IW4_sUhjzQ90-

Ghd0qVI9qg0DsqBlYDvlLM8VQR73CLLsTo1LOtW1IIthpywyjDeWnTLK9kA&_iepl=

Pielke, R. A. (2007). *The Honest Broker: Making sense of science in policy and politics* (6th ed.). Cambridge:

Cambridge University Press.

Raschky, P. A., & Weck-Hannemann, H. (2007). Charity hazard—A real hazard to natural disaster insurance?

   Environmental Hazards, *7*(4), 321–329. https://doi.org/1.1016/j.envhaz.2007.09.002

Republic of Namibia. (2009). *A policy for disaster risk management in Namibia*. Retrieved from Republic of

   Namibia website: http://extwprlegs1.fao.org/docs/pdf/nam169289.pdf

Republic of the Philippines. *An act mandating the conduct of fire, earthquake, and other hazardous*

   phenomena drills in educational buildings/establishments, school buses, and health-care institutions. ,

   Pub. L. No. 2992 (2009).

Ronan, K. (2015). *Advances and continuing challenges towards HFA2 and post-2015 background paper*.

   Retrieved from United Nations Childrens Fund website:

   https://www.preventionweb.net/english/hyogo/gar/2015/en/bgdocs/UNICEF%20and%20UNESCO,%20

   2014.pdf

Ross, C. E., & Van Willigen, M. (1997). Education and the Subjective Quality of Life. *Journal of Health and*

   Social Behavior, *38*(3), 275–297. https://doi.org/1.2307/2955371

Seballos, F., Tanner, T., Tarazona, M., & Gallegos, J. (2011). *Children and Disasters: Understanding Impact and*

   Enabling Agency. Retrieved from World Vision International, UNICEF, Save the Children website:

   https://opendocs.ids.ac.uk/opendocs/handle/123456789/2367

Sakurai, A., & Sato, T. (2016). Promoting Education for Disaster Resilience and the Sendai Framework for

   Disaster Risk Reduction. *Journal of Disaster Research*, *11*(3), 402–412.

   https://doi.org/1.20965/jdr.2016.p0402

Sardjunani, N. (2010). *Advancing Child Rights in the Context of DRR Initiatives in Indonesia, Indonesia*

   Country's Experiences and Achievements. PowerPoint presented at the Ministry of Natural Development

   Planning. Ministry of Natural Development Planning.

Save the Children. (n.d.). *Legacy of disasters: The impact of climate change on children*. Retrieved from 2007

website: https://resourcecentre.savethechildren.net/node/3986/pdf/3986.pdf

Shaw, R., Takeuchi, Y., Shiwaku, K., Fernandez, G., Gwee, Q. R., & Yang, B. (2009). *1-2-3 of disaster eduction -*

UNISDR. Retrieved from United Nations Office for Disaster Risk Reduction - Regional Office for Asia and

Pacific website: https://www.unisdr.org/we/inform/publications/12088

Shiwaku, K., Ru Gwee, Q., Shaw, R., & Takeuchi, Y. (2011). Chapter 1 Disaster Education: An Introduction. In

Community, Environment and Disaster Risk Management: *Vol. 7*. *Disaster Education* (Vol. 7, pp. 1–22).

https://doi.org/1.1108/S2040-7262(2011)0000007007

Shiwaku, K., & Shaw, R. (2008). Proactive co-learning: a new paradigm in disaster education. *Disaster*

Prevention and Management: An International Journal, *17*(2), 183–198.

https://doi.org/1.1108/09653560810872497

Sørensen, J., Vedeld, T., & Haug, M. (2006). *Natural hazards and disasters: Drawing on the international*

experiences from disaster reduction in developing countries. Retrieved from Norwegian Institute for

Urban and Regional Research website:

https://www.academia.edu/8576998/Natural_hazards_and_disasters_Drawing_on_the_international_e

xperiences_from_disaster_reduction_in_developing_countries

Thomas, D. R. (2006). A General Inductive Approach for Analyzing Qualitative Evaluation Data. *American*

Journal of Evaluation, *27*(2), 237–246. https://doi.org/1.1177/1098214005283748

Thomas, V., & López, R. (2015). *Global increase in climate-related disasters* (No. 466). Retrieved from Asian

Development Bank website: https://www.adb.org/sites/default/files/publication/176899/ewp-466.pdf

Tierney, K. (2015). Resilience and the Neoliberal Project: Discourses, Critiques, Practices—And Katrina.

