

Precarious places, precarious knowledges

Interrogating epistemic inclusion and integration in

Disaster Risk Reduction education

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Author's declaration

This is to certify that:

- I. this thesis comprised only my original work towards the degree of Doctor of Philosophy.
- II. due acknowledgement has been made in the text to all other material used.
- III. this thesis does not exceed the word length for this degree.
- IV. no part of this work has been used for the award of another degree.
- V. this thesis meets the *University of Sydney's Human Research Ethics Committee (HREC) requirements for the conduct of this research.*

Signature

Name Liberty Pascua de Rivera

Abstract

Natural and human-made hazards threaten societies. This is the rationale for the United Nations' invitation to governments to align their policies and national strategies to the global framework of Disaster Risk Reduction (DRR). Policies for DRR stipulate the inclusion of different perspectives and their integration to the global framework towards building a culture of resilience against disasters. While there have been varying levels of response to this call, less attention had been directed towards a critical reflection of the epistemological features of 'knowledge' that undergird DRR, including its expressions in education. In this doctoral dissertation, I engage the lenses of decolonial thinking and practice and critical pedagogy of place in examining cognitive justice; I do so through investigation of the rhetoric of epistemic inclusion and integration in the policies and practices for DRR in cyclone-exposed communities in Australia, the Philippines, and Vanuatu.

With an investigative structure patterned after the comparative case study approach, I followed the biography of DRR policies and their inflections across multiple sites, scales, and time frames. I engaged in ethnographic techniques in conjunction with layered data collection methods, including rhetorical policy analysis, interviews, and participant observation. The insights from the research showed that as the rhetoric of DRR policies endeavoured for inclusion, the texts also contracted, as 'knowledge' ultimately becomes delineated by 'science' and as fitting the DRR framework. Place-based knowledges are marginally involved in both policies and practices, and only as an accessory, even as they are ostensibly considered valuable and necessary. The concluding discussion offers recommendations towards equitable and effective approaches to disaster education - a valuable resource in DRR and disaster education governance at the local, national, and international levels.

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ACRONYMS

AIDR	Australian Institute for Disaster Resilience
BNHCRC	Bushfire and Natural Hazards Cooperative Research Centre
BOM	Bureau of Meteorology
CAVAPPED	Cagayan Valley Partners in People Development
CCE	climate change education
CCS	comparative case study
CDC	Climate and Disaster Committee
CDP	Center for Disaster Preparedness
CMP	colonial matrix of power
COAG	Coalition of Australia Governments
CSO	civil society organisation
DepEd	Department of Education
DFAT	Department of Foreign Affairs and Trade (formerly AusAid)
DFES	Department of Fire and Emergency Services
DOC	Department of Communities
DRANSZEN	Disaster Resilient Australia-New Zealand School Education Network
DRR	Disaster Risk Reduction
GiZ	Gesellschaft für Internationale Zusammenarbeit
GOP	Government of the Philippines
GORV	Government of the Republic of Vanuatu
HFA	Hyogo Framework for Action
IDNDR	International Decade for Natural Disaster Reduction
MDG	Millennium Development Goals
MDMO	Municipal Disaster Management Office
MoET	Ministry of Education
NDMO	National Disaster Management Office

NDRRMC	National Disaster Risk Reduction and Management Council
NEMC	National Emergency Management Committee
NGO	non-government organisation
OCD	Office of Civil Defense
OECD	Organisation for Economic Co-operation and Development
SDG	Sustainable Development Goals
SDRRMO	School DRRM officer
SES	State Emergency Services
SFDRR	Sendai Framework for Disaster Risk Reduction
SPC	Secretariat of the Pacific Community
TOPH	Town of Port Hedland
UN	United Nations
UN DRIP	United Nations Declaration on the Rights of Indigenous Peoples
UN DRO	United Nations Disaster Relief Organization
UN DRR	United Nations Office for Disaster Risk Reduction
UN OCHA	United Nations Office for the Coordination of Humanitarian Affairs
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children’s Fund
UNISDR	UN International Strategy for Disaster Reduction
USAID	United States Agency for International Development
VCAN	Vanuatu Climate Action Network
VKS	Vanuatu Kaljoral Senta
VMGD	Vanuatu Meteorology and Geohazards Department
WFP	World Food Programme
ZPE	zero-point epistemology

CHAPTER 1

Precarious places, precarious knowledges

Disaster Risk Reduction (DRR) is a United Nations (UN) policy initiative that calls on governments and non-state actors to work towards building a culture of resilience in hazards-exposed communities (Etkin, 2016; UNISDR, 2017; United Nations, 2005, 2015). Strategically, the UN points to education as the launch-pad for the project of “resilience-building” (Singh, 2012, np), with the Hyogo Framework for Action’s Priority 3 underscoring “knowledge, innovation and education” (United Nations, 2005, p.9) as indispensable elements in promoting a culture of resilience. The framework also encourages the inclusion of local, indigenous, and traditional knowledge systems alongside the call for integrating DRR learning to all channels and at all levels of every country’s education system (UNISDR, 2006; United Nations, 2005, 2015).

This doctoral research is a critical response to claims of epistemic inclusion and integration processes, as embedded and embodied in the rhetoric of policies for DRR both at the international and national level, and in the examination of how education has been instrumentalised for the project of resilience-building. The thesis highlights the contradictions that have been inherent in calls for inclusion of multiple perspectives, as juxtaposed with the endorsement of building a global- and singular- culture of resilience. The project and thesis title— *precarious places, precarious knowledges* – underscores the overall aim of the research: to interrogate how *knowledges* in locations exposed to recurrent hazards are integrated within global, national, and school policies and practices for DRR.

Foremost, the study examines these interrelated questions: *what* knowledges are included in culture-building? *Whose* knowledges are promoted, and whose perspectives are neglected or ignored? In the pursuit of inclusion and integration, *which* dimensions to knowledge are considered and *which* ones are excised? Finally, with a focus on education, *how* should place-based knowledges take up space in an environment where their value

and utility are acknowledged and dismissed simultaneously?

To tease out these questions, multiple perspectives at various geographical levels and scales of policy activity, including three national contexts, were considered: Australia, the Philippines, and Vanuatu. With a focus on cyclones and their epiphenomena of storm surges and flooding, the study's analytical and methodological strategies were centred on an examination of cognitive [in]justice, the democratic co-existence of different knowledge systems or the lack thereof (Santos, 2013; Visvanathan, 2009) as delineated by the tenets of decolonial thought (Castro-Gómez, 2007; Mignolo, 2011b; Mignolo & Tlostanova, 2006) and critical pedagogy of place (Greenwood, 2008; Gruenewald, 2003, 2008). The critical examination proceeded at a layered, iterative, and multi-axial investigation, starting with the rhetoric of policies and how they cascaded to subjacent levels of policymaking and implementation at the global, national, local, and school levels. The critique of policies was then complemented with an investigation of how inclusion claims become manifest through a directed analysis of how context-specific knowledges and their dimensions are regarded, involved, and engaged both discursively and in practice.

The sections that follow detail the following: disaster education as part of an emerging field of DRR, the impetus and aims of the research, the research questions and design, and the outline of the thesis. I conclude this chapter by positioning myself as a researcher with regard to the broader political and epistemological importance of deploying critical perspectives in response to seemingly benign global calls of values, and culture, alignment.

Disaster education and learning

Disaster research is a robust field encompassing the physical and social sciences, business, governance, and technology (Egner, Schorch, & Voss, 2015; Kelman, Petal, & Glantz, 2015; Perry & Quarantelli, 2005; Quarantelli, 1978, 1998). By fifteen years after the Hyogo Framework's pronouncements for DRR mainstreaming, there had been a

proliferation of studies in disaster research. In the area of education, studies had typically revolved around national policies and their implementation at the school level (Amri, Bird, Ronan, Haynes, & Towers, 2017; Thi & Shaw, 2016). However, limited studies focused on the comparative and critical examination of global policies that shape DRR (Gall, Cutter, & Nguyen, 2014; Wanner, 2021). In addition, despite research support and policy backing, observers and scholars have issued sustained observations about gaps between policies and practices with the lack of coverage and representation of place-based knowledges in DRR activities, including in education (Kagawa & Selby, 2012; Vaughter, 2016; Wisner, 2006). This lack of intersection between formal education and context-based learning occurs despite flourishing research and even greater interest for place-based knowledges integration, to be discussed in length in Chapter 2. These gaps in the literature warrant investigation, to which this study aimed to contribute new insights.

Typhoon Haiyan and this study

The research, as designed, was highly informed by my experiences and background. Cyclones, or typhoons, the phenomenon of interest, are called *bagyo* in the Philippines. I was born and raised in the typhoon-prone rice-farming town of Santa Marcela in Northern Philippines, where a *bagyo* is a yearly affair. Like most Filipinos reared in such an environment, I grew up with almost nonchalant regard for typhoons. Destructive and regenerative all at once, such phenomena were but punctuations to everyone's calendar. As an NGO worker later in my life, the onset of the typhoon season meant incorporating donation drives and rations distribution into my work schedule.

A decade ago, I left the Philippines and joined a throng of Filipinos in a diaspora. In 2015, when I was part of a research team investigating climate change education at the National Institute of Education in Singapore, UNESCO invited the principal investigator to a meeting of experts on climate change learning in the Asia-Pacific region. My line manager was keen, but their schedule did not allow for a week-long disruption. "Go," they said. "You know enough about climate change education to contribute to the discussions,"

they added.

The meeting was set to be in the city of Cebu in the central Visayas region of the Philippines in November 2015. However, two weeks before the meeting, Typhoon Haiyan (local name 'Yolanda') would hit the region, overwhelming the coastal city of Tacloban and its neighbouring islands. On a Wednesday in 2015, while I was in the middle of data collection, I was anxiously glancing at TV monitors in Singapore, with reports pouring in about my home country and the deaths and devastation in the aftermath of Haiyan. Haiyan would become known as the "most powerful" tropical cyclone to make landfall in recorded history (Schiermeier, 2013; Takagi and Esteban, 2015) and the deadliest typhoon to hit the Philippines (Lagmay et al., 2015).

The UNESCO meeting had to be postponed. Cebu City, the supposed venue of the meeting, became the jump-off point for relief and rescue operations. In February of 2016, the delegates finally met in Manila (see UNESCO, 2014). The conference was well-represented by people from Asia-Pacific—Mongolia, Japan, Thailand, and the Pacific islands, including Palau, Samoa, and Hawaii. Collectively, we were development workers, researchers, pedagogues, teachers, United Nations agencies, universities, international and local NGOs. Typhoon Haiyan set the stage for the meeting of experts and directed the energy of discussions on the importance of climate change education relating to meteorological phenomena, cyclones, most distinctively.

It was in these peculiar and serendipitous sets of circumstances that I first began to observe, participate, and take a more profound interest in the developing discourses around disaster risk reduction and climate change education (DRR-CCE; See Kagawa & Selby, 2012). Over three days, we dissected 'knowledge,' pored over documents, shared 'best practices,' discussed 'formulas' for understanding disasters, vulnerability, exposure, and capacities, mulled over 'challenges,' and visited 'model schools' in the Metro Manila area. In all its forms, 'knowledge' was referred to repeatedly as the missing and critical component as to why the communities in the typhoon's path did not evacuate before its landfall, despite repeated warnings issued by the government and international weather

bureaus. A critical issue raised about Typhoon Haiyan was the lack of vocabulary for the storm surge that swept through the coastal communities. Many expressed how it would have been better for the national government and the media to describe the event as “tsunami-like” waves (Esteban et al., 2016). However, storm surges were not atypical occurrences in the affected areas, where the local terms for these phenomena were *dulok* or *daluyong* (Cadag, 2020).

Globally, Typhoon Haiyan resuscitated the corporate call to attend to the effects and triggers of climate change (Nakamura, Shibayama, Esteban, & Iwamoto, 2016; Schiermeier, 2013). On a personal level, Haiyan prompted my decision to shift gear and consider specifically the case of climate-induced hazards and disasters as domains of learning, of how knowledge could, and should, save lives. In addition, this thesis is also a personal and academic reflection on the institutional and programmatic channels that facilitate the ‘expertification’ (Epstein, 1996) of DRR and climate change and the inherent privileges that a person possesses for their knowledge to be represented in discursive spaces.

Aims of the research

The impetus for this research comes from my curiosity as to how a global mandate on DRR and DRR education considers place-based knowledge systems. Whereas inhabitants in precarious environments are often portrayed as victims of the elements, studies show that the opposite is true: people and communities living with the constant threat of disasters are active survivors (Rodríguez, Quarantelli, & Dynes, 2007) whose knowledge of hazards and disasters, both practical and philosophical, are invaluable resources for risk management.

Indeed, I have observed how communities in precarious environments have developed coping and adaptation mechanisms to secure their lives and livelihoods on multiple occasions. While I have seen massive devastations caused by hazards, I have also witnessed the various ways in which communities harness opportunities brought about by climate and weather, such as torrential rains and floods.

In addition, more than a decade following the global mainstreaming of the DRR framework in 2004, the research is a timely response to a need to assess the policy development process for DRR education at multiple levels of governance and its implications. Midway through the programmatic timeline of the Sendai Framework, the Hyogo Framework's successor, the present time is also a critical juncture to examine how different actors interpreted, adopted, localised, or resisted the mainstreaming of DRR education.

I have drawn from the concept of cognitive justice (Santos, 2013; Visvanathan, 2009), the plural and non-hierarchical involvement and regard of different knowledge systems and ways of knowing, to problematise the singular framing of culture in engaging education for DRR (Benadusi, 2014b) in precarious environments. Emphasising the centrality of place and context in DRR education, this study adopts the term “place-based knowledge” (Gibson-Graham, 2016) to collectively refer to local knowledge, indigenous knowledge, traditional ecological knowledge, traditional knowledge, indigenous technical knowledge, endogenous knowledge (Hiwasaki, Luna, Syamsidik, & Shaw, 2014) and other related terms from the literature. The choice for the term was inspired by the epistemic privileging of ‘place’ in this study’s theoretical linking with decolonial thought and critical pedagogy of place (to be discussed in Chapter 3). As aligned to the ideology of cognitive justice, the study employed the term ‘place-based’ knowledge in its plural form, i.e., *knowledges* to reflect the diversity of perspectives in the locations of the research and in recognition of the different geo-historical interfaces of epistemologies and ontologies of peoples, past and present, who inhabit/ed land.

The choice of the term ‘place-based knowledges’ as shorthand is not intended to blur or depreciate the struggles that have long defined the specific knowledge identifiers that the term collectively refers to in this thesis. For indeed, the lineage of the struggle for cognitive justice is undeniably rooted to the longstanding resistance of and for indigenous knowledges (McCoy, Tuck, & McKenzie, 2017; Tomaselli, 2014; Villegas, Neugebauer, & Venegas, 2008) in a ‘battlefield’ (Long & Long, 1992) for representation and against

marginalising processes. The progress had been slow but nevertheless alive and embodied in global policy instruments such as the UN Convention on Biological Diversity (1992) and the UN Declaration on the Rights of Indigenous Peoples (UN DRIP) (United Nations, 2007b). Indigenous knowledge, as stipulated in the UN DRIP, must be respected and recognised; in particular, Article 31.1 states that:

Indigenous peoples have the right to maintain, control, protect and develop their cultural heritage, traditional knowledge and traditional cultural expressions, as well as the manifestations of their sciences, technologies and cultures, including human and genetic resources, seeds, medicines, knowledge of the properties of fauna and flora, oral traditions, literatures, designs, sports and traditional games and visual and performing arts. They also have the right to maintain, control, protect and develop their intellectual property over such cultural heritage, traditional knowledge, and traditional cultural expressions. (pp. 22-23)

While the study did not follow a characteristically ‘Indigenist’ approach to the research framework, in solidarity, it posits that the insistence for a place-based analysis opens avenues to interrogate the axes of epistemic participation for indigenous and traditional knowledges.

The research questions

The main objective of this study is to analyse, problematise, and interrogate claims of knowledge inclusion and integration and their expressions and implications for DRR education. I posit that one way to understand the ‘knowledge’ philosophy that undergirds, directs, and features in DRR education is to examine the nexus of policies and practices at different axes of engagement. Thus, I raised the first question in this thesis: *How do policy authors and DRR actors at the international, national, local, and school levels regard and involve ‘knowledge’ types and dimensions in policies and practices?* In relation, the second research question asks: *How do different actors and institutions engage place-based knowledges in K-12 formal education in identified contexts within*

Australia, the Philippines, and Vanuatu? The question provides the direction of the inquiry in tracing the biography of policies as they cascaded to subjacent levels of governance and manifest in education for DRR. The epistemological orientation of interrogating claims at inclusion is anchored on the issue of cognitive justice (Santos, 2014; Visvanathan, 2006, 2009a), briefly discussed above and in more detailed form in Chapter 3. Thus, the last research question imagines the possibilities of a DRR education that engages diverse epistemologies: *What are the features of effective and equitable approaches for disaster education?*

The research design

Following a comparative approach to research, I engaged in a policy-practice nexus analysis by following DRR policies, zeroing in on their rhetorical regard and involvement of knowledge, and how this rhetoric was mirrored or deflected at domestic levels policymaking and practice. I located the research in cyclones-exposed communities in Australia, the Philippines, and Vanuatu. In World Risk Reports (Behlert et al., 2020; Garschagen et al., 2015), Vanuatu and the Philippines consistently ranked high in the list of at-risk territories; Port Vila in Vanuatu was dubbed as the most exposed city in the world to natural hazards (ABC News, 2015). Similarly, Aparri town is located in the Philippines, a country that encounters 20 typhoons every year (Gloriani, Villanueva, Yanagihara, & Yoshida, 2016; Ribera, García-Herrera, & Gimeno, 2008). While Australia does not feature prominently as a hazard-prone territory, the town of Port Hedland in Northwestern Australia has all the features of a cyclones-exposed community due to the town's proximity to the tropical waters of the Indian Ocean (Thomas, 2015; Wilson, 1980). The national governments of Australia, the Philippines, and Vanuatu officially indicated their strategic alignment to the DRR framework as mandated by the United Nations (Australian Emergency Management Committee (AEMC), 2011; Government of the Philippines (GOP), 2010; Government of the Republic of Vanuatu (GORV), 2015b).

As guided by the theoretical stipulations of cognitive justice, I engaged in a critical

analysis that revivifies the academic debate of how place-based knowledges systems are systematically rendered inferior, albeit in subtler styles, in contemporary times. I posit through this study that DRR education, with its conceptual and programmatic moorings deeply intertwined with an epistemological position that affords prominence to ‘science,’ cannot or have not managed to shed its entrenched inferior regard of differing perspectives even as it aims to be inclusive in its rhetoric.