American Behavioral Scientist, *59*(10), 1327–1342. https://doi.org/1.1177/0002764215591187

Tong, T. M. T., Shaw, R., & Takeuchi, Y. (2012). Climate disaster resilience of the education sector in Thua

Thien Hue Province, Central Vietnam. *Natural Hazards*, *63*(2), 685–709. https://doi.org/1.1007/s11069-

012-0178-5

UN General Assembly. *Convention on the Rights of the Child*. , Pub. L. No. Resolution 44/25 (1989).

UNDP. (2010). *Capacity Development for Disaster Risk Reduction*. Retrieved from United Nations

Development Program website:

https://www.undp.org/content/dam/undp/library/crisis%20prevention/disaster/5Disaster%20Risk%20R

eduction%20-%20Capacity%20Development.pdf

UNICEF. (2010). *Humanitarian Action and Recovery: Haiti 2010 - 2011 Mid-Year Review*. Retrieved from

UNICEF, World Health Organization website:

https://reliefweb.int/sites/reliefweb.int/files/resources/A1E78476BAE252D68525773C0064B6D5-

Full_Report.pdf

UNICEF. (2012). *Sierra Leone: Country programme document*. Retrieved from United Nations Children Fund

website: https://www.unicef.org/about/execboard/files/Sierra_Leone-2013-2014-final_approved-

English-14Sept2012.pdf

UNICEF. (2016). *Angola Humanitarian Situation Report*. Retrieved from United Nations Children Fund website:

https://www.unicef.org/appeals/files/UNICEF_Angola_Humanitarian_SitRep___31_December_2016.pdf

UNICEF. (2018). *Turkey 2018 Humanitarian highlights*. Retrieved from United Nations Children Fund website:

https://www.unicef.org/appeals/files/UNICEF_Turkey_Humanitarian_Situation_Report_Dec_2018.pdf

UNISDR. (2005). *Hyogo Framework for Action 2005 - 2015: Building the Resilience of Nations and Communities

to Disasters*. Retrieved from United Nations International Strategy for Disaster Reduction website:

https://www.unisdr.org/2005/wcdr/intergover/official-doc/L-docs/Hyogo-framework-for-action-english.pdf

UNISDR. (2008). *Safe schools in safe territories: Reflections on the role of the educational community in risk management* (p. 114). Retrieved from UNISDR, UNICEF, The European Commission for Humanitarian Aid, The European Union website: https://www.unisdr.org/we/inform/publications/8962

UNISDR. (2009a). *Terminology on Disaster Risk Reduction*. Retrieved from https://www.unisdr.org/files/7817_UNISDRTerminologyEnglish.pdf

UNISDR. (2009b). *United Nations International Strategy for Disaster Reduction (UNISDR) Secretariat Evaluation*. Retrieved from Global Development Advisors website: https://www.unisdr.org/files/12659_UNISDRevaluation2009finalreport.pdf

UNISDR. (2011a). *UNISDR says the young are the largest group affected by disasters*. Retrieved from https://www.unisdr.org/files/22742_2011no3.pdf

UNISDR. (2011b). *Hyogo Framework for Action 2005-2015 mid-term review: Building the Resilience of Nations and Communities to Disasters*. Retrieved from United Nations International Strategy for Disaster Reduction website: https://www.unisdr.org/files/18197_midterm.pdf

UNISDR. (2014). *First Meeting of Safe School Leaders Summary of Discussions*. Retrieved from United Nations Office for Disaster Risk Reduction website: https://www.wcdrr.org/uploads/First-Meeting-of-Safe-School-Leaders-Final-Report.pdf

UNISDR. (2015). *Disaster Risk Reduction and Resilience in the 2030 Agenda for Sustainable Development*. Retrieved from United Nations International Strategy for Disaster Reduction website: https://www.unisdr.org/files/46052_disasterriskreductioninthe2030agend.pdf