Thus, as a signifier for this research, *precarious places* is used to refer to the coastal towns where the fieldwork was conducted: Port Hedland in Australia, Aparri in the Philippines, and Efate in Vanuatu. With concerns of a rapidly warming climate, coastal communities, including the research locations mentioned, are predicted to be most adversely affected by intensifying climate-related hazards such as cyclones and sea-level rise (Aerts, Botzen, Bowman, Dircke, & Ward, 2013; Siegel, 2020). Relatedly *precarious knowledges* indicate the increasing marginalisation of perspectives in these places, with ‘Western science’ put forward as the undergirding epistemology to a techno-managerialist approach to disaster management. ‘Western science,’ as regarded in this study, refers to the Renaissance and Enlightenment-linked view of a rational, reductionist, and value-neutral knowledge (Mignolo, 2009; Chapter 3).

In addition, this study pushes the comparative case study (CCS) approach (Bartlett & Vavrus, 2017a; Vavrus & Bartlett, 2012) outside the boundaries of within-country case studies. In this research, the site selection criterion of the precariousness of place requires bypassing the nation/country/state as a delimitation clause. While CCS does not restrict the analysis to within national boundaries, there appears to be little evidence that compares sites across countries. This study endeavoured to allow new patterns of comparisons and contrasts to emerge.

Thesis structure

The dissertation is composed of nine chapters, including this current Introduction. In Chapter 2, I discuss how knowledge integration and inclusion as features of policies

were extended in the twin narratives of place-based knowledge research and school-based education that emerged in the aftermath of the Indian Ocean tsunami. The chapter provides an initial identification of the tensions and gaps between policy rhetoric and reality. It presents an analytical approach of critically deconstructing policies as soft laws and persuasive texts.

In Chapter 3, I anchor the debates, tensions, and problematisations in the literature to the concept of cognitive (in)justice. The chapter explains how perspectives of decolonial thinking and practice and critical pedagogy of place were deployed as theoretical anchors in teasing out cognitive justice's call for epistemic democracy and plural regard of different knowledge systems. The chapter illustrates how the two perspectives served as the foundation for the analytical engagement with the texts of DRR policies and their operationalisation at a global, national, local, and school levels.

Chapter 4 outlines the multiple angles, layers, and timeframes that were pursued in tracing the policy-practice nexus for DRR through a multi-sited data collection approach to fieldwork that is ethnographically informed. This chapter illustrates the data collection procedures, methodological decisions, and analytical approach that were chosen and based on Bartlett and Vavrus' (2017a) comparative case study approach.

Chapters 5, 6, 7, and 8 cover the discussion on my engagement with the data from the local to the global, the national, and the school level, respectively. Chapter 5 shows the dimensions of place-specific and phenomenon-specific knowledge by asking the foremost question of 'How do residents in cyclone-exposed areas view and regard cyclones?' The discussion locates the inquiry in communities that are perennially affected by cyclones. In this thesis, I refer to these places as 'cyclone towns'— the island of Efate in Vanuatu, Port Hedland in Australia, and Aparri in the Philippines. Relating to the literature in Chapter 2, I revisit the categories of knowledge discussed and connect them to the themes I ascertained through immersion and interviews with residents of the cyclone towns.

The research perspective then shifts to the global in Chapter 6 through a transversal rhetorical policy analysis to understand how global discourses about DRR

developed over three decades. The analysis proceeds at the level of discourse to examine the rhetorical dimensions, persuasive features, tropes, and metaphors employed to engage ‘education’ and ‘knowledges’ in the developing framework of DRR. In this chapter, I pay special attention to how the authors of international policy instruments categorised different types of knowledge, specified their uses, and how they should fit the global agenda for building a culture of resilience.

Considering the persuasive features of policies discussed in Chapter 6, I follow the extent of this influence to subjacent levels of domestic governance. In Chapter 7, I conduct a vertical analysis and focus on how the discourses and rhetoric of building a culture of resilience flowed to the national and sub-national levels of policymaking and practice. In three case-based analyses, I discuss how Vanuatu (for Efate), the Philippines (for Aparri), and Australia (for Port Hedland) aligned their policy directions to the global mandates as well as asserted their focus on what DRR is and should be. Relating to Chapters 5 and 6, I examine how ‘knowledge’ and ‘education’ were engaged, this time looking at how place-based knowledges figured in the processes of setting up a DRR framework.

I revert the focus to the communities, specifically at schools within the cyclone towns, in Chapter 8. I explore in this chapter the interplay of policies and practices as well as rhetoric and action for DRR education. Following the double critique of policies and practice, I examine how the global rhetoric (Chapter 6) and national strategies (Chapter 7) became resonant or dissonant in school contexts and whether the dimensions of place-based knowledges (Chapter 5) are given space in school-based learning.

Finally, in Chapter 9, I synthesise the key points and outline the implications of the insights generated through this study for debates on knowledge inclusion and integration, DRR education, and cognitive justice. Through comparatively building the cases of Australia, the Philippines, and Vanuatu, I illustrate in this chapter how global policies and the rhetoric contained in the policies are selectively deployed to countries that they have pre-determined to be ‘developing’ or ‘at risk.’ As a central concern of this thesis, it is understood that cognitive justice, the plural and non-hierarchical engagement of different

knowledge systems (Santos, 2014; Visvanathan, 2009; See Chapter 3 for the expanded discussion) becomes impossible to achieve in spaces of DRR engagement and its rhetoric of inclusion as place-based knowledges are relegated to the category of an accessory—to ‘science,’ to DRR, to institutional priorities, and the formal curriculum. I discuss in this chapter how place-based knowledges are made to fit the techno-managerial outlook of ‘what to do before, during, and after’ a disaster. Thus, from a question of *what* and *whose* knowledge is considered for integration and inclusion, this study adds the question of *which* dimensions are deemed good enough to fit a pre-determined framework and epistemological bias, both in DRR governance and disaster learning. In addition, I provide my reflections on the study design and recommendations for future research and programmatic actions based on the evidence gained, both in policy and practice, on how DRR education could be accommodated towards place-based orientations.

Conclusion

I outlined in this chapter how the impetus for this research emanated from my personal and professional encounters with the discourses and practices relating to disaster risk reduction and climate change education. I highlighted the emergence of DRR and its engagement of education as a tool for culture-building, and how the rhetoric of inclusion and integration has resulted in interest in place-based knowledges and their utility for the policy proponents’ culture-building project. I then illustrated how this research had focused its critical lens on inclusion claims and the proposal of building a global- and singular- culture as contradicting aspirations, simultaneously endorsed. I outlined the aims, research questions, context, the significance of the study, and the thesis structure. The next chapter on the literature review will extend the discussion on knowledge inclusion and the prominent debates and tensions surrounding place-based knowledges integration.

CHAPTER 2

Interrogating epistemic inclusion and integration

This study interrogates epistemic inclusion and integration claims in policies and practices related to DRR and their expressions in disaster education. The literature on DRR points to the Indian Ocean tsunami in 2004 as pivotal to global and local actors' renewed and sustained decision to address mounting losses and risks relating to disasters (Leoni, 2014; Wahlström, 2014). With its expected facility to empower knowers and save lives, knowledge would become a constant feature in venues for policymaking exercises and implementation activities (United Nations, 2005). Two illustrative narratives on 'knowledge' emerged in the aftermath of the tsunami. The first narrative focused on local, indigenous, and place-based knowledges by highlighting the disaster mitigation experiences of ethnic groups such as exemplified by the Simueluen people in Indonesia (McAdoo, Dengler, Prasetya, & Titov, 2006; Suciani, Islami, Zainal, Sofiyan, & Bukhari, 2018). The second narrative centred on Tilly Smith, a 10-year-old primary school student who raised the alarm of an impending tsunami, and the direct and immediate association between formal, school-based education with saving lives (Hornig, 2009; UNISDR, 2005a). Despite extensive and sustained research interest for each narrative, the review of research outputs shows sparse evidence of interaction and intersections between the two. I then describe how, in this study, I extended the interrogation of assertions of epistemic inclusion and integration by examining policy materials that stipulated these claims. With a focus on global policies, I describe and illustrate how the analytical strategy of this research focused on the 'soft' (Abbott & Snidal, 2000; Herwig, 2016; Wanner, 2021) and persuasive features of policies (Edwards, Nicoll, Solomon, & Usher, 2004; Winton, 2013), and how these facilitate a discursive and rhetoric cascade to subjacent domestic policies and contextual interpretations. The chapter concludes by linking the themes in the reviewed literature to cognitive justice (Visvanathan, 2009) as the undergirding logic of this critical analysis.

The Indian Ocean tsunami and the two epistemic narratives

On the morning of 26 December 2004, an underwater earthquake off the coast of Indonesia generated a tsunami that would soon overwhelm several coastal areas of the country and as far as Thailand, Bangladesh, Sri Lanka, Seychelles, and Somalia (Shaw, 2006). The devastation in the aftermath called for extensive humanitarian operations, including the repatriation of the dead and the living alike because, while the catastrophic event indisputably impacted the affected countries' social, political, economic, and ecological futures, the tsunami also pushed to the fore the global nature of hazards (Arlikatti, Peacock, Prater, Grover, & Sekar, 2010; Heger & Neumayer, 2019). The giant waves hit 15 countries in total (Leoni, 2014), but the dead, a large number of them tourists, represented 50-65 different nationalities (de Sausmarez, 2005; Shaw & Oikawa, 2014). The tsunami then highlighted, perhaps for the first time, how the unrestrained nature of hazards and disasters does not respect political and geographical borders.

The first World Conference on Disaster Reduction was held three weeks after the tsunami (Shaw, 2006). There was a clear quorum in that gathering of country representatives, not surprisingly, as 168 delegates were "moved and stunned into action" (Leoni, 2014, np) to approve the Hyogo Framework for Action. Considered as the world's first comprehensive agreement on disaster risk reduction (Benadusi, 2014a; GFDRR, 2018; Leoni, 2014; Shaw & Oikawa, 2014), the Hyogo Framework has drawn attention to the issue of exposure (Wahlström, 2014) as well as directed the focus on communities at risk. As Benadusi (2014a) observed:

There was a gradual shift from technology-based solutions for disaster prevention, usually entrusted to governments and legitimized by the expertise of globally recognized research institutes, to solutions revolving around local communities' endogenous mitigation and response capacities. (p. 554)

Indeed, the Hyogo Framework's pivot to the community facilitated individual and group narratives to surface to disaster management's mainstream discourse. Relatedly, the literature shows that two narratives on knowledge were most prominent after the

tsunami. The first narrative centred on the practicality of local, indigenous, and place-based knowledges in reducing fatalities, with the experiences of the Simueluen people in Indonesia as the most cited example (McAdoo et al., 2006; Suciani et al., 2018). The second narrative was Tilly Smith and the evident direct correlation between school-based learning in saving lives (Hornig, 2009; UNISDR, 2005a). Together, these narratives engaged directly with the Hyogo Framework's Priority 3, which underscored "knowledge, innovation and education" (United Nations, 2005, p. 9), and the clarion call to governments to prioritise DRR integration in their formal, informal, and non-formal education channels (United Nations, 2005).

From the Hyogo conference to succeeding world and regional meetings, from white papers to research articles, the narratives of the Simueleuns and Tilly Smith would become the main banner stories on why and how knowledge is critical to disaster management (Hornig, 2009; UNISDR, 2005a). For instance, both narratives would become the illustrative vignettes at the director's opening statement in the 2006-2007 World Disaster Reduction Campaign. The campaign's theme, "Disaster Risk Reduction Begins at School," would become the first global program that mobilises governments, communities, and stakeholders for disaster education (UNISDR, 2006).

The Simeuluens and place-based knowledges

The first narrative on knowledge emphasises indigenous communities' survival stories concerning seismic hazards like earthquakes and tsunamis. Among several examples, the *Smong* story by the residents of Simuelue island in Indonesia would be the most cited. *Smong* is an oral tradition, passed on in song form, that illustrates the visual and experiential indicators of ground tremors, receding sea, and giant waves associated with tsunami (Gadeng, Maryani, & Rohmat, 2018; McAdoo et al., 2006; Rahman & Munadi, 2019; Rahman, Sakurai, & Munadi, 2017, 2018; Sutton, Paton, Buergelt, Meilianda, & Sagala, 2020). With their knowledge of *Smong*, the Simuelue island residents evacuated the beach area within a few minutes after they felt the first tremors. The awareness and

value of the knowledge-behaviour link facilitated by *Smong* were magnified when it came to be learned that only seven individuals of the island's 75,000 population died in the tsunami (McAdoo et al., 2006; Suciani et al., 2018).

From a policy and governance perspective, the literature points to international policy materials, especially the Hyogo Framework, as the catalyst for refocusing attention to context-specific epistemologies such as the *Smong* knowledge in Simuelue island (Gaillard & Mercer, 2013; Hiwasaki, 2017; Le Dé, 2017; Reyes, Ayo, Baluyan, & Balaguer, 2019; Singh, 2018). For example, Gaillard and Mercer (2013) and Le Dé (2017) observed that the policies produced at the international arena shifted from a management view of command-and-control, top-down, science-centric governance to highlight the socio-economic and political dimensions of exposure. Moreover, from focusing on technical knowledge transfer in the 1990s, Le Dé (2017) noted that the policies gradually became more strategic in involving and identifying capacities and vulnerabilities of local communities. Distinctively, the Hyogo Framework is emphasised to have created the pivotal point for an inclusive outlook through an overt policy component that stated a people-centred, local knowledge-focused approach to disaster management (Reyes et al., 2019). The statement from Singh (2018), below, on the author's assessment of the impact of the Hyogo Framework, captured the positive sentiments towards said policy instrument's facilitations for an inclusive DRR:

The HFA was a break from the past in converting a neutral and isolated science and technology-based learning into political, social, and cultural categories. Hyogo changed the whole perception of looking at disasters from the erstwhile 'knowledge banks of science' which treated people as objects to be acted upon during crisis but as a relationship which generates compassion, peace, togetherness and sustainability. (p. 24)

Overall, the Hyogo and Sendai Frameworks were considered to have cemented in place the missing link on local knowledge for disaster management and presented a distinct positioning away from high technoscience (Hiwasaki, 2017; Kniveton et al., 2015;

Reyes et al., 2019).

Prior to the Hyogo Framework, there had been a strong collective of scholars and disaster researchers whose works highlight the context-specific features of cultures, knowledges, and practices (e.g., Bankoff, 2003; Hewitt, 1983; Hewitt & Burton, 1971; Oliver-Smith, Hoffman, & Smith, 1999). This precedent, as prompted by global policy stipulations, was later extended by a critical group advocating for indigenous and place-based knowledges to be given due emphasis against a largely techno-scientific approach to risk management (Howitt, Havnen, & Veland, 2012; Iloka, 2016; Mutasa, 2015; Roder, Ruljigaljig, Lin, & Tarolli, 2016; Shannon, Hope, & McCloskey, 2011; Walshe & Nunn, 2012). The critique was directed explicitly at international development projects, and interventionist means that negate the value and usefulness of local peoples' existing hazards management practices (Gaillard & Mercer, 2013; Iloka, 2016; Kelman, Mercer, & Gaillard, 2012; Walshe & Nunn, 2012). Alongside this argument was the emphasis that local knowledge had been largely absent in the mainstream framework of disaster management. Local and indigenous knowledge, it was posited, have been dismissed and neglected, ignored (Mercer & Kelman, 2010), considered as inferior and belonging to "backward" and "less educated" people (Shaw, Uy, & Baumwoll, 2008) by mainstream institutions charged with disaster management (Dekens, 2007a). Mercer et al. (2012) also emphasised the missing historical and cultural dimensions of human-hazards interaction in hazard research. Increasingly, researchers were pushing for multiple domains, types, and dimensions of knowledge to be considered in disaster management (Dekens, 2007a; McWilliam, Wasson, Rouwenhorst, & Amaral, 2020).

The global policies' prompts led researchers to locate their studies in disaster-prone areas such as in perennially flooded villages (Islam, Ingham, Hicks, & Kelly, 2018), in seismic and volcanic environments (Mercer et al., 2012), in mountain settlements (Dekens, 2007a, 2007b), and in coastal and island communities (Hiwasaki, Luna, Syamsidik, & Marçal, 2015; Hiwasaki, Luna, Syamsidik, & Shaw, 2014).

With the view that knowledge would translate to greater readiness and action

(Tuladhar et al., 2015), research activities then aimed to identify, document, and classify place-based knowledges (Hazarika, Tayeng, & Das, 2016; Hiwasaki et al., 2015; Islam et al., 2018; Mercer, Dominey-Howes, Kelman, & Lloyd, 2007; Mercer & Kelman, 2010), as well as formulate and propose frameworks for classification (Dekens, 2007a; Mercer, Kelman, Taranis, & Suchet-Pearson, 2010). Many of these studies were exploratory and descriptive, employing various methods, and unified in their call for community consultation at critical stages of DRR. Table 1, below, shows the classifications and dimensions of place-based knowledges as developed by several researchers.

Table 1

Knowledge Classifications and Dimensions

Authors	Classifications/Dimensions
Mercer et al. (Gaillard & Mercer, 2013; Mercer et al., 2007; Mercer & Kelman, 2010)	Building methods, social linkages/resilience, land use planning, food strategies/resilience, environmental strategies/resilience Local knowledge- 'inside' knowledge Scientific knowledge – 'outside' knowledge
(Dekens, 2007a)	Knowledge types - Technical, ecological, historical, others Practices - Individual, community level, (non)technical, short term, long-term Beliefs, values, worldviews - Sociocultural/religious belief systems, values based on respect/reciprocity/sharing/humility, others
(Hazarika et al., 2016)	Community participation, agricultural patterns, housing patterns, food storage and granary, investment pattern, fishing, availability of boats
(Islam et al., 2018)	Governance, social networks, income diversification

Several scholars advocating for integration put forward that place-based knowledges be combined, integrated, or hybridised with science (Hiwasaki et al., 2014; Mercer et al., 2007; Mercer et al., 2012). As judged in its scientific attributes, local knowledge is even more emphasised, with the assertion that current and future environmental challenges are poised to exceed the evolution of indigenous adaptation strategies (Hazarika et al., 2016). Consequently, hybridisation is pushed to the fore as the only way for local communities to adapt to the intensifying threats of hazards and disasters. These 'hybrid solutions' of 'hybrid knowledge' (Mercer et al., 2012) are put forward as an articulation of the need to tap into both scientific and indigenous resources as one form of knowledge may not suffice, as illustrated by this excerpt from Mercer and Kelman (2010): “The vulnerability of indigenous communities in SIDS [Small Island Developing States] to environmental hazards can only be addressed through the utilization of both indigenous and Western knowledge in a culturally compatible and sustainable manner” (p. 245). Thus, before place-based knowledges could be useful, integration and hybridisation must fit the narrative, epistemology, structure, and framework of science as this excerpt from Islam et al. (2018) shows: “local knowledge strategies which have scientific value will strengthen villagers' sense of identity as well as reduce the socioeconomic impacts and vulnerabilities associated with flooding” (p. 537). Straightforwardly, Hiwasaki et al. (2014) stated that: “We believe that local and indigenous knowledge *needs to be integrated with science before it can be used* [emphasis added] in policies, education, and actions related to disaster risk reduction and climate change (p. 15).

In addition to congruence to science, local and indigenous knowledges were also referred to as an 'indispensable' component of DRR (Mavhura, Manyena, Collins, & Manatsa, 2013). Several studies explored the features, dimensions, and goodness of 'fit' of local knowledge systems vis-à-vis the DRR framework and how the latter could be strengthened through the former, at a programmatic level, as an "effective tool" for reducing risks (Shaw et al., 2008). The level of engagement ranged from simple

identification of knowledge features to categorisations and framework building. As aiding DRR, Parajuli (2020) posited that place-based knowledges may be helpful as an entry point to introducing basic science to communities, specifically in translating science concepts to the local language, with the rationale that there had been slow progress in awareness programs penetrating local communities. It is posited that local knowledge's social and empirical significance must be harnessed to strengthen community resilience (Hiwasaki et al., 2014). In order to utilise the usefulness and applicability of place-based knowledges to DRR, a number of research suggested that their relevance should be acknowledged (Mercer & Kelman, 2010) to encourage participation and empowerment of affected communities and improve intervention adaptation to local contexts (Mavhura et al., 2013).

Tilly Smith and disaster education

The second narrative centred on ten-year-old British Tilly Smith, who was on holiday with her family in Thailand when the earthquake and tsunami struck. Having learned about seismic hazards in her Geography class back in England two weeks ago, Tilly alerted beachgoers when she noticed the signs of an impending tsunami (Hornig, 2009). Because of Tilly's actions, the beach was cleared in time for all the people to seek safety to the upper floors of buildings before the first wave engulfed the area (UNISDR, 2005). Tilly's quick thinking was credited for zero casualties on that beach that day (BBC News, 2005), in stark contrast to the immense fatalities that would soon come to light, i.e., from 170,000 to 300,000 (Leoni, 2014; Murty, Aswathanarayana, & Nirupama, 2007; Shaw, 2006). As a result, Tilly Smith would receive awards and public commendation for her example of how knowledge should translate to behaviour in emergency situations (BBC News, 2005).

Tilly's story would become the referenced narrative in campaigns to promote the need for the deliberate integration of DRR into school curricula (UNISDR, 2005). These campaigns would soon gain ground as national governments aligned their policies and

practices to global standards. Thematically, several studies on disaster education pre-Hyogo Framework lamented the limited coverage in the curriculum (Clary, 1996; Tait, 1996; Whitehead, 1996), lack of issues-based discussions (Okpala, 1996), and pedagogical inattention to the need to address what could be identified as a knowledge-behaviour gap (Kanchev & Tsankova, 1996; Lidstone, 1996). The shift in rhetoric upon the promulgation of the Hyogo Framework was noticeable, with both 'grey' (organisational/policy) and academic publications on disaster education referring to Priority 3 on education and knowledge building in their discussions and as the impetus for involvement (Benadusi, 2014b; Mutasa & Munsaka, 2019; Nahid, Hesam, & Hormoz, 2018; Shaw, Takeuchi, Rouhban, Sassa, & Canuti, 2009; Shiwaku & Shaw, 2016). As Benadusi (2014a) observed, the Hyogo Framework's stipulation on education, specifically the 'use [of] knowledge, innovation and education to build a culture of safety and resilience', became the obligatory reference point for DRR engagement in education.

The grey literature's initial coverage broadly reviewed existing modes of education and knowledge-building activities to identify 'best' practices and address gaps (BRI & GRIPS, 2007; Wisner, 2006). Similarly, articles on DRR education began to appear in hazards and disaster research, sustainability journals, and education journals, mainly in the Sciences, Environmental, and Geography Education. Policy studies in DRR education also became a niche domain with authors typically assessing the (in)congruence of national policies with local-level conditions (Gwee, Takeuchi, Wen, & Shaw, 2011; Thi & Shaw, 2016), weak policy operationalisation (Amri, Bird, Ronan, Haynes, & Towers, 2017; Apronti, Osamu, Otsuki, & Kranjac-Berisavljevic, 2015), and marginal commitment of governments (Siripong, 2010). Ronan et al.'s (2016) summary of DRR-related research projects showed an exponential increase in outputs during the Hyogo Framework, with 146 countries reporting to have included DRR in their national curriculum.

There was consensus that curricular integration encouraged by the global policy was the first step in disaster education engagement. With great faith that taught knowledge encourages action, Petal and Izadkhah (2008) posited that learning should

necessarily begin in schools. Thus, the project of knowledge-building encompassed research involving the assessment of students' baseline knowledge (Mamon, Suba, & Son, 2017) and perceptions of hazards and disasters (Muzenda-Mudavanhu, Manyena, & Collins, 2016; Tuladhar, Yatabe, Dahal, & Bhandary, 2014), interventions to enhance knowledge (Gouramanis & Morales Ramirez, 2020), the assessment of these interventions and whether they were efficacious in facilitating an increase in students' understanding of hazards and disasters (Gouramanis & Morales Ramirez, 2020) and in changing undesired [e.g., fatalistic] attitudes (Baytiyeh, 2018). Constraints were also identified as to the institutional and programmatic processes of implementing national policies in local education spaces (Amri et al., 2017; Nurdin, 2019), specifically in practices of curricular integration in local and national contexts (Apronti et al., 2015; Baytiyeh, 2014; Baytiyeh & Naja, 2014; Fujioka & Sakakibara, 2018; Nurdin, 2019; Siripong, 2010). The general research focus would then branch out to disaster education according to hazards type (e.g., landslides, earthquakes, seismic hazards) (Baytiyeh, 2014; Bernhardsdottir, Musacchio, Ferreira, & Falsaperla, 2016; de Mendonca & Valois, 2017) to domain-specific analyses (Kitagawa, 2019; Trumble, 2019) and methods in carrier subjects such as in Geography (Gouramanis & Morales Ramirez, 2020; Tanyanyiwa, 2019) and Science (Canlas & Karpudewan, 2020; Nurdin, 2019). In addition, teaching-focused inquiries looked at testing pedagogical approaches, paradigms, and interventions (Gouramanis & Morales Ramirez, 2020) across levels from pre-school (Proulx & Aboud, 2019), elementary/primary (de Mendonca & Valois, 2017; Thi & Shaw, 2016), secondary (Mamon et al., 2017) and higher education (Gouramanis & Morales Ramirez, 2020; Zhou, Perera, Jayawickrama, & Adeniyi, 2014).

DRR was often coupled with climate change adaptation as a topic (Bonifacio, Takeuchi, & Shaw, 2010; Kagawa & Selby, 2012; Shaw & Oikawa, 2014). Researchers posited that the two pedagogical responses were necessarily aligned and complementary, given the present and anticipated increase in global warming-induced disasters brought about by climate change (Etkin, 2016; Kagawa & Selby, 2012).

Over time, the research focus would include interest in social justice and the representation of voices in DRR education. For instance, several authors shed light on teachers' role as key actors and “change agents” who may need support in teaching a relatively novel topic in their classrooms (Nurdin, 2019; Tanyanyiwa, 2019). In addition, teacher training and professional development issues, materials production, and dissemination were raised (Apronti et al., 2015). Also, the inclusivity of DRR education was another dimension of interest. This extended to the lack of voice of children with disabilities (Ronoh, 2017), indigenous groups, and the elderly (Tatebe & Mutch, 2015) in the framing of DRR education. Finally, following the long-running UN campaign for child-centred learning, several studies explored and advocated for educational practices that put the child as the learner and key actor in the centre of DRR education (Amri, Haynes, Bird, & Ronan, 2018; Delicado et al., 2017; Proulx & Aboud, 2019).

Case studies on disaster education across locations and levels (Fujioka & Sakakibara, 2018; Shiwaku & Shaw, 2016) have become comparative in approach (Bernhardsdottir et al., 2016; Kitagawa, 2019; Thi & Shaw, 2016). To the mid-and latter part of 2010-2020, there were already a few systematic reviews of literature, suggesting that research activities in the area of formal DRR education were reaching maturation (Amri et al., 2018; Johnson, Ronan, Johnston, & Peace, 2014; Nahid et al., 2018; Ronan, Alisic, Towers, Johnson, & Johnston, 2015).

The confidence in formal education did not wane as the years passed. Although there is now more cautious thinking that formal education is not a guarantee towards zero loss and risk, it was seen, nonetheless, as a critical resource in preparing young citizens to lessen their vulnerabilities, as well as influence young minds in developing appropriate values and attitudes (Apronti et al., 2015; Baytiyeh & Naja, 2014; Galliara & Prabhawalka, 2012; Shaw, Takeuchi, Gwee, & Shiwaku, 2011).

Place-based knowledges inclusion and integration: mere rhetoric?

If epistemic inclusion of place-based knowledges was to be realised in knowledge-building projects, it must have its full expression in various forms of disaster education. However, whereas the Tilly Smith and the Simueluen narratives developed into distinct literature themes within the larger umbrella of the DRR framework's knowledge and resilience-building project, there seemed to be sparse opportunities for them to cross paths. There were very few, and far between, examples of place-based knowledges integration in formal education, even as the UNISDR insists that learning should encompass “more than formal education at schools and universities [to involve] the recognition and use of traditional wisdom and local knowledge for protection from natural hazard” (UNISDR, 2005 in Gwee, Shaw, & Takeuchi, 2011, p. 23). In addition, UNESCO's (2017) affirmation of the agency's commitment to social justice included strong advocacy for integrating local, traditional, and indigenous knowledges and practices in DRR education. For instance, the agency's Global Education Monitoring (GEM) Report (UNESCO, 2016) indicated that DRR education should tap into traditional and indigenous knowledges, reiterating local languages' importance in ensuring a classroom-community linkage in learning. At length, the GEM discussed examples of indigenous practices on sustainability and resilience, the value of intergenerational learning, and the need for a multi-stakeholder approach to sustainability learning. Magni (2016), in her background report for GEM, discussed the features of indigenous epistemologies and their usefulness extensively.

For this literature review, only a few research outputs were located on school-based learning that engage context-specific knowledge features. Rahiem (Rahiem, 2018; Rahiem & Rahim, 2020), for example, looked at the use of folklore to teach in early childhood education and religious practices as proponents of resilience in post-disaster environments. Indeed, place-based knowledges have been largely appointed to inhabit the informal realm of education for DRR. Studies of integration in this area consider the role of village elders and community leaders in transmitting knowledge (Damsar & Indrayani,

2018; Septiana et al., 2019). There is also resignation that the divide between formal and informal education is at is because of local knowledge's highly contextual attributes (Tanyanyiwa, 2019) and that place-based knowledges, specifically indigenous knowledge, "are often beyond formal education" (Mavhura et al., 2013, p. 38) as these are often passed on via oral transmission.

However, this area of DRR education is rife with research documenting the lack of context-specific engagement in school-based learning. For instance, Shiwaku and Fernandez (2011) observed that school disaster education in Nepal does not provide information or knowledge on past disasters, attention to the immediate environment, livelihood, or local issues. Research in this area critiques the lack of a link between school and community education (Bonifacio et al., 2010; Shaw et al., 2011), the silence in the curriculum and in- classroom teaching on hazards that directly impact the communities (Baytiyeh & Naja, 2015), as well as teachers' hesitations about engaging in unfamiliar pedagogical materials such as folk stories, riddles, music, song, outdoor learning, and involvement of community residents in classroom discussions (Tanyanyiwa, 2019). Similarly, Vaughter (2016) reiterated the need to expand the coverage of curricula to traditional and indigenous knowledge, and context-specific pedagogical engagements. Vaughter also observed that "there has been little systematic uptake of this [traditional and indigenous] knowledge into school curriculums" (p. 18) as well as in public information campaigns and planning policy, despite widespread acknowledgment of their usefulness. Despite these suggestions and observations, Kagawa and Selby's (2012) case studies of 30 countries' school DRR curricula showed that attempts to capitalise on local and indigenous knowledges for DRR have been lacking, for the most part, an observation that was consistent with Wisner's (2006) a decade earlier.

If disaster education is the ultimate expression for the project of capacity, knowledge, and culture-building, yet there is no strong indication in the literature of programmatic evidence, are claims of 'integration' and 'inclusion,' then, mere empty rhetoric? Already, some have pointed out the inconsistencies in policies as indicative of a

lip-service project of knowledge inclusion and integration. Researchers including de la Poterie and Baudoin (2015), Osorio Piñeros (2020), Raju and da Costa (2018) demonstrated that the rhetoric of inclusion is misleading when considered from the technocratic stipulations of global policies. While acknowledging the progressive messaging of the Yokohama Strategy and the Hyogo Framework, the authors lamented the backtracking in policy rhetoric in the Sendai Framework: from a focus on local knowledge to stronger messaging on technology-based governance as well as a regard of community actors as partners in the Yokohama Strategy to aid recipients in the Sendai Framework (de la Poterie & Baudoin, 2015). The dismissal of local communities as actors was considered a “concerning shift” (Raju & da Costa, 2018) from the progress in inclusive discourses in the text of the Yokohama Strategy and Hyogo Framework (de la Poterie & Baudoin, 2015). This shift, in Osorio Piñeros’ (2020) words, was marked by a return to technocracy:

The SFDRR approach to disaster risk is a significant shift, compared with the Yokohama Strategy and the Hyogo Framework, in terms of the role assigned to technocracy and traditional knowledge as means to understanding this phenomenon. While the SFDRR places emphasis on technocracy, the Yokohama Strategy relied on traditional knowledge and the Hyogo Framework embraced both without emphasising on any of them. (p. 329)

Šakić Trogrlić et al. (2021) signalled that there may be a mismatch between the rhetoric of local knowledge importance and inclusion and the reality of practice on the ground. The authors posited that “*despite* [emphasis added] global policy and research push for [local knowledge] integration in DRR, realities from the ground indicate that [local knowledge] is still marginalised and inferior to [scientific knowledge]” (p. 8), further posing the question of whether stakeholders are only paying lip service to inclusion.

The rhetorical biography of epistemic inclusion and integration for DRR

In this study, I extended the interrogation of the proponents of policies that claim to promote epistemic inclusion and integration, to begin investigating global policies that stipulated these claims. With the focus on international policies, I describe and illustrate how such an analytical strategy is anchored to policies following soft law regime and persuasive texts, thereby justifying how the discourse and rhetoric of policies cascaded to subjacent domestic policies and contextual interpretations. As de la Poterie and Baudoin (2015) maintained, it is critical to examine the meaning and nuances in international discourse because it is at this level where conventions are set to run for a decade or more.

DRR policies are also considered ‘soft’ laws (Pinninti, 2013; Raju & da Costa, 2018; Wanner, 2021). As a tool for governance, soft law regimes are non-obligatory and non-binding. Soft law regimes deploy a ‘governance through goals’ (Biermann, Kanie, & Kim, 2017) and the ‘pledge-and-review’ principle (Milkoreit & Haapala, 2019). Instead of sanctions, soft laws set goals, the attainment of which are reliant on the country’s voluntary pledges and actions (Milkoreit & Haapala, 2019; Raju & da Costa, 2018). DRR governance, in this sense, is maintained through consensus and for the tenets of the law to permeate all of the different sectors and structures (Raju & da Costa, 2018).

I support views that with the absence of a robust regulatory structure and with rhetoric that emphasised shared global goals and expectations (Milkoreit & Haapala, 2019), DRR policies are essentially persuasive texts. As Raju and da Costa (2018) confirmed, the purpose of the Sendai framework as it cascades to subjacent levels of governance is to “*influence* [emphasis added] how laws, regulations, and policies are designed and applied” (p. 280). From the soft law regime perspective, I then approached the text of policies and how they persuade their audiences.

In Chapter 6, I approached the analysis from the perspective of persuasion as rendered by the rhetoric of policy texts. Rhetoric is often contrasted with reality—as *versus* reality—signifying the presence of a gap between desired, ambitious, or embellished narrative against a reality that does not mirror said description (See, for

example, Cowper, 2020; Oliver, 2017; Rodgers, 2018; Turner-Daly & Jack, 2017) - thus, as half-truths and spin that elevates presentation over substance (Edwards, Nicoll, & Usher 2004).

In conducting a rhetorical analysis of policies, the analytical lens is focused on the persuasive strategies used in policy texts to persuade audiences to accept and support particular constructions of reality, points of view, and courses of action (Winton, 2013). Knowledge of these strategies can be used to understand why groups support specific policy solutions with conflicting goals and values, question the version of reality proposed by policy, imagine other possibilities, and as grounds for a political response. Thus, this study diverges from a regard of rhetoric as meaningless talk or talk without action but attends to how policy rhetoric's power influences how individuals understand the world and aim to move audiences to action (Edwards et al., 2004).

A rhetorical analysis “involves the study of how we attempt to persuade or influence in our discursive and textual practices” (Edwards & Nicoll, 2001, p. 105). It provides a method for identifying how arguments are constructed to persuade audiences to accept and support particular constructions of reality, truth, and courses of action. Rhetorical analysis examines attempts at persuasion through discursive, textual, and gestural practices (Edwards et al., 2004). In the study of persuasive discourse, Bitzer (1992) reiterated for attention to the practical work of rhetoric as it “comes into existence for the sake of something beyond itself,” maintaining that rhetoric “functions ultimately to produce action or change in the world... rhetoric is a mode of altering reality, not by direct energy to objects, but by creating discourse that changes reality through the mediation of thought and action” (pp. 3-4).