UNISDR. (2018). *Strategic Approach to Capacity Development for Implementation of the Sendai Framework for Disaster Risk Reduction*. Retrieved from https://www.unisdr.org/files/58211_fullconciseguide.pdf

UNISDR, & GADRRRES. (2017). *Comprehensive School Safety: A global framework in support of the global alliance for disaster risk reduction and resilience in the education sector* (No. STC00972; p. 8). United Nations Office for Disaster Risk Reduction, Global Alliance for Disaster Risk Reduction in the Education Sector, Save the Children.

United Nations. Sendai Framework for Disaster Risk Reduction 2015-202. , A/RES/69/283 § (2015).

United Nations General Assesmbly. International Decade for Natural Disaster Reduction, Programme forum 1999. , 44/236 § (1990).

United Nations General Assesmbly. (1994). *Yokohama Strategy and Plan of Action for a Safer World Guidelines for Natural Disaster Prevention, Preparedness and Mitigation*. Retrieved from https://www.ifrc.org/Docs/idrl/I248EN.pdf

Wallemacq, P., & House, R. (2018). *Economic losses, poverty, and disasters 1998-2017*. Retrieved from Centre for Research on the Epidemiology of Disasters website: https://www.preventionweb.net/files/61119_credeconomiclosses.pdf

Western Cape Government. (2012). *Disaster Risk Reduction Campaign "Edu-tains" Learners on Effects of Climate Change and Smart Living*. Retrieved from Western Cape Government website: https://www.westerncape.gov.za/news/disaster-risk-reduction-campaign-edu-tains-learners-effects-climate-change-and-smart-living

Willis Towers Watson, Start Network, Save the Children, & Overseas Development Institute. (2017). *Sustaining the Gains: Feasibility of Risk Financing for Education.* (p. Task I Report Annexes). Global Partnership for Education.

Wisner, Ben. (2006). *A Review of the Role of Education and Knowledge in Disaster Risk Reduction*. Retrieved

from Thematic Cluster/Platform on Knowledge and Education website:

http://citeseerx.ist.psu.edu/viewdoc/download?doi=1.1.1.205.3258&rep=rep1&type=pdf

Wisner, Benjamin. (2004). *At risk : natural hazards, people's vulnerability, and disasters* (2nd ed). Retrieved

from https://trove.nla.gov.au/version/28454230

World Bank. (2010). *Disaster and Emergency Preparedness: Guidance for Schools* (p. 72). Retrieved from

World Bank, International Finance Corporation website:

https://www.ifc.org/wps/wcm/connect/8b796b004970c0199a7ada336b93d75f/DisERHandbook.pdf?M

OD=AJPERES

World Bank. (2017). Global Program for Safer Schools. *World Bank*. Retrieved from

http://www.worldbank.org/en/topic/disasterriskmanagement/brief/global-program-for-safer-schools

Wuebbles, D., Fahey, D., Hibbard, K., Dokken, B. C., Stewart, D. J., & Maycock, T. K. (2018). *Climate Science*

Special Report: Fourth National Climate Assessment, Volume 1 (No. No. 4). Retrieved from United States

Global Change Research Program website:

https://science2017.globalchange.gov/downloads/CSSR2017_FullReport.pdf

Yamin, L., Rincón, J., Reyes, J., Hurtado, Á., Tristancho, J., Becerra, A., … Obando, L. (2017). *Seismic Risk*

Reduction Strategy for Public School Buildings in Peru. Retrieved from World Bank website:

http://documents.worldbank.org/curated/en/923581513229916549/pdf/122062-WP-P152216-PUBLIC-

Technical-Note-Seismic-Risk-Reduction-Strategy-Public-School-Buildings-Peru.pdf

Yap, S. *Providing Emergency Relief and Protection for Children During Disaster, Calamity and Other Emergency*

Situation. , Pub. L. No. 5062 (2014).