The indirect energy of discourses and the power dynamics they create or perpetuate has been considered and analysed in policy analysis, most especially in the field of critical discourse analysis (Fairclough, 2012; McCormick, 2011) as well as policy historiography, archaeology, and genealogy (Gale, 2001; Scheurich, 1997; Scheurich & Young, 1997). Policy discourses inherently have authoritative and rhetorical influence

(Nicoll & Edwards, 2004; Rizvi & Lingard, 2010) to push an agenda forward. This political nature of policies, however, is often rendered opaque through the smokescreen of a supposed neutral, legal- rational stance, impartiality, as well as objectiveness, effectiveness, and efficiency (Shore & Wright, 1997). With its politics concealed, policies systematically limit or even negate the existence of alternative readings of a phenomenon, the 'otherwise' (Ball, 1994) of how we view an issue as a problem and the possibilities of a solution (Bacchi, 2000; Scheurich, 1997). Policies, thus, are tools for discipline and control (Foucault, 1991; Foucault & Sheridan, 1995). They are stealth organisms that shape our view of the world. They dictate how we should behave as individuals and society (Bartlett & Vavrus, 2017b), including how we construct ourselves as subjects—as 'professional,' 'criminal,' 'deviant,' (Shore & Wright, 1997) or in the case of DRR, as a 'resilient' citizen.

A critical interpretation of policies must consider the proposed plans put forward and, in equal measure, work to unsettle the givenness, certainties, and orthodoxies fostered. As a tool for critical policy analysis, a rhetorical analysis must reject the claim of a value-free and neutral material and understands policies as constructions and products of the history and culture of the society that generated them (Bowe, Ball, & Gold, 2017). From the dimension of rhetorical reading of policy discourses, the analysis is attendant to the features of policies and policy analysis above while focusing the lens on the author and how they “alter[s] reality by bringing into existence a discourse of such a character that the audience, in thought and action, is so engaged that it becomes mediator of change” (Bitzer, 1992, pp. 3-4).

Synthesis and conclusion

In this review of literature, I showed how the Indian Ocean tsunami triggered a global response to disaster risk management. I have also demonstrated how two narratives that emerged in the aftermath of the tsunami, on place-based knowledges and disaster education, would attract the attention of researchers and engender a renewed

interest in the role of 'knowledge' for managing disasters. I noted and discussed that, while the two narratives developed into robust research areas, there is scant evidence that they intersected with or became integrated into the international policies emphasised. I then described how I approached the analysis of the literature and data from first examining policies as soft laws, with due emphasis on their persuasive features, and how the discursive practices influenced policymaking and practices at domestic subjacent levels of governance. The following chapter discusses how I grounded the investigative process in relation to cognitive justice, as supported by concepts in decolonial thinking and critical pedagogy of place.

CHAPTER 3

Cognitive (in)justice in DRR and disaster education

Chapter 3 illustrates the theoretical underpinnings that guided the research process and analysis. As the previous chapter showed the dearth of evidence for the involvement of place-based knowledges in DRR education despite policy stipulations and research support, this current chapter put forward cognitive justice as a useful heuristic to analyse these observed incongruities between policy rhetoric and reality, as the literature themes highlighted. In Chapter 3, cognitive justice is put forward as a theoretical construct, undergirding logic, and as a goal in the examination of epistemic inclusion and integration, and as informed by the lenses of decolonial thought and critical pedagogy of place.

A cognitive justice perspective provides an appropriate heuristic for examining the policy architecture and practices of DRR. In recognition of the geo-historical roots of inequitable knowledge regard, cognitive justice is applied as an analytical strategy to key tenets of decolonial thought, specifically the concepts of coloniality and border thinking (Grosfoguel, 2011; Mignolo & Tlostanova, 2006; Quijano, 2000). In addition, critical pedagogy of place as a theory of place-conscious education is engaged to examine the expansion of DRR knowledge discourses and rhetoric, including involvement of place-based knowledges, and how they manifest in formal, school-based learning environments (Greenwood & Smith, 2008). Given the centrality of cognitive justice in this research, this chapter explores it as a theoretical framework within which epistemic inclusion and integration in knowledge building are examined. Further, given the important focus on education in disaster contexts, the lenses of decolonial thought and critical pedagogy are explained and applied.

Cognitive justice to interrogate epistemic inclusion and integration

As mentioned previously, cognitive justice refers to recognising and advocating,

the dialogue of many forms of knowing (Santos, 2013; Visvanathan, 2009) in a non-hierarchical (van der Velden, 2004) and decentralised democratic co-existence of epistemologies. It asserts an epistemological plurality that transcends mere tolerance and liberalism, insisting on recognising a knowledge system's cosmology, place, and epistemic bearings (Visvanathan, 2009). In essence, cognitive justice is based on the following principles (Visvanathan quoted in Kraak, 1999, p. 3):

- All forms of knowledge are valid and should co-exist in a dialogic relationship to each other.
- Cognitive justice implies the strengthening of the 'voice' of the defeated and marginalized.
- Traditional knowledges and technologies should not be 'museumized'.
- Every citizen is a scientist. Each layperson is an expert.
- Science should help the common man/woman [sic].
- All competing sciences should be brought together into a positive heuristic for dialogue.

The lineage of cognitive justice, a term first coined by Visvanathan (1997), is the author's response and observation to how Western science cannibalised and impoverished India's local science system. Indeed, the critical lens of cognitive justice is a directed condemnation of Western science's dominance and arrogance as implemented in local contexts. This same denunciation is emphasised in Boaventura de Sousa Santos's concept of "abyssal thinking" (Santos, 2007). In abyssal thinking, a line is drawn between two realms -- "this side of the line" as the dominant perspective and the "other side of the line" as rendered invisible and non-existent by virtue of being located beyond the margins of inclusion set by the former. Epistemologically, 'abyssal thinking' refers to the denial by some proponents of modern science of the co-presence of alternative perspectives. The dispute lies in what is deemed scientific truth—this side of the line—and the invisibility of forms of knowledge that are deemed incommensurable and incomprehensible— "the

popular, lay, plebeian, peasant, or indigenous knowledges on the other side of the line” (p. 45). The struggle for global cognitive justice, in Santos’s view, requires disrupting the abyssal lines of exclusion and inclusion, thus an active engagement in “post-abyssal thinking” (p. 53).

Along with insistence on dialogue and plurality, proponents of cognitive justice are equally attendant to epistemic repression and subjugation processes. These devices, covert or overt, follow a nomenclature system—of labelling, categorising, ranking, and relegating knowledge systems to inferior status, as set and decided by the proponents of one that declared itself dominant over others. The subjects of repression are often Indigenous peoples, including their local and traditional knowledge systems, as they come in contact with science and become ensnared towards a zero-sum view of the world (Santos, 2013; Visvanathan, 2009).

Among the devices illustrated by Visvanathan (2006, pp. 167-168) are the ‘hierarchisation’ and ‘museumisation’ of knowledge. Hierarchisation refers to recognising knowledge of the traditional domain but relegating them to the lower rung as marginal knowledges. In addition, museumisation is the process of relegating knowledge to obsolescence, ‘embalmed’ and displayed only for historical purposes (Kraak, 1999).

Hierarchisation, museumisation, and related processes of epistemic subjugation result in what may be the desired outcomes-- that of thinking alike or ‘monoculture of the mind’ (Shiva, 1993), or the obliteration of knowledge systems or ‘epistemicide’ (Santos, 2013).

Thus, cognitive justice extends its facility as a theoretical construct to being a political and epistemological pursuit. Central to the purposes and directions of research in the area attend to the need to protect knowledges from invalidation and loss (van der Velden, 2004) through the deliberate and active valorisation of marginalised epistemologies (Santos, 2013). The academic responses range from calls for cohabitation (Visvanathan as written by Kraak, 1999) and the building of bridges (Le Grange & Aikenhead, 2017) between knowledge systems. There are also demands for more radical

acts of decentring (Le Grange & Aikenhead, 2017) to invalidate claims to dominance, which requires resistance to claims of superiority of knowledge systems (van der Velden, 2004), and identifying instances of misrecognition (Coolsaet, 2016) and misrepresentation of indigenous and traditional knowledge systems. In the long run, this entails working towards the restoration of subjugated knowledges (Chan-Tiberghien, 2004) and reterritorialisation (Veintie, 2013) of indigenous spaces.

In addition, cognitive justice holds suspect ideas that may appear democratic and inclusive to identify seemingly benign or progressive practices and their covert features that hierarchise and museumise. Coolsaet (2016), writing from the perspective of agroecology in Europe, employed cognitive justice as a heuristic to examine the epistemic philosophies between those who claim to 'know' agriculture and those who 'do' agriculture, thus subjecting to the critical gaze the constitution of 'expert' knowledge. Frizelle (2009) explored how policies and prevention measures for the HIV/AIDS epidemic in South Africa were influenced by the knowledge claims of international experts and organisations. The author argued that, while local and transnational processes do come together to create knowledge claims, these interactions are still largely unequal as the experiences of local people, and South Africa-specific features are pushed aside in the overall process of policy development and implementation. Veintie's (2013) research on intercultural bilingual education in Ecuador highlighted how proponents of the approach attempted to fracture thinking identified as 'Western,' and at the same time, wrestled with the dominance and persistence of particular Western epistemologies and structures in those systems. In development studies, van der Velden (2004) used cognitive justice as an ethical framework to expose the World Bank's 'knowledge-for-development' paradigm as an instrument for knowledge loss. In many parts congruent to this thesis' outcomes, the author's exposition showed how knowledge management presented a knowledge categorisation scheme that stripped agency from the supposed beneficiaries of knowledge. As van der Velden (2004b) explained:

The knowledge paradigm inherent in the new knowledge for development theories

originates in theories of economic growth and development, which are founded on principles of scarcity and dependency. This paradigm categorizes poor people and their issues in terms of solutions that provide what people lack, and it invalidates what they have. Hence the focus on accessing, transferring, and communicating knowledge, with knowledge more and more situated in information and data stored in computers and documents. This development paradigm denies poor people their knowledge, often one of their few resources, and fails to see them as agents. (p. 78)

Consistent and in alliance with the activism of these researchers, this research deployed the analytical properties of cognitive justice to examine knowledge inclusion and integration for DRR as manifestations akin to the epistemic subjugation processes and practices described by Visvanathan. Several researchers have signposted the possible limitations of knowledge integration, even as they advocate for cross-context synergies for DRR. For example, Shaw, Takeuchi, Uy, and Sharma (2009) framed caution about the often-inevitable consequence of "cultural invasion" in adopting disaster management models from Western contexts, with the latter often overshadowing indigenous people knowledge within DRR. As the authors stated:

There is a need to recognize the good knowledge assets that already exist in local communities, and at the same time there is wisdom in adopting and benefiting from the advances that current science offers us. There is no defined line of equilibrium between the two. It is a transitional domain, which has to be worked with in a highly contextual manner that delivers benefits without undermining related assets. The core issue, besides finding solutions to physical and economic dimensions of Disaster Risk Reduction, is one of avoiding cultural invasion that so often comes as part of the package with technologically advanced disaster management solutions. (2009b, p. 3)

In addition, it is valuable to consider Benadusi's (2014b) signalling of the complex project of building *a culture* of resilience, with emphasis on the singular form, as an

indication of Shiva's (1993) monoculture deliberations and the adverse consequences of gravitating towards a zero-sum view of the world.

Emphasis on place, location, identities, and insistence for the value of different epistemologies in conceptions of cognitive justice link very well with decolonial thinking and practice and with the core assertions and tenets of a critical pedagogy of place. Both perspectives provide the conceptual mooring that locates the historical and genealogical engagement with cognitive injustices or how specific knowledge systems emerged – or have been asserted - to claim dominance over many others.

While cognisant that different perspectives do enrich the plurality of knowledges, I also recognise and reiterate the need to affirm Indigenous peoples' battle for representation (See Chapter 1, p. 7). For DRR education, I draw from Article 8j of the Convention on Biological Diversity (United Nations, 1992), for the need for concerted effort for:

knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and [to] promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge innovations and practices. (p. 6.)

In solidarity, this thesis confirms that even as every layperson is acknowledged to have an expertise to contribute to epistemologies and discourses (Visvanathan quoted in Kraak, 1999), the practice of cognitive justice must first, and foremost, uphold the knowledges of traditional custodians of the land, elders, and Indigenous knowledge-bearers. Thus, in the insistence for plurality, one must be vigilant to not drown and negate the voices, epistemologies, and worldviews of Indigenous peoples.

This thesis further errs on the side of caution in interpreting “expertise” as a characteristic of every individual in light of the possible translation of such affordances to formal education settings. Taking heed from Gert Biesta's (2009, 2021) admonition of ‘learnification’ and its links to a post-truth world, wherein the modern ‘experience’ of the

self has increasingly become the reference/s for truth and meaning, the study pushes back at the notion of diluting teachers' expertise to an arbitrary attribute in favour of a learner-centred education, and one in which the emphasis is positioned on students' experiences and interpretations. Going beyond the impasse of positing education as 'enactment of teaching as control' at one end of the spectrum, and one wherein it is "left entirely to 'learners' and their 'learning' on the mistaken assumption that freedom is the total absence of control" (Biesta. 2021, p. 51), this thesis circles back to its reiteration for dialogue with place – as land, location, venue, host—of and for education. Place, this study posits, anchors the activity of education to the situatedness of learning and teaching. Place-based education, as will be discussed in later sections of this chapter (pp. 44-45), is attendant to knowledges embedded to land, while at the same time refusing to mask enduring challenges, both present and future. Teachers' content-knowledge and pedagogical expertise, rather than relegated to the margins, are enhanced with ongoing conversations and relations to Indigenous peoples, learners, and the environment.

Cognitive [in]justice through a decolonial lens

Decolonial thinking and practice (decoloniality, henceforth) is one of two primary schools of thought critical of empire (Bhambra, 2014b), the other being postcolonial theory. Decoloniality and postcolonial theory as schools of thought converge and diverge in their features. In terms of similarities, both emerged in opposition to empire and its legacies.

Each perspective branched out from the broader politics of knowledge production, challenging the insularity of historical narratives and historiographical traditions emanating from Europe (Bhambra, 2014b). They have equally exposed the parochialism of the Eurocentric logic of rationality and universality, thereby questioning the features and politics of status quo knowledge production. Their differences delineate the positionalities of critical thinkers from both paradigms. Postcolonial critiques trace their roots in cultural studies and the humanities. Decolonial critiques are anchored on

Wallerstein's world-system theory (Grosfoguel in Ndlovu-Gatsheni, 2015), engaging scholars in the social sciences development and 'underdevelopment' theory Frankfurt School's critical social theory tradition (Bhabra, 2014b).

The proponents of both paradigms are diasporic scholars, albeit originating from different locations and colonial rulers. Key postcolonialist theorists trace their ancestry to the Middle East and South Asia; decolonial theorists are primarily of South American origin. The postcolonialists extensively refer to their experiences under the British crown. Similarly, the decolonialists look to their history of subjugation under Iberian rule (Portuguese, Spanish). It then follows that while postcolonialists date the origins of colonial atrocities to the 19th and 20th centuries and the expansion of the British empire, decolonialists push the time element further back to the beginning of the 15th century (Bhabra, 2014b), arguing that the seeds of coloniality had germinated in Europe well before its kingdoms ventured out to 'discover' territories outside the creation of Europe's imperial and colonial ambitions (Mignolo, 2005; Quijano & Ennis, 2000).

Proponents of decoloniality as an epistemological and political movement consider the geopolitics of knowledge construction and implications (Andreotti, 2011; Ndlovu-Gatsheni, 2015). Many scholars first draw attention to the dominative and assimilative forces of European colonialism, both past and present and the Eurocentric cultural and epistemological logic (De Lissovoy, 2010) that perpetuates asymmetric global power relations (Grosfoguel, 2011). In decoloniality's later iteration, Mignolo (2007) would argue that decolonial thinking and practice should not be labelled as a 'school of thought' or 'paradigm' with universal applicability. The refusal of being classified as a high theory is aligned to decolonialists' advocacy of rejecting abstract universals (Shepherd, 2018) and recognising the different colonial or imperial experiences and acts of resistance of peoples and places.

The condition of ‘coloniality’

Central to decolonial thinking is the idea of coloniality, the undercurrent that survived formal colonisation, and has lived on in succeeding social orders (Ndlovu-Gatsheni, 2015). With reference to the colonial experiences of decolonial scholars and the exploitations and subjugation of Latin America under Iberian rule, coloniality is used as shorthand to refer to power relations that relegate peoples, knowledges, and cultures as inferior, while disguised as an idea of “salvation, progress, modernization, and being good for everyone” (Mignolo, 2005, p. 6).

Maldonado-Torres (2007) stresses the covertness upon which coloniality impressed itself in “books, in the criteria for academic performance, in cultural patterns, in common sense, in the self-image of peoples, in aspirations of self” (p. 243) and all other aspects of the self, both public and private. Bhabha (2004) also illustrates the pervasiveness of the colonial experience as manifest in colonised society’s acts of mimicking and imitating the culture of (previous) colonisers. Further, the undercurrent of coloniality at the level of the psyche and as articulated in “historical projects and ideas of civilization” (Maldonado-Torres, p. 257) is, in Kapoor’s (2020) illustration, an “unconscious desire” that explains why “people enjoy rather than reject development, so that capitalism continues to flourish, not perish, globally” (p.49).

Hierarchisation, museumisation, and related processes that hinder cognitive justice are manifestations of coloniality. Coloniality is perpetuated through the lens of the “zero point” and is facilitated by a power matrix that legitimises subjugation.

The zero-point epistemology

Decolonialists posit that the European Renaissance constructed a metalanguage of rationality that would weave itself into the historical processes of the Enlightenment, all the way to neoliberal globalisation, to become globally hegemonic (Mignolo & Tlostanova, 2012; Quijano, 2000, 2007). The language of rationality would undergird the positioning

of the 'zero point epistemology' (ZPE) (Mignolo, 2009) or 'zero point of observation and knowledge' (Castro-Gómez, 2007). The ZPE refers to the epistemological position in which the knower assumes a purportedly detached stand while evaluating, mapping, and classifying peoples, places, and projects, determining their validity from the knower's supposedly neutral vantage (Mignolo, 2009). The ZPE is delineated by a Eurocentric epistemic contract broadly delimited by the doctrines of divine law, as curated by Western Christians of the time, and natural law, as determined by European science. From this vantage point, the dominant perspective claims universality for itself as the centre the zero point, and reducing other historical processes and knowledge systems to inferior categories (Mignolo & Tlostanova, 2012).

Referencing the Latin American experience with European colonisation, decolonial scholars maintain that Europeans as enunciators of colonialism have simultaneous authoritative roles at the zero point: to colonise knowledge (Grosfoguel, 2007) and colonise beings (Maldonado-Torres, 2007). While epistemic colonisation subjugated knowledge systems, the colonisation of beings targeted the possessors of such knowledges. It involved classifying and ranking human beings as not entirely rational, mature, or developed, signalling the creation, maintenance, and enactment of racism and patriarchy (Mignolo & Tlostanova, 2012).

As a means of asserting dominance in knowledge construction and knowledge perspectives, ZPE positions itself as the only valid form of producing knowledge, therefore eliminating the co-existence of other ways of producing and transmitting knowledges through assigning the latter's claims in an epistemological scale of binaries: traditional-modern, barbarism-civilisation, orient-occident (Castro-Gómez, 2007) or to the more benign categories of culture-knowledge and wisdom-science (Mignolo, 2009). Having the authority of the zero-point, ZPE limits the reach of scrutiny away from itself, taking on the role of the reference and the observer, occupying a secure, almost indisputable status (Mignolo & Tlostanova, 2012).

The colonial matrix of power

The “colonial matrix of power” (CMP) (Mignolo, 2011a, p. xxvii) was born out of the ZPE. The matrix refers to a form of social discrimination traced back to the Spanish conquest of South America when the Spaniards declared themselves superior over indigenous peoples, whom they subjected to a caste system by their difference (Quijano, 2000, 2007). The power matrix is a persistent feature of coloniality. With a view of knowledge, the caste system would translate as a jargon of expertise, with knowledge holders sifted between the experts and the layman in a hierarchy that elevates the stature of the former. The hierarchy of knowledges allows for universalist claims of specific knowledge systems across different experiences of coloniality, past and present (Ghiso & Campano, 2013; Grosfoguel, 2002) to perpetuate both discourse and practice. It also denotes the denial of knowledge production among conquered peoples and repression of traditional modes of knowledge production based on the superiority/inferiority relationship enforced by a system of hierarchies (Bhambra, 2014a; Grosfoguel, 2002). As expressed in cognitive justice, this hierarchisation of knowledge illuminates the acknowledgment of non-expert knowledge of the traditional domain. Expert knowledge, in this regard, is often represented as synonymous with scientific knowledge (Visvanathan, 2001).

The influence of the ZPE and the reach of the power matrix would become complete with the accession of dominated people to the imposed system of hierarchies and systems of knowledge, internalising the very logic and language of the dominators. This is apparent, for instance, in a knowledge system that idealises the "mechanistic, dualistic, materialistic, instrumentalist and linear way of seeing and doing" (Odora Hoppers, 2009, p. 609).

For this study, the ZPE, the CMP, and the engendered knowledge hierarchies were analysed as contemporary expressions of coloniality. In the policy analyses in Chapters 6, 7, and 8, coloniality is applied as the backlight to understand and illustrate the power relations as stipulated in the rhetoric of policies and actors' relations. In addition,

coloniality was also employed to examine teachers' regard of place-based knowledges of cyclones and related phenomena as pedagogical opportunities.

Border thinking and geographies of selves

Decoloniality, the antithesis of coloniality, is the conscious delinking (Mignolo, 2007) from coloniality. At once, it refers to the confrontations that emerged from when European rule imposed its force through the slave trade, colonialism, and imperialism, and at the same time to contemporary resistance to enduring power asymmetries in the form of apartheid, neo-colonialism, and 'underdevelopment' (Ndlovu-Gatsheni, 2015). Education sociologist Raewyn Connell's (2007) Southern Theory, for example, argues for recognition, repositioning and centring of Southern knowledges as epistemological resources for theory production. Performing epistemic disobedience, in this sense, requires the rupturing of the legitimacy claims and authority of the ZPE. Thus, the goal of decoloniality against the ZPE is cognitive justice through pluriversality. Coolsaet (2016) maintains that cognitive justice originates in decolonial thought. Relatedly, "pluriversality" (Mignolo, 2010) refers to a future in which all epistemologies are equal in regard. In the same vein, Santos's (2007) call for the breaching of the lines of distinction created in abyssal thinking (See Chapter 2, p. 32) emphasises for epistemological diversity in which [Western] science becomes but a part of an "ecology of knowledges" (p. 67) in a non- or "counter-hegemonic" way (p. 70). Pluriversality and ecology of knowledges, then, are cognitive justice.

The margins of the ZPE are where "border thinking" (Mignolo, 2012) takes shape. Border thinking means enunciating from a geo-politics (place) and body-politics (senses) of knowledge (Mignolo & Tlostanova, 2006). The combined geo-body politics of knowledge stresses locality as not merely a geo-historical location of the knowing subject but also the epistemological correlation with the sensing body, perceiving the world from a particular locale and particular local history. Geo-body politics begins with asking *where* one thinks rather than *what* one thinks (Mignolo & Tlostanova, 2006). In recognition of

multiple encounters, the mobility of people, and the numerous interfaces of contact, Anzaldua (2015) puts forward geographies of selves as a useful perspective, as follows:

Our bodies are geographies of selves made of diverse, bordering, and overlapping “countries.” We’re each composed of information, billions of bits of cultural knowledge superimposing many different categories of experience. Like a map with colored web lines of rivers, highways, lakes, towns, and other landscape features en donde pasan y Cruzan las cosas, we are “marked” ... As our bodies interact with internal and external, real and virtual, past and present environments, people, and objects around us, we weave (tejemos), and are woven into, our identities. Identity, as consciously and unconsciously created, is always in process—self interacting with different communities and worlds. (p. 69)

Through Anzaldua’s (2015) concept of geographies of selves, the body with its emotions and knowledges, with the land are centred. Thus, border thinking and geographies of selves at once elevate the location of the knowledge holder as the point of enunciation and at the same time attendant to the layers and interfaces of places, relations, and selves of the knower.

For this study, border-thinking analysis of place-based knowledges and their inclusion in policies and practices for DRR has been applied through examining different dimensions of place-based knowledges. While maintaining the view of the holistic embeddedness of land and self, place-based knowledges were viewed from the artificial sub- category of geo-ecological and embodied properties and lived (i.e., livelihood-linked) dimensions. This is applied in Chapter 5 to understand the different facets of place-based knowledges. It is important to note that categorisations may easily result in dimensions being “abstracted from a culture as a life form” (Visvanathan, 2001, p. 6). The aim of this analytical decision, however, was to extend the illustration of each identified knowledge dimension. From these artificial splices, it is then argued, in succeeding chapters, that only select dimensions to place-based knowledges are deemed material for inclusion and integration.

Critical pedagogy of place and cognitive justice

Critical pedagogy of place as a theory of place-conscious education originates from a double critique of cultural and ecological politics, stipulating its twin aims of decolonisation and reinhabitation (Greenwood, 2008; Gruenewald, 2003, 2008). Like decoloniality, critical pedagogy of place regards colonisation as the progenitor of lasting anomalies impinged on people's territories, bodies, and minds (Greenwood, 2013). Forms of education (i.e., formal systems) have been identified as a culprit to the perpetuation of colonisation through the process of schooling (Tuhiwai Smith, 1999), through media-sponsored consumer culture, as well as through externally developed and donor-determined educational goals (Greenwood, 2013). Decolonisation, in this sense, requires a long-term process involving a cultural, linguistic, and psychological dissociation from colonial structures (Tuhiwai Smith, 1999).

In critical pedagogy of place, decolonisation means a proactive education process of unlearning normalised and familiar patterns of knowing, looking back, and digging down for alternative and unfamiliar stories of the land and its peoples (Greenwood, 2008, 2013; Gruenewald, 2003, 2008). Simultaneously, reinhabitation involves a conscious reimagination and recovery of an ecologically conscious relationship between people and place. To reinhabit means a reacquaintance with the land, its stories including its ecological limits. While decolonisation and reinhabitation are two distinct concepts, they are, necessarily, two sides of the same task. Decolonisation/reinhabitation as an educational aim takes on three investigative dimensions: the historical, the socioecological, and the ethical (Greenwood, 2013).

Place-based knowledges offer visions of the old and new perspectives and approaches, the hidden and the emerging, as these knowledges are (re)negotiated time and again. From a broad perspective, place as a palimpsest is a fitting metaphor to capture the layers of inscription and re-inscription on a historical parchment (Kincheloe, McKinley, Lim, & Barton, 2006). As a palimpsest, place is a host and the facilitator for the crossbreeding of stories and perspectives in a dynamic, constant state of flux, marked by

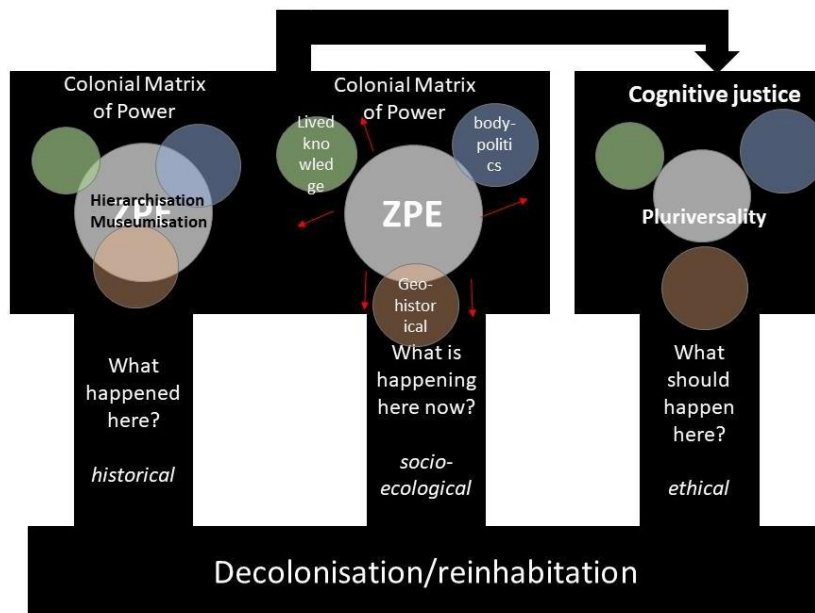
the departure and arrival of inhabitants. It is ever-changing, transforming, unstable, and never to be pinned down once and for all (Greenwood, 2008). It is the goal of place-based education to re- surface these stories on the particularities of places from the people who know them best— the indigenous peoples, the residents, the layman as we aim for cognitive justice.

Tracing the contours of cognitive [in]justice: the analytical strategy

There are strong parallels between approaches framed in decoloniality and critical pedagogy of place. First, both are anchored to a critique of colonisation as the purveyor of persistent relations and structures of injustice. Second, both perspectives stress the centrality of place and locality as the beginning of knowledge (Anzaldúa, 2015; Mignolo, 1999b) and as a pedagogical possibility (Greenwood & Smith, 2008). Both features also link well to cognitive justice (Visvanathan, 1997, 2009). As applied to this study, decoloniality's ZPE and power matrix denote the investigation of hierarchisation, museumisation and related processes. Border thinking was used to identify the features of place-based knowledges as lived, geo-ecological, and embodied. The three dimensions of critical pedagogy of place—the historical, socio-ecological, and ethical— serve as the framework's pillars (See Figure 1, next page).

Figure 1

The Study Framework



What happened here? Identifying manifestations of coloniality

The historical dimension asks, “What happened here?” (Pillar 1, Figure 1) and requires an understanding of a place's history, including its geography, the movements of peoples and materials, and the transformations a place went through over time. It also examines the genealogies of its various waves of inhabitants giving special attention to indigenous peoples, their stories, and their experiences of colonisation (Greenwood, 2013).

Answering Research Question 1 on how policy authors and actors regard and involve knowledge types for DRR requires undertaking a historical inquiry of the study contexts and policy development for DRR and DRR education. First, in Chapter 6, the rhetoric of DRR policies’ proponents as instrumentalised in perpetuating the power matrix akin to the ZPE were examined. Second, how the same power relations and knowledge regard became manifest in local policymaking spaces and practices were analysed in Chapters 7 and 8.

What is happening here now? Border thinking and resistance

The second part pertains to the persistence of border epistemologies. The analysis answers Research Question 2 on how different actors and institutions engage place-based knowledges. The socioecological dimension looks to the present in asking, “What is happening here now and in what direction is this place headed?” (Pillar 2, Figure 1). Here, contemporary contestations are examined, while remaining attentive to the remnants of a colonial past and its inflections in the present. This dimension charts a likely future for the place should the current place-people status quo relationship persist (Greenwood, 2013).

Chapter 5 is the core chapter in which the analysis of place-based knowledges inclusion and integration is based. With the research and fieldwork conducted in the cyclone towns, different dimensions of place-based knowledges have been teased. As situated knowledge, the specific climatological features, geographies, and exposedness of place to cyclones and their epiphenomena of flooding, storm surges, and wind damage has resulted in architectural, economic, and adaptation practices that are specific to place are discussed. In Chapters 6, 7, and 8, there is further examination of whether these dimensions were acknowledged, retained, and valued in policies and practices for DRR and education.

What should happen here? Imagining the possibilities of cognitive justice

The ethical dimension proposes alternatives to the status quo by stating the question, “What should happen here?” (Pillar 3, Figure 1). The purpose of this inquiry is to explore and imagine a decolonised and reinhabited future of social justice and equity gained through an educational pedagogy that follows a place-conscious mode of learning (Greenwood, 2013).

Decoloniality and critical pedagogy of place share the same end goal: to help create an environment of mutual respect and equal regard between place-based knowledges and other knowledge systems, including Western knowledges. This study puts forward

cognitive justice, indicated by pluriversality, as the ultimate goal of delinking from the colonial power matrix.

Santos (2007, 2013) maintains that there is no social justice without cognitive justice. Allowing one knowledge system to homogeneously and monoculturally (Shiva, 1993) define the parameters of universal understanding invalidates the cultural, epistemological, and ontological presuppositions of many knowledge systems; this is a case, according to Santos (2013), of “epistemicide.” In a world that is increasingly becoming more aware of the limits of dominant knowledge paradigms (Odora Hoppers, 2009), the pursuit of cognitive justice pries open the door for marginalised knowledge systems to contribute fresh and diverse perspectives and solutions to complex global problems (Moulaison Sandy & Bossaller, 2017), including disaster reduction.

In this study, it is argued that reducing risks on a global scale requires multiple perspectives and context-specific solutions. Cognitive justice is examined in DRR education through a conjoined analysis of place and policy. Operationally, this means a form of DRR education that is attentive, inclusive, and non-hierarchical regarding any knowledge system, a notion that Research Question 3 explored and is discussed in Chapter 9.

Conclusion

Using the concept of cognitive (in)justice, through this chapter, I have presented an epistemological framework and analytical strategy to understand how local, place-based, indigenous, and traditional knowledge are relegated to the margins. Through the interrelated tenets of decolonial thinking and practice and critical pedagogy of place, I have illustrated a framework that traces the political-historical dimensions of knowledge subjugation, and an image of how cognitive justice could be realised. In the following chapters, I operationalise these concepts in my discussion of place-based knowledges, global and national policies, residents’ perspectives, DRR stakeholders, and teachers.

CHAPTER 4

Tracing layers of cognitive (in)justice: methodology and methods

Following on from the previous chapter, where core concepts and theoretical frameworks have been established and in keeping with applying cognitive justice as the primary approach to the emergent discourses and practices of Disaster Risk Reduction (DRR) and DRR education, this chapter discusses the application of Lesley Bartlett and Frances Vavrus' comparative case study (CCS) approach (Bartlett & Vavrus, 2017b; Vavrus & Bartlett, 2009). As discussed in the previous chapter, this study is informed and framed by investigating cognitive (in)justice in disaster education as indicated by activities akin to or indicative of hierarchisation and museumisation. In doing so multiple angles, layers, and timeframes in tracing the policy-practice nexus for DRR through a multi-sited, follow-the-data approach using ethnographic techniques were pursued (Bartlett & Vavrus, 2017b; Falzon, 2009; Marcus, 1998a, 1998b; Vavrus & Bartlett, 2009). The set of methods included participant observation, extensive notetaking while at fieldwork, interviews, and document analysis. In the following sections, I describe and explain the data collection procedures, methodological decisions, and analytical approach I have chosen.

I, the Researcher

This research has been approached from three overlapping perspectives as a researcher: with the eyes of a local, a development worker, and an education researcher. Due to my background, I consider myself an 'insider' to the phenomenon of cyclones. Being an insider means I have firsthand accounts of the destruction cyclones have caused and have been a witness of the various ways in which communities harness opportunities brought about by the phenomenon. Conversely, taking on a comparative approach meant that I am an 'outsider' to the local contexts of the two other research locations, Australia, and Vanuatu (Crossley, Arthur, McNess, & McNess, 2016; McCormick, 2017; McNess, Arthur, & Crossley, 2015).

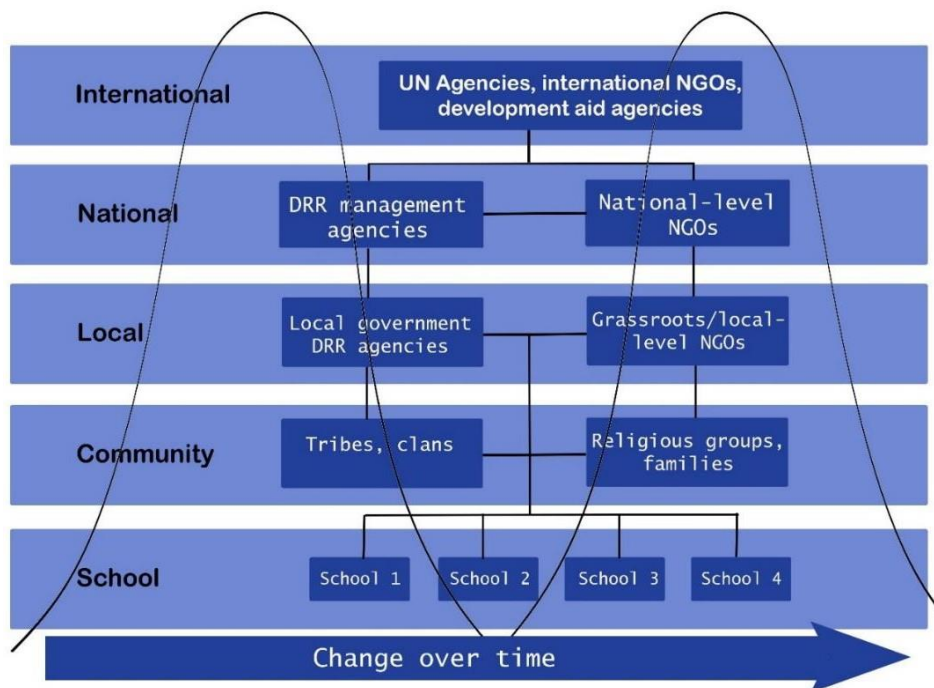
Following a qualitative approach to the research implies that I, the researcher, am the main instrument and ‘method’ involved. To highlight this, I used the first-person perspective throughout to indicate that the data analysis was very much influenced by my positionality, past, present, and emerging, and indicate that I take full responsibility for the ideas presented in the text (Gullion, 2016). While my study presents an extensive discussion about the topic, I am also cognisant that what I show through the text is a partial glimpse of the whole picture. All these contribute to my positionality, as discussed above, and as this study’s main research instrument, the same features figured in how my methodological and analytical approach materialised.