Appendix A: Summary Statistics for Regressions

Table A.1: Basic Summary Statistics for Regression 1 (DRR in National Education Policy)

	Mean	Std. Deviation	Minimum	Maximum
DRR in Nat'l Ed. Policy	0.66	0.48	0.00	1.00
School Risk Assessment	0.25	0.44	0.00	1.00
Guidance	2.93	1.73	0.00	5.00
Teacher Training	1.11	1.32	0.00	3.00
GNI	4688.84	3939.92	320.00	13810.00
LAC Dummy	0.33	0.47	0.00	1.00
AFRICA Dummy	0.21	0.41	0.00	1.00
EVIDENCE	0.44	0.32	0.00	1.00
ADVOCACY	0.42	0.23	0.00	1.00
FUNDING	0.51	0.40	0.00	1.00
CAPACITY	0.37	0.31	0.00	1.00

Appendix B. Descriptive Statistics of Facilitators and Blockers of Policy

Development & Implementation

Table B.1. Facilitative development variables

	%	n
Elected officials use their position to advance CSS	16	11
Civil Society use their position to advance CSS	26	18
Education sector official use their position to advance CSS	32	22
Disaster management officials use their position to advance CSS	31	21
Professional journalists report on CSS	9	6
There is evidence on the impacts of CSS	43	29
The government has a clear framework on how to approach CSS	21	14
Education is valued by the public	29	20
The government has a good technical capacity	15	10
Continued advocacy on CSS for a long period	31	21
There has been large disasters or frequent hazard impacts	34	23
There has been a focus on post-disaster response	10	7
Private sector supports CSS financially	7	5
The government is part of regional or global efforts to promote CSS	29	20
The government coordinates with international and national agencies on CSS	19	13

Table B.2. Blocking development variables

	%	n
Government staff are too busy to conduct CSS	28	19
There is not strong evidence that supports CSS	4	3
The government does not have a framework for CSS	18	12
The National government doesn't have jurisdiction over sub-nationals	10	7
There is no strong guidance for sub-nationals provided	12	8
Funding has not been sufficiently allocated	43	29
Funds are not distributed on time	25	17
Government leaders do not show consistent support for CSS	15	10
Government leaders have not shown commitment for CSS	16	11
The government does not have a sufficient technical capacity	29	20
The policies are not aligned well with other policies	16	11
The policies were implemented too quickly	3	2
Public policy is focused on disaster response	13	9
Civil Society is not involved	6	4
Education sector officials are not committed to CSS	12	8
Disaster management officials are not committed to CSS	9	6
Professional journalists do not report on CSS	18	12
The public is not focused on CSS	19	13
The private sector is not interested in CSS	10	7
The culture does not value education	9	6

Table B.3. Facilitative implementation variables

	%	n
Strong evidence	40	27
Continued Advocacy	31	21
Flexibility when implementing policies	28	19
Civil Society	25	17
Disaster Management Officials	25	17
Education Sector Officials	24	16
Frequent hazard impacts	24	16
Education authorities planned well	21	14
Good technical capacity	21	14
Government has a clear framework	19	13
Elected Officials	16	11
Policies align well	16	11
Private sector	12	8
Government dedicated funds	10	7
Education valued by the public	9	6
Professional journalists report	6	4
Focus on disaster response	6	4
Funds dedicated were easily accessible	3	2

Table B.4. Impeditive implementation variables

	%	n
Funds not allocated	46	31
Staff too busy	28	19
Poor technical capacity	28	19
Funds inaccessible	26	18
Staff don't understand policies	25	17
Public not focused on education	22	15
Inflexibility when implementing policies	18	12
Too much focus on post disaster response	18	12
No strong guidance	16	11
Government leaders don't show consistent support	16	11
No clear framework	15	10
Professional journalists don't report	13	9
Elected officials don't show consistent support	12	8
Education sector leadership don't show support	10	7
National government has no control over sub-nationals	9	6
Policies don't deal with problems	7	5
Private sector not involved	7	5
Polices not aligned with other policies	6	4
Civil society not involved	6	4
Disaster management officials don't show support	6	4
Culture does not value education	4	3
No strong evidence	1	1
Policies implemented too quickly	1	1