Comparative Case Study

I patterned my research design after Bartlett and Vavrus’ Comparative Case Study (CCS) (Bartlett & Vavrus, 2017b; Vavrus & Bartlett, 2009) model. The CCS follows a multi- sited type of ethnographic approach (Falzon, 2009; Marcus, 1998a, 2011) that favours short-term, interrupted field engagements, the aim of which is to follow the conduit of people, materials, documents, and connections (Koyama, 2009; Phillips, 2009). There are three dimensions to the CCS: the vertical, the horizontal, and the transversal axes. Figure 2 (next page) illustrates CCS as adapted for DRR education.

Figure 2

Comparative Case Study of DRR Education



As indicated by the flowchart above, the vertical axis was employed to examine how DRR and DRR education policies as developed by inter- or supranational organisations cascaded down (Finnemore & Sikkink, 1998) administrative ladder to national agencies, local governments, NGOs, communities, and schools. I also used the vertical dimension to investigate the bottom-up flow of policy, in which the focus was on how local actors informed national and global-level policymaking.

The horizontal axis directed the analysis at specific layers of the model and compared how different actors at the same tier (e.g., Schools 1-4, national government policies and stakeholders across the three contexts) interpreted, employed, or resisted the policies. Finally, as indicated by the wave-like line in Figure 2 (above), the transversal axis tracked changes in policies and contextual practices over time. With their intersections and areas of overlap, all three dimensions provided structural integrity to the inquiry while allowing for nonlinear engagement with the data.

Multiple sites, multiple actors

The selection of sites followed the multi-scalar governance structure of DRR. At the international level, the relevant actors were United Nations agencies directly in charge of DRR management, including education for DRR. Included in the international cluster were the UN Disaster Risk Reduction (then UNISDR), UNESCO, UNICEF, and international NGOs.

At the national and state level, government agencies and NGOs at the forefront of disaster management were the foremost actors. Agencies and advocates from the following sectors comprised this cluster: education, national defence, social welfare, indigenous affairs, and ad hoc bodies designed to respond to emergencies and disasters.

At the local level, provincial and municipal government agencies and local-level NGOs of grassroots beginnings and those reporting to international NGOs were part of this cluster. At the community level, the research identified context-specific political and social actors and relations central to the communities' functioning. These included language groups, religious groups, and kinship systems. At the school level, teachers and administrators were the stakeholders of interest.

Cyclone towns as the research base

Central to the research design was the identification of research bases to fit the feature of a hazards-exposed place. Located at the layer of the Local, it was at the research bases where I spent most of my data collection activities. The criteria for base selection were as follows:

1. Exposure to cyclones
2. Alignment to the DRR framework

Geographical exposure as a criterion for selection means a place must be near a large warm body of water and at 5° away (preferably at 10° - 20°) from the equator. Accordingly, these are vital conditions for the formation of tropical storms and cyclones (Dowdy et al., 2012; Pielke, 2011). The second prerequisite was a research base's

connection, at least at a policy level, to the global DRR framework. For example, the national governments of the research bases had to have explicitly stated their alignment to either or both landmark DRR policy instruments, the Hyogo and Sendai Frameworks.

Table 2, below, highlights the research base’s comparative convergences.

With these criteria, I chose areas within Australia, the Philippines, and Vanuatu as field sites. These were Aparri (Philippines), Port Hedland (Australia), and Efate (Vanuatu). From the research base selection, I then navigated to different offices as sites at the international and local level, crisscrossing to the schools, and country-level agencies, travelling physically or connecting with participants virtually as needed.

Table 2

Comparative Convergences

Location	Exposure	DRR policy
Port Hedland (Australia)	20.4° south of the equator, coastal	National Strategy for Disaster Resilience
Aparri (Philippines)	18.3° north of the equator, coastal	Philippine Disaster Risk Reduction and Management Act of 2010
Efate (Vanuatu)	17.6° south of the equator, coastal	Disaster Risk Reduction and Disaster Management National Action Plan

In addition, I also considered the articulated commitment of the national governments of Australia, the Philippines, and Vanuatu to global pronouncements for the recognition and equal representation of indigenous and traditional knowledges. In Chapter 7, I discuss how each country expressed their alignment to the UN Declaration on the Rights of Indigenous Peoples (United Nations, 2007; See Chapter 1, p. 7) and how the same rhetoric became manifest or concealed in their engagement with knowledges for DRR.

There were two phases to the fieldwork and entry to the research bases. The first phase involved a minimum of month-long immersion in each. The second was confirmatory research to corroborate data gathered in the first phase, fill in 'holes' in the developing analysis, and member checking with participants. Phase 1 of the research took place in December 2017- April 2018. The second phase soon followed, from June-September 2018.

The methods: the paper trail, shadowing, interviews, participant observation

As employed in this research, ethnographic methods followed what Delamont (2012) considers "partial immersion." Due to the limited time to conduct a complete immersion in my research sites, I endeavoured to capture as many perspectives as possible through extensive interviewing. I describe below the different methods employed to complement and triangulate data.

Following the paper trail

'Following the paper trail' means that my first research site was the Internet, as I scoured for documents related to DRR policies. I pursued the paper trail consistently while I was on fieldwork and even while completing this dissertation. Wherever I went, I would ask participants for relevant documents to my study, including white papers, maps, land use plans, statistical reports, newsletters, pamphlets, textbooks, curriculum materials, even meeting minutes. In addition, I perused the collections of local and national libraries, universities, museums, and weather bureaus while in the research contexts. I searched for books, archived photographs, autobiographies, children's stories, drawings, songs, poems, and local weather and climate references. This kind of targeted research at the sites and research bases made it possible for me to access recorded place-based perspectives of cyclones as expressed in local artefacts and literature.

Shadowing and internships

As I had to seek permission from local authorities to conduct the study, I then took the opportunity to negotiate for short-term internships in their offices. I engaged in what Kusenbach (2012) refers to as shadowing, or natural go-along, to conduct participant observation in my hosts' workspaces. I had to ensure that I made full disclosure before and throughout my internships that I was there to observe my hosts operations. For instance, I always asked my hosts to indicate their willingness to be observed through signing a Participant Observation Consent Form to reflect this arrangement. Shadowing happens when examining existing activities that are bound to continue even after the researcher's departure (Kusenbach, 2012). Through this method, I was able to cultivate relationships with the very first participants to the study who took me under their wing, showed me around, let me sit in meetings, and gave me my first orientation of the terrain, the people, and the history of the research bases (Taylor, 2016).

In Port Hedland, I had a two-week internship with the Town Council's Emergency Services department. Through this attachment, I joined local and regional meetings and planning sessions as the Pilbara region prepared for the cyclone season. Representatives from various sectors, including the mining camps, the Fire Department, the State Emergency Services (SES), the Army, and Community Services, attended these meetings. Through these events, I identified, talked to, and scheduled interviews with prospective study participants.

I also interned with the municipal council of Aparri under the auspices of the Municipal Disaster Management Office (MDMO). In my first week, I joined a three-day training on lifesaving and water safety involving high school students and school DRR officers. I also took part in DRR workshops and observed planning sessions while with the MDMO.

Shadowing in Vanuatu was mainly through my association with Oxfam as I attended their organisational gatherings. I was also asked to share my study in a *storian*, a roundtable discussion, with the members of the Vanuatu Climate Action Network

(VCAN). VCAN is a group of non-government organisations with advocacies aligned to climate change and DRR. The internship attachments provided for first contact points with my hosts as the primary gatekeepers to the communities. Through these immersions and conversations, I was able to identify and get hold of several nodes and persons to the network of actors in the research contexts.

Interviews

I employed interviews to elicit detailed information about cyclones, DRR, and education policies based on the interview participants' reconstruction of past events (Taylor, 2016). The interviews were primarily conducted in a semi-structured format, such that I had a lean interview schedule with ad hoc follow-up questions. As the data collection period reached its mid- and latter stages, my interview schedule morphed mainly depending on data from preceding interviews and observations I had already made, influencing emerging themes (Rapley, 2011; Taylor, 2016).

I had to conduct structured interviews when I observed protocols that prohibited divesting from an approved interview schedule. One example to illustrate this was Australia's Department of Education and Training's (DET) instructions, which disallowed follow-up questions or the probing of teachers' responses.

I took heed from Rapley's (2011) pragmatic advice for using a recorder; the device facilitates a genuine interaction among parties, allowing the researcher to take brief notes only as needed to make a full transcript of the interviews. However, I turned the machine off when with participants in walking tours (See next section). The interviews were then unstructured and open-ended, with me asking only non-directive questions and letting the participants determine the course, content, and focus of the conversation (Taylor, 2016). The interviews were conducted mainly through face-to-face meetings, and some through Skype calls. The interviews were transcribed either by a transcriber or by me.

Participant observation and walking tours

Engaging in participant observation means I took every opportunity to be immersed in the DRR space and my research base's town life. Apart from my scheduled interviews, I made myself available for other activities such as festivals, birthday parties, workshops, trivia nights, conferences, picnics, a funeral, church services, and a wedding. I found and attended a symposium on disaster resilience in the Philippines. I knocked on office doors and never refused an invitation to tea or dinner.

I made a conscious decision to make at least one of my visits to each of my research bases to coincide with the place's cyclone season, as I wanted to expose all my senses to how the communities respond to the phenomenon. Two weeks after my arrival in Port Hedland, I witnessed how the town prepared as a storm cell was being monitored off the coast of Northwest Australia. I landed in Vanuatu while Efate was under Category 2 watch for Cyclone Hola. During my second visit to the Philippines, at least four successive typhoons passed by Aparri.

As I spent more time in the research locations, I usually asked one or two study participants to join me for a walking tour, a drive, or a boat ride around their community. I joined Philemon and his grandchildren Grace, Tara, and Tom for kayaks twice to their old village of Eratap Island in Efate. Sheryl and Mayette took me around their community in Epau. In Aparri, Harold, the chief officer for the Disaster Management Team of Aparri, toured me around the town, pointing to areas that have been affected by the most recent cyclone. Mara and I went to Bisagu together, where she pointed out the skeletons of houses washed out to sea. In Port Hedland, I was the beneficiary of the kindness of people who drove me around town: Samuel of the Town of Port Hedland, Trinity who I stayed with, the staff of Mirntuttantu Maya, Julia, who took me with her to inspect the evacuation centre, and Diane who showed me her family's cyclone shelter.

These engagements were critical as they gave me access to the smells, the sounds, the panorama, the close-up shot, the heat and humidity, the cave used as an evacuation site, the church building that was levelled by a cyclone, and the water level indicators. I

would take out my recorder when a participant mentioned a phrase related to my research at times. I would then ask for permission to record and request the participant to re-state and elaborate on what they had just said. Most of the time, I preferred the unobtrusive nature of written documentation. I then transferred the details to my field notes later in the day.

I kept five sets of research notes throughout my fieldwork. My field notes contained narrations of my day-to-day activities of data collection. My methodological notes were written sporadically, such that they contained my reflections on the usefulness of my methods and decisions to shift strategies. My analytical notes included initial answers to my research questions. I also kept a journal to document my musings and struggles while in the field. Finally, I had a budget log to track my daily expenses. My field notes, analytical notes, and methodological notes were all parts of my research data (DeWalt & DeWalt, 2011).

The two-phase design of the research allowed for short and scheduled respite from the study. Several qualitative researchers (DeWalt & DeWalt, 2011; Taylor, 2016) stress the importance of taking a break from fieldwork to clear one's mind, temporarily disconnect with the data, and review the data collection process. These brief rests were critical in the evolving analysis and fine-tuning my strategies in getting to areas that were difficult to access.

The Fieldwork

The data collection flow varied at each research base and phase of the fieldwork. In both the Philippines and Australia, I had to allot two weeks of my schedule to meet with participants based in Manila and Perth, respectively. In the Philippines, I accomplished most of my planned interviews at the international, national, and provincial levels during the first phase. In the second phase, I focused mainly on conducting participant observation and interviews in Aparri, travelling to the *barangays* (villages), and participating in school activities related to DRR. In Australia, my internship with the town

council during the first phase of the research afforded for my exploration of local and regional discourse on DRR. I used the second phase to gather the perspectives of state actors, the local community, and schoolteachers. Of the three sites, Efate was the most straightforward experience. Port Vila in Efate is the capital of Vanuatu. The city hosts international organisations' offices and serves as the base stations for state agencies. Thus, in Efate, I was able to transition from interviews in the capital with NGOs and national government agencies and to meet study participants in a village thirty minutes from Port Vila on the same day. Unlike the Philippines and Australia cases, the two phases of my research in Vanuatu resembled each other. The second phase involved member-checks and documents trailing with participants in the first phase.

Reaching the participants

I purposively identified key organisations and persons in my research sites through desk research and document analysis before travelling for my fieldwork. Setting up appointments with international and state-level actors was mandatorily through email followed by phone calls. By and large, electronic means of communication have been most functional in this research. In Australia, email was the most used tool in setting up initial meetings, from Ministry personnel to local citizens. Such conventions were less observed in Vanuatu, however. In Efate, I struggled at first when my emails and calls were unanswered or when interviewees failed to show up on appointments. Three participants then advised that Vanuatu is less concerned about formality. If I needed something, I was told to turn up at office doors. I did follow this counsel with fruitful results.

Snowball sampling, a data sampling technique that uses referrals, complemented the use of purposive sampling (Silverman, 2014). Snowball sampling was used strategically to gain access to hard-to-reach groups. For instance, I had no gatekeeper to particular Aboriginal communities in Australia. In this case, I deliberately asked for referrals from every Aboriginal person I interviewed.

Social media, Facebook specifically, facilitated several critical facets of my data

collection. In the Philippines, my emails and calls to prospective interviewees were unreturned for weeks. I had to turn to Facebook and reach out to an acquaintance to seek their help in securing appointments. They then led me to what they called the virtual 'backdoor' of contact. My acquaintance later became my gatekeeper; they created chatrooms on Facebook and directly contacted study participants. Through such facilitation, I secured commitments for meetings, which then extended to referrals to other participants.

In Vanuatu, Facebook became my primary mode of communication with participants during and after my fieldwork. For example, when study participants learned that I lost my mobile phone, which I used to take photos of my field sites, some lent me their smartphones and then forwarded the images via Facebook messenger.

In Australia, Facebook was most facilitative in successfully recruiting interviewees from Port Hedland. Before this, I had posted in community boards and library notice boards, asking for volunteers for my research, but had not been effective in getting responses. My 'big break' came when the Bushfire and Natural Hazards Cooperative Research Centre (BNHCRC) offered to advertise my study on their Facebook page. The Facebook advertisement gained substantial interest and led to referrals from people within Port Hedland and even those living outside of town. A pivotal outcome of this social media advertising was that a town councillor who holds office at a local mall contacted me to offer their facilities to conduct my interviews. The research, in my opinion, would not have progressed as fast without the aid of Facebook. Further, the Facebook messenger provided a tool to sustain conversations and relations with the study participants, many of whom became my friends, even after my fieldwork. For instance, the participants in the Philippines and Vanuatu occasionally send me photos of their communities in the aftermath of a cyclone through Facebook messenger.

Ethics and consent

As soon as I identified my field sites, I negotiated access and had my research proposal approved by the University of Sydney Human Research Ethics Committee [HREC] (Protocol Number 2017/802). The Consent Forms and Participant Information Statements I prepared indicated that participants are free to withdraw their consent at any time without penalty, prejudice, or repercussion to them. Research in schools also meant that I had to obtain permission from Principals. In addition, certain agencies have certain regulations on access to field sites. These agencies included the following:

- a. Department of Education and Training, Australia
- b. Department of Education- Division Office of Cagayan, the Philippines
- c. Bureau of Meteorology, Vanuatu
- d. Vanuatu Cultural Centre/Vanuatu Kaljoral Senta
- e. Town Council of Port Hedland
- f. Office of the Mayor, Aparri

While many of the participants were enthusiastic about participating in my study, some expressed confusion about what I aim to accomplish with the data I was gathering (Taylor, 2016). In addition, several participants were willing to participate but were apprehensive about being identified in the transcripts, only to retract such a stance at the end of the interview. On one occasion, a participant of Aboriginal descent started quizzing me midway in an interview if the information I was collecting was for the government. Such an encounter made me realise the importance of being transparent and upfront in communicating my research aims. More importantly, the incident reminded me of how research projects were weaponised in the past against Indigenous communities (and those considered 'marginal,' more broadly) to justify policies of exclusion and discrimination (Fingers, 2005; Stevens & Wolfers, 1974).

Further, while I ensured to obtain informed consent from my study participants, there was a high risk that they would eventually come to take my presence on-site for granted. Ongoing informed consent (Cutcliffe & Ramcharan, 2002; Miller & Bell, 2002)

was critical to ensure that the interface between researcher-participant remained nondeceptive and mutually respectful. It was my responsibility to sensitise the participants to the research by regularly reminding them of the purpose of my presence in their community, school, and institutions. Thus, I made it a habit to wear a shirt that bears the University of Sydney imprint at least once a week while I was in the field. I also conveyed the content of the Informed Consent Form through writing and speaking in the participant's preferred language where possible.

All participants in the study were de-identified to adhere to the ethical protocols of research. Unless participants explicitly expressed that they preferred to be identified, pseudonyms were used in the discussions and for all related outputs connected to this study.

Language

I used English in all my interviews and correspondences in Australia. Although some of my respondents come from different ethnic groups and Aboriginal descent, they all conversed in English and considered the language their first or second language. In the Philippines, the interviews were conducted mainly in Taglish, a mix of Filipino (Tagalog) and English, and Ilokano, the regional language of Northern Philippines. Most Filipinos code-switch between a Philippine language and English when in a conversation. Ilokano was primarily used for my interviews in Aparri. I am a native speaker of Filipino and Ilokano.

In Vanuatu, the official languages are English, French, and Bislama. I conducted most of my interviews in English. However, there were cases when the participants expressed their preference to talk in Bislama, especially in the villages and French schools. My two-month stint in Vanuatu helped me develop basic comprehension of Bislama. Thus, I encouraged my interviewees to converse in the language.

Nonetheless, the language barrier did figure during the interviews. I had to clarify some terms, and during the analysis, I had to recall the context of the conversation.

Therefore, I acknowledge that any lost and misinterpreted elements from my interviews and observations in Vanuatu and, to a lesser extent, in the Philippines and Australia are to be attributed to my limited contextual and linguistic familiarity with the places and their residents.

Ethnicities and relationalities

My research benefited from connections both old and new. Albeit faced with some complications, forging new relationships in the Philippines was most manageable as I was a 'local.' In Port Hedland and Efate, I tapped into the Filipino diaspora as a resource. In both places, there were Filipino organisations that I deliberately sought out upon my arrival. They welcomed and assisted me in many ways, such as looking for accommodation, finding modes of transportation, food recommendations, and warnings on places to avoid.

There were also instances when my ethnicity played a curious role in my favour. In my home country, I was often welcomed with great anticipation as a White person, owing to an earlier introduction by a gatekeeper that I was coming from a university in Australia. However, I sensed the confusion, dismay, or relief once they got over the initial preconception that I am a 'foreigner' – and not White – in those first meetings.

My ethnicity was almost a negligible factor in my interactions with the locals of multi-ethnic Port Hedland. I observed, however, that my skin colour worked to my advantage in approaching members of the Aboriginal community. Indeed, when my councillor-host accompanied me to talk to Aboriginal persons at the mall, those we tried to talk to walked away from us. The councillor then told me that to be seen with a White person might not work to my advantage. Once I built relations with some community members, I became fully aware of the simmering animosity between the racially distinct groups and the inherent power differentials in Port Hedland. I recognised that the matters discussed in my presence by the Aboriginal participants were being said with their guards down because they saw me as non-threatening, perhaps even an ally (See Boughton &

Durnan, 2014 for a similar experience). This perception was further confirmed with invitations for tea with bush tucker on the menu, visiting family, taking part in a funeral service on one occasion, and cooking food for Catherine and her partner in Port Hedland. I became a party to organisational and family gossip, with my skin colour functioning, almost like camouflage, to my being different. As a participant-friend told me, “We are all Aboriginals. You are an Aborigine of the Philippines. I am an Aborigine of the Pilbara. We are sisters.”

In Vanuatu, most of those I talked to, at one point or another, had been in an interaction with a foreigner, whether they were tourists, aid agency employees, volunteers, or researchers such as myself. There was also cross-cultural borrowing between Vanuatu and the Philippines. The latter’s television soap operas are accessed and enjoyed by ‘Ni-Vans.’ At times, some Vanuatu research participants gleefully discussed the plots, the characters, and the sceneries of the soap operas with me. I found it helpful to use these soap opera references as an icebreaker or build rapport with the participants.

Methodological calibrations

The qualitative, follow-the-data mode of research was facilitative of midcourse corrections. Aparri in the Philippines was not my first choice of research base. Initially, I wanted to study the island town of Calayan off the shore of Aparri. However, daily gale warnings before my sea voyage made me reconsider my travel by boat to Calayan. Upon arrival in Aparri, I stayed with family relatives to wait for calmer weather. I soon learned that water vessels to Calayan had moored and that the forecasted weather would remain inclement for the next two weeks. Upon consultation with my research supervisors, I then applied for a permit to conduct my research in Aparri and updated my Ethics papers with the University of Sydney.

I was at first reluctant to conduct the study in Aparri. Although the town’s characteristics fit all features of a typhoon-exposed place, I hesitated at the idea, as Aparri is a place that I am too familiar with. I frequented the town as a child and, at some point,

my family made Aparri their residence. Initially, I saw this situation as methodologically problematic. I desired to be equally unacquainted to all the research bases, to bring an ‘outsider’s eye,’ untainted by previous or ongoing exposure to a place. Nonetheless, the choice to pursue the fieldwork in Aparri proved to be epistemologically enriching as the data unfolded themes that were, indeed, new to me.

I also had to shift from a one-on-one interview to a group interview in a few cases. In the Philippines, it was not unusual for me to arrive at an interview appointment with one confirmed interviewee and be welcomed by two or three persons gathered around a table, where snacks and drinks are already laid out. In Vanuatu, group interviews were only possible in the communities when I grouped the genders separately. Finally, I conducted group interviews in schools for all three locations. Doing so was most practical, as I had to take advantage of the teachers’ one-hour breaks between classes.

On the one hand, I assumed the role of a facilitator and moderator in group interviews. I found that the collective dynamics in group interviews stimulated conversations in ways that the one-on-one meetings did not yield. On the other hand, Taylor (2016) cautioned about forming superficial consensus in group interviews, a pattern that I also observed. To counter this, I made sure that a few participants did not monopolise the discussion encouraged the quiet ones to speak up and actively solicited dissenting opinions on the raised points.

While I viewed my presence and interactions with the study participants as a process of co-constructing data (Kvale & Brinkmann, 2015), I was also mindful of being reflexive of my pre-existing opinions (Maxwell, 2013; Miles, Huberman, & Saldaña, 2014) about the topic of research as well the study participants. I was also careful not to impose my views (Maxwell, 2013) or foster an atmosphere where the participants felt the need to provide the ‘right’ answers or behave according to what they perceive as my preferred behaviour. As Dingwall (1997) noted, interviews are “a situation [in] which respondents are required to demonstrate their competence in the role in which the interview casts them” (p. 58 in Rapley, 2011). Some participants checked with me, for instance, if their

responses were 'ok' or correct. Others also felt embarrassed when I asked a question to which they did not know the answer. I then had to reassure them that there was no right or wrong answer.

Analytical Approach: The horizontal, vertical, and transversal dimensions

As the CCS discourages the use of *a priori* codes and the imposition of categories from one place to another (Bartlett & Vavrus, 2017b), I used "eclectic coding," a recognised approach in which several coding techniques are used to generate patterns and themes (Saldaña, 2012). From the generated codes, I then proceeded to analyse the themes as guided by the CCS' vertical, horizontal, and transversal lines of inquiry.

Coding and making sense of data

I conducted the coding independently for each research base and site. The first coding cycle mainly used descriptive codes. The codes went through the first instance of data condensation through axial coding, generating multiple provisional themes. The second coding cycle then used both research questions (RQ)-based coding and theoretical coding. I cross-checked the provisional themes with RQ-based coding, whether they were conceptually suitable to answer the research questions. For theoretical coding, I checked the provisional themes against the constructs of the theoretical framework. The themes were then further condensed through the determination of overarching main themes.

Putting the case studies together required a visual display that traces the flow of policy development. I initially used a mind map to draw lines and figures and made notes to denote the web of concepts and actors. Upon several iterations and as the themes began to condense tightly, I then used Miles, Huberman, and Saldaña's (2014) method of "stacking comparable cases" (p. 103), which uses matrices and display formats to compare and explore interrelationships across scales, between sites, and at every axis of the CCS.

The horizontal view

Bartlett and Vavrus' (Bartlett & Vavrus, 2017b; Vavrus & Bartlett, 2009) “horizontal” dimension to the inquiry was employed in Chapters 5, 6, 7, and 8. A horizontal perspective compares data across the same units of analysis, such as residents in the three cyclones towns (Chapter 5), national government policies, actors, and country-level NGOs in Australia, the Philippines, and Vanuatu (Chapter 7), and schoolteachers (Chapter 8). The horizontal view attends to contextual nuances, even as it seeks out thematic similarities across contexts.

The vertical dimension

The “vertical” dimension examines across layers (Bartlett & Vavrus, 2017b; Vavrus & Bartlett, 2009), for instance, the flow of rhetoric of global policies and their influence at domestic spaces of policymaking (Chapter 7) and practices in education (Chapter 8). In this particular thesis, the vertical dimension had to consistently attend to the space afforded to place-based knowledges in the developing authoritative discourses of DRR and its subsidiary of DRR education.

The transversal view

In Chapters 6 and 7, I mainly used Bartlett and Vavrus' (2014) transversal perspective in the rhetorical analysis of policies. A transversal inquiry uses the temporal-historical lens to examine how process and change occurred in a continuum. The unit of analysis at this level is global DRR policies. In these chapters, I approached the issue at the level of discourse and, specifically, of rhetoric. As the international policies were non-binding and non-obligatory, I analysed how the authors of the policies employed rhetorical tropes to persuade and influence and how education and knowledge-building were embedded in these authoritative discourses.

Conclusion

This chapter described how a research design structured after the Comparative Case Study model facilitated an organised yet nonlinear approach to both data collection and analysis. I also explained the fieldwork process and the methodological decisions that I had to consider for contextual uniqueness. The following three chapters will discuss the results of the analysis. Chapters 5 and 6 are the base chapters for place-based knowledges and policy, respectively. Chapters 7 and 8 then refer to the discussions on the intersections of policies and practices at the national and school levels of DRR and DRR education.

CHAPTER 5

Knowledge dimensions in the cyclone towns

In this chapter, I illustrate the different dimensions of place-based knowledges as grounded in residents' perspectives in locations exposed to cyclones and their epiphenomena of storm surges and flooding. Consistent with border thinking, I chose to discuss the residents' perspectives first in the series of data chapters as a deliberate act to foreground the voices of those who *live* and *think* in places that are exposed to the phenomenon of cyclones (Mignolo & Tlostanova, 2006). In addition, Chapter 5 provides the base chapter for succeeding discussions on how place-based knowledges' dimensions figure in policies and practices for DRR, including its expressions in education. In the discussions below, I introduce the 'cyclone towns' as the research locations. I engage in a horizontal analysis (Chapter 4) of themes and patterns that emerged from my conduct of participant observations, interviews, and textual and photographic materials that I have gathered. I discuss each knowledge dimension by using examples and anecdotes as evidence from the towns. Not all dimensions were manifest in all three places, and these dimensions have within-place variations. I relate these variations as reflecting Agrawal's (1995) view of knowledge distinctions as non-definitive, blurred, and dynamic. Thus, the examples and anecdotes shown are not intended to generalise across or within three locations but to illustrate the richness and fluidity of perspectives and, indeed, of knowledge dimensions. I then revisited the concepts of geo-ecological, lived, and embodied knowledge introduced in Chapter 3 to examine how the dimensions indicate border thinking (Anzaldúa, 2015; Mignolo, 2011b). Finally, I synthesise these insights and understandings in the concluding section as I reflect on the multiple facets of place-based knowledges. The aim is to partially answer Research Question 2 about the engagement of place-based knowledges in DRR.

The cyclone towns

I directed the inquiry to communities in Efate in Vanuatu, Aparri in the Philippines, and Port Hedland in Australia, here referred to collectively as *cyclone towns*. By virtue of their geographical location, the cyclone towns are exposed every year to cyclones and related meteorological conditions. In the Methodology discussion (Chapter 3), I described geographical exposure to cyclones as a place's location at 10° - 20° with respect to the equator and proximity to a large body of warm water. Research shows that these are ideal conditions for the formation of tropical storms and cyclones (Dowdy et al., 2012; Pielke, 2011). All three locations fit the description by these geo-meteorological features and have been confirmed through the fieldwork and interviews I conducted.

Figure 3

Vanessa prepares laplap for a wedding in Epau village, Efate



Efate Island, Vanuatu

Efate is one of the more than eighty islands in the Y-shaped archipelago that make up the Republic of Vanuatu in the South Pacific. Port Vila, the capital city of Vanuatu, is on Efate Island. With Port Vila in its jurisdiction, Efate is the de facto seat of the national government, the centre of commerce, and the hub of tourism. As the South Pacific has

been increasingly becoming a popular tourism destination, Efate and Vanuatu have been hosts to the steady influx of tourists, most of them calling Port Vila their port of call. The cruise ships bring with them the sightseers and shoppers. Visitors were also welcomed at the airport. Many of these guests bought land, built resorts, hotels, and restaurants, and stayed with tentative exit plans. From the interviews, the study participants shared that there has also been an extended arrival of foreign workforces, working as middle managers and service workers in the resorts, hotels, and spas.

While Efate is the most urbanised region of the country, the peri-urban fringes of Port Vila are still characteristically rural, including the villages of Eratap and Epau where I conducted most of my non-Port Vila based fieldwork. At the time of my visits, electric power was yet to reach the village of Epau (Figure 3 on the previous page illustrates a meal preparation in Epau). For both the residents of Eratap and Epau, subsistence farming is their primary source of income. A number operate passenger vans, fish for food and trade, and others work at the resorts and establishments in Port Vila to supplement that.

Efate and the rest of Vanuatu are exposed to many natural hazards, including earthquakes, volcanic activities, and cyclones (Bedford & Spriggs, 2018). Of these phenomena, the residents acknowledged cyclones as the most common and perennially experienced. The cyclone season in Efate and Vanuatu spans the months of November to February. Two cyclones passed by Efate while I was doing fieldwork, including when I arrived in Port Vila. For this chapter, I based most of my Efate-based discussions on interviews and observations conducted with the following participants, in Table 3 on the next page.

Table 3*Efate Residents as Participants to the Study*

Name	Designation
John	Hairdresser
Matthew	Assistant to a tailor
Diane	Stay at home mother
Titus	Village chief
Philemon	Gardener/fisherman
Genesis	Area secretary
Vincent	Gardener
Marie	Office worker
Helene	Resort worker
Ralph	Bus driver
Jonathan	Gardener
Greg	Gardener
Timothy	Gardener
Luke	Area secretary
Annelise	Gardener
Miranda	Gardener
Sarah	Gardener
David	Area secretary
Jenna	Hostel worker
Henry	Office worker
Moses	Tour operator
Lita	NGO volunteer

Aparri, the Philippines

Aparri is one of the towns that dot the shoreline of mainland Luzon in the northern tip of the Philippines. It is part of the Cagayan Valley region; a vast land hemmed in three sides by mountain ranges. In the Valley, the Southwest monsoon in June brings a hot and humid condition, including weather systems that often develop into cyclones. Towards the last quarter of the year, the Northeast monsoon takes over. Clouds moving inland are then barred by the mountains from crossing over to the Valley's other side. Rainclouds are trapped to condense and precipitate in a steady drizzle that strengthens into episodic downpours and shrouding the Valley in a mist throughout the Christmas season. Figure 4 on the next page shows the cyclone tracks where Aparri is located.

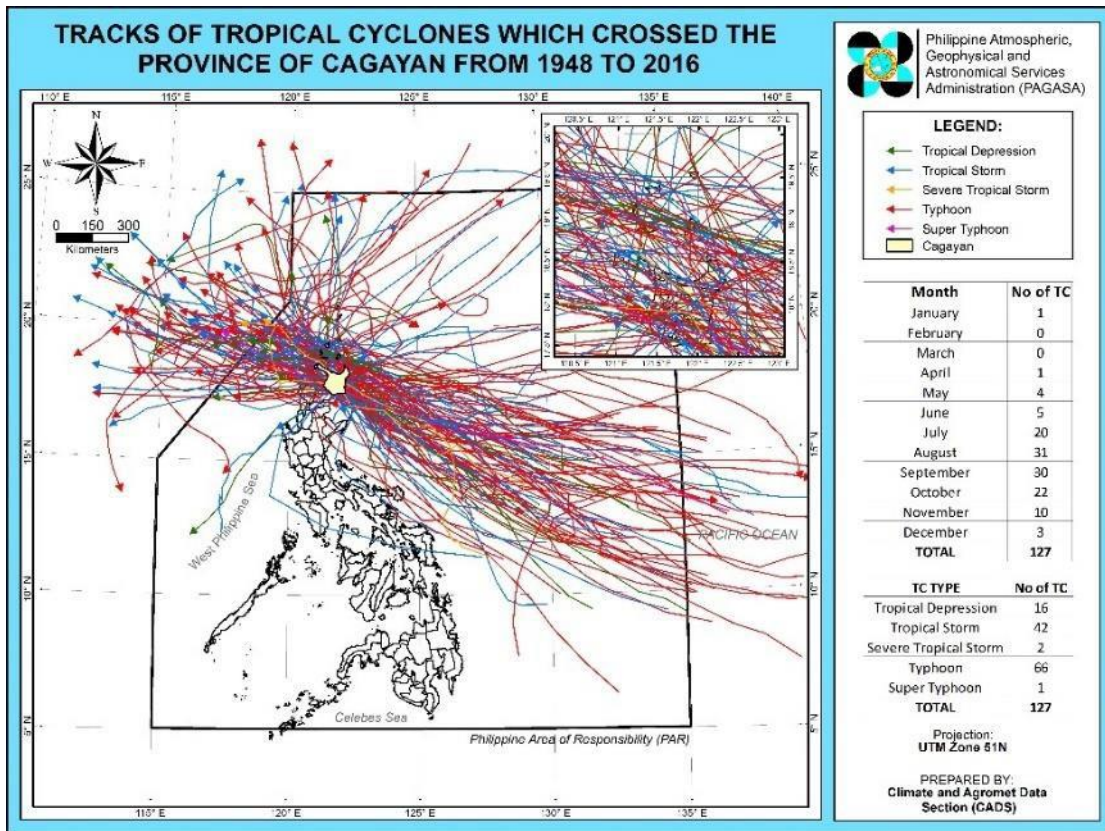
Growing up near the Valley, I became acquainted with its geography and the region's weather patterns. The Valley is almost perpetually wet, save for the three months of summer in March to May. The rain that descends on the mountain slopes cascades down, the bulk of the rainwater spills to the fields and communities in the plains below. The valley is a dipper; the water it holds mostly courses through the terrain through the many tributaries of the Cagayan River, the longest waterway in the country (National Water Resources Council, 1981). The river meanders and bifurcates through towns and villages before dislodging its content to the West Philippine Sea, right at Aparri's doorstep. This converging of two water systems inspired Aparri's tagline: "Where the river meets the sea."

The residents of Aparri mainly engage in rice cultivation and economic activities that involve harvesting marine resources (e.g., fishing, shellfish collecting, crab-trapping). Three cyclones passed by the town while I was in the area for my fieldwork. In Aparri, I gathered data with residents of the town proper and the outlying *barangays*¹ of Bisagu, Bukig, and Fuga. Table 4 on page 74 lists down the residents from Aparri who participated in the study

¹ ¹ A *barangay* is the smallest unit of government in the Philippines.

Figure 4

Severe Weather Events from 1948-2016 in Aparri



Note: The image was generated and supplied by the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA)

Table 4*Aparri residents as participants in the study*

Name	Designation
Maricel	Librarian
Arturo	Councilor
Leo	Office worker
Guillermo	Office worker
Concepcion	Office worker
Jada	Barangay captain
Rolly	Barangay captain
Edmar	Fisherman
Antonio	Fisherman
Isaac	Fisherman
Sotero	Fisherman
Marissa	Café worker
Perla	Stay-at-home wife
Jose	Fisherman
Sebastian	Farmer
Chloe	Stay-at-home wife
Jejomar	Farmer
Francis	Farmer
Nestor	Farmer
Andres	Farmer
Jojo	Farmer
Angela	Farmer
Rudy	Farmer
Valentin	Farmer
Cion	Farmer
Digna	Farmer
Mara	Office worker

Figure 5

A Coal Cargo Train in Port Hedland



Port Hedland, Australia

Port Hedland in the Pilbara region is *Marrapikurrinya*, the land of the *Karriyara* people in the coastal Northwest of Australia. Marapikurrinya means ‘five fingers,’ in reference to the hand-shaped formation of the natural tidal creeks moving in from the coast of the Indian ocean. In Aboriginal lore, these land and water formations were created during the dreaming when a creation spirit arose from the landlocked area of water, known as the *Jalkawarrinya* (Hardie, 1981). The Aboriginal residents frequented Marapikurrinya as a hunting ground for kangaroos, emus, bustards, and goannas in its pre-colonial condition. Its freshwater soaks were also preferred sites to gather fish, seabirds, shellfish, and crustaceans (Brown & Geytenbeek, 2003; Hardie, 1981).

The town went through different phases of industrial transformations from the time it became a part of settler colonisation – as a pastoralist town, a pearling town, and most recently, as a mining town (Hardie, 1981). With the discovery of mineral ore deposits in the 1960s and the subsequent building of the port, the town had become a major economic artery in Australia. Perhaps a fitting image of an ‘artery’ metaphor is the daily appearance of an almost three-kilometre train of mineral ore cargo that traverses through the flat North-western Australian landscape (Figure 5, previous page).

The mining industry is the single economic force that shapes all facets of Port Hedland, from its population density and diversity to town planning. Apart from the *Kariyarra* people, the large Aboriginal population in town also include the *Ngarluma*, *Nyamal*, and *Yindjibarni*, among many others. The mining industry also attracted workers from other regions of Australia and the world. The participants in this study thus reflect to some degree the mix of ethnicities in the town—from Melbourne and Perth, from South Africa, Cocos Islands, Torres Straits, New Zealand, the Philippines, Bosnia, to name a few. There is also significant and sustained traffic of itinerant residents such as the fly-in-fly-outs (FIFOs), the caravaners, and service workers. The ebb and flow of people in Port Hedland depends on the discovery of new mineral deposits to be mined and the demand of the world market for abundant raw materials in the Pilbara region. Thus, in

addition to diversity, there is also a high level of transience.

Like Efate, Port Hedland's cyclone season occurs in the summer months of November to April. I was in Port Hedland during the cyclone season of 2018. On my second week, the town was on Cyclone Watch as a storm cell system was detected in the Indian Ocean. The cyclone's path diverted so that no alert level was issued. In Port Hedland, the bulk of the data analysed were from conversations with the following residents (Table 5, next page).

Table 5*Port Hedland Residents as Participants to the Study*

Name	Designation
Benjamin	Former mayor; museum curator
Karla	Office worker
Nigel	Former miner
Anne-Marie	Former mayor; NGO head
Mary	Café worker
Janella	Office worker
Howie	Office worker
Austin	Mining company worker
Cindy	Mining company worker
Annette	Office worker
Tim	Retired office worker
Wayne	Former tradesperson
Emily	Board member, Aboriginal organisation
Henry	Mining camp worker
Philip	Head of the board, Aboriginal organisation
Jona	Retired nurse
George	Businessperson
Ian	Tradesperson
Jane	Restaurant owner
Keith	Pilot
Catherine	Linguist/cultural worker
Marian	Member, Aboriginal organisation
Marilyn	Pub owner
Raelyn	Businessperson
Darren	Tradesperson
Sheryl	Artist
Aman	Restaurant owner
Diane	Councillor
Harry	Retired

Knowledge dimensions of cyclones and their epiphenomena

Although geographically distant from one another, there are strong parallels and intersections of knowledges, experiences, and stories across contexts in the cyclone towns. In this section, I discuss how the residents of Efate, Aparri, and Port Hedland regard cyclones as, at once, disruptive, normal, and essential events. While cyclone exposure is a shared experience in all three places, the variances and particularities of knowledges that developed in the cyclone towns, and indeed in pockets within the towns, attest to the heterogeneity of perspectives as meteorological events come into contact with geography, topography, history, culture, politics, and economics of place. The themes as place-based knowledges dimensions generated from the fieldwork in the three locations were the following: the temporal, the economic, the psychological, the socio-political, the bio-ecological, the spiritual/cultural, the structural/architectural, and the future scenario perspective. These dimensions are summarised in Table 6 on pages 108-110.

The temporal dimension

Because of the three locations' proneness to hydrometeorological hazards, the residents have learned to live with recurrent events that may be deemed 'dangerous' to outsiders. The onset of the cyclone season marks changes in the physical environment. Cyclones signal a shift in the communities' living patterns and the need to prepare, change course, and regroup.

Main adaptation practices

The residents of the three towns engage in disaster prevention measures before the onset of the cyclone season. First, houses and critical infrastructures are secured. Abodes that need repair are attended to. In Port Hedland, this means tree pruning and cleaning of yards of materials that could become flying debris in the event of a cyclone. Awnings are also reinforced, and outdoor shade sails are taken down. The roofs of houses in Efate are fortified with either coconut leaves or cement blocks (Figure 6, next page). In Aparri, the

roofs are fastened with a rope. The residents in all three locations shared that the roof is the most susceptible part of a house to wind damage.

Figure 6

Houses in Epau (top) and Eratap (bottom)



Second, food and fuel are stored. In Efate, the women stock on provisions and food supplies. When a powerful cyclone is forecasted, the people also harvest what could be salvaged from their gardens, such as bananas, *aelan kabis*, papaya, coconuts, and fruits from trees. Third, livelihoods are protected. The boats in Aparri are moored, and the farm animals are kept out of harm's way. In Port Hedland, the mining companies suspend operations.

Fourth, forecasts and warning signs are observed. The people regularly tune in to radio and television announcements. With the advent of the Internet and social media, the

residents also get updates from their peers and the towns' respective weather bureaus (e.g., Australia's Bureau of Meteorology). Finally, in the event of a strong cyclone, families seek shelter in structures especially built for cyclones or evacuate to designated areas and facilities. Evacuations are routine procedures in all three places. When a cyclone is detected, those who had plans to cross the sea or the river must rethink their activities, postpone, re-route, or shelter in place.

Death and destruction

Cyclones, as disruptive forces, were recalled by the residents most succinctly for the destruction they left behind. Some of these powerful systems have caused death and physical changes to the land. In Efate, Cyclone Pam in 2015 remained the talk of the town three years after it made landfall. Pam's wind power forced people to leave their homes and left behind a swathe of material destruction. Indeed, during my fieldwork in 2018, the cyclone's imprints were still visible through uprooted trees, roofless buildings, and rogue iron sheets hanging perilously on hillsides. The participants noted the death toll from the cyclones. Cyclone George in Port Hedland is recalled having resulted in three deaths, while Cyclone Pam in Efate left behind 24 casualties. In Aparri, the participants shared cases of electrocution and drowning incidents in relation to typhoons.

What is etched in the memories of the residents who have been through powerful cyclones was the force of the wind and the sounds it emits. Timothy of Efate described the sound as "a howl"; Jona of Port Hedland remembered it as "a whistle." On its own, a cyclone's wind packs enough power to send unsecured objects flying or even toppling down structures. Wind damage may be further exacerbated by water hazards such as storm surges and flooding in areas close to the water.

Typhoon Karen in 2008 was one such extraordinary event for the residents of Fuga in Aparri. Karen was a minor tropical depression that quickly developed into a Category 3 force. The wind triggered a powerful *aluyo*, or storm surge, which inundated the hamlets in the lower parts of the village. Digna, a mother of two and a resident of Fuga, shared:

We were all huddled up. The doors and windows were barricaded from the inside. When the waters seeped in, the tables and chairs started to float. We had to hack away one of the windows to get out and seek shelter in higher ground. (Digna, Aparri resident)

Jose, a resident from Fuga, regarded Karen as the only typhoon that made him “shiver with fear.” While fleeing his flooded house, Jose had to brace himself against the power of the wind. He recalled that:

I could hardly move forward with the wind pushing against my body. I had to hold my child on one side and carry a water-filled jug on the other to balance myself. Else, the wind would have tossed us around. (Jose, Aparri resident)

When the eye of the storm passed by, the residents thought the cyclone had departed and started cleaning the mess it left behind. However, the momentary calm soon became a brute force that ripped the roofs off houses, cottages, and school buildings. Galvanised iron sheets were soon flailing around, endangering those in their path. The residents found their houses demolished and their gardens, trees, and fishing vessels destroyed in the aftermath. “It was a cyclone that cleared the forest of foliage,” said Jose.

The residents of Bisagu, also in Aparri, shared their fear of storm surges as the wind force tend to push the tide towards the community. In 1991, Arturo vividly recollected how Typhoon Trining rendered the place a wasteland with only eight houses standing in the aftermath. Jun lived in one of those houses that gave way to the storm’s power. Recalling Typhoon Pepang, Perla of Bisagu shared how the house she was taking shelter at was wrecked by the pressure of the wind on top and water from below. Before the house ultimately toppled down, her family sought refuge in a neighbour’s place, whose roof soon was snatched from the seams the moment the typhoon reached its maximum wind speed. The people inside had to endure being drenched by both rain and floodwater until the storm abated.

The residents recollected the destructive aftermath of cyclones through different means. For example, memories were easily accessible through references to physical

reminders, such as the wrecked remains of a building and watermarks left by a flood. Others juxtaposed the experience to a life event. For instance, I would hear the following phrases uttered when my interlocutors tried to remember their experiences:

[1] The year when Arnold was born...

[2] When I was a young boy, and my father brought home many lifejackets...

[3] When I was still nursing my youngest kid ...

[4] When my daughter was about to give birth to her son, Jaime...

Some reminders were more enduring; an example here is Eratap island in Efate, which its residents abandoned because of a cyclone. Eratap island is separated from the main island of Efate by a shallow lagoon. Despite its picturesque views, fine sand, abundant marine resources, and papaya growing wild, Eratap island is uninhabited (See Figure 7, next page).

However, one could surmise through cleared paths, the presence of ornamental vegetation, and unattended garden plots that the island was once settled. In fact, according to Titus, the village chief, the residents of Eratap that now live on a hill on the southern part of mainland Efate mainly descended from the families that left Eratap island in the 1950s.

Philemon took me to Eratap island twice. In the presence of his grandchildren, Philemon shared the story of how the island was once a thriving village and a fortress for their ancestors in pre-colonised and pre-Christianised Vanuatu. In the 1950s, a strong cyclone damaged the islands' vegetation and the people's houses. A visiting doctor to the island advised the village chiefs to consider relocating to mainland Efate to avoid the same disaster in the future. Thus, the whole village left Eratap island. Vincent, the brother of Philemon and Titus, is said to be the last that was baby born on the island. As the great exodus had happened in recent memory, the people, including the children, were still very much familiar with the story at the time of my study. Recollection, in this sense, is achieved through a physical reminder (an island) and as supported by the stories of village elders such as Philemon and Titus.

Figure 7

The Uninhabited Eratap Island



The memorialisation of the stronger cyclones is also an enduring practice in Port Hedland. The plethora of archival materials in the form of self-published memoirs, work of fiction, biographies, collection of poems, and memorabilia in the town's library showed that cyclones figure prominently in the residents' memories—from the early settlers to the migrants in later years. For example, in the commemorative publication of Port Hedland's first 100 years as a gazetted town (1896-1996), there is a special section for *Cyclone Chaos* which details the people's recollection of 'the blow' as a cyclone was called, as juxtaposed with the struggles of the early settlers who have had to acclimatise to their new environment; of babies born in makeshift shelters, those who hid in the bathroom, and houses lost to the sea. The blow was especially hard for pastoralists whose sheep and horses drowned, as well as damaged windmills and barns (Lewis, Bloemen, & Parker, 1997; The Town of Port Hedland, Australians for Reconciliation, & Wangka Maya Pilbara Aboriginal Language Centre, 2000). Memoirs included details of the terror of houses and water tanks ripped off their foundations, and storms surge roaring into hotels and shops,

the railways and seawall damaged, injuries, isolation, and death (Aitchison, 2010; Hardie, 1981).

During my research, I noted visual cues that remind both residents and visitors of the place's exposure to cyclonic conditions. Several establishments would display the owners' accounts about their encounter with a cyclone. The owners of Whim Creek Hotel, for instance, memorialised their experience with Cyclone John in 1999 with a newspaper cut-out prominently displayed in the hotel's lounge area (See Figure 8, next page). The town also had put up several structures to commemorate the devastation left behind by Cyclone George in 2007. One of two monuments is the steel structure of 'The Palms' (Figure 9, next page) by the town's seashore.

Some cyclones left a more lasting mark. The sinking of the S.S. Koombana by a cyclone on its voyage from Port Hedland to Broome on March 20, 1912, had to be the most memorable (Clutterbuck & Doohan, 2003; Hardie, 1981; Lewis et al., 1997), even meriting an exhibition at the town's Dalgety House Museum, as well as naming several locations in the town after the ill-fated ship (e.g., Koombana Park, Koombana Lookout). During Port Hedland's transition to a mining town, Cyclone Joan in 1975 would be a phenomenon described in books (Clarkson, 2012; Lewis et al., 1997) and by several participants to the study. Benjamin, who arrived in 1962 to work for the first mining camp in Western Australia, remembered Cyclone Joan both with fascination and fondness. According to Benjamin, the mining town was severely impacted, such that:

Cyclone Joan demolished every conceivable electric light pole in the town. Our light poles consisted of railway lines, with the power lines at the top carrying the various distribution points. It created a crescendo—one power line went down, then pulled down every single one to the ground. (Benjamin, Port Hedland resident)

Over time, the town would acclimatise to the northern cyclonic storms, with structures of thick, steel cables stretched that secured roofs to heavy wagon wheels buried deep in the ground (Clutterbuck & Doohan, 2003).

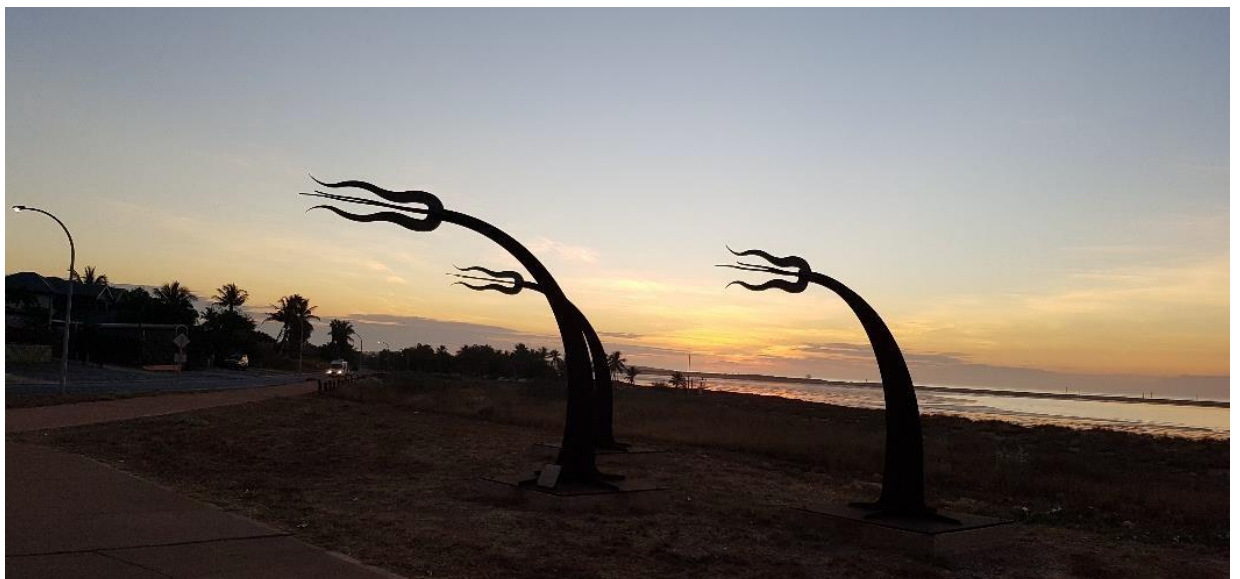
Figure 8

Whim Creek Remembers



Figure 9

"The Palms" Memorial for Cyclone George



Rebirth and regeneration

A place's relationship with cyclones extends beyond the threat and inconveniences they pose. Their recurrence is adapted to, and at the same time, anticipated and even needed. In Port Hedland, the advent of the cyclone season brings about "the much-needed rain, washing the town off the dust that clings to everything" said Diane, a long-time resident of the town. Another study participant from Port Hedland, Henry, relished the greener landscape of the desert after a cyclone "like it's a whole new life again." As Henry added:

Ahh, I love the cyclone. It greens the place up. It washes the town clean. The plants that have been burned in the bushfire regrow. When the cyclones come, it brings new shoots up for the animals, makes the animals fat, and good for flavour too when you eat them. (Henry, Port Hedland resident)

Without discounting the destruction that powerful cyclones cause, the residents used the metaphor of 'regeneration' and 'rebirth' to describe life in their communities after a cyclone has passed. While stripped bare of their leaves and branches, the trees and plants are to experience re-growth, a natural pruning. Jonathan, from Efate, mused:

[Cyclones] clean the environment. It is nature's way to clean pollution, all the bad things. The air is clean, the ground is clean, the trees and plants' old leaves and extra branches are removed, but to be replaced by new ones. It is a new day after a cyclone. We don't think much about the changes, and they make our place almost new again. (Jonathan, Efate resident)

Indeed, in the aftermath of Cyclone Pam, Miranda of Efate observed how communities started re-planting their gardens and rebuilding their houses even as donations began arriving from NGOs and the government.

The economic dimension

To a non-resident of the cyclone towns, the aftermath of a cyclone could be a jarring, if unsettling, experience. Hannah Beech (2018) reporting for the New York Times, was caught in the force of Typhoon Mangkhut (local name Ompong) in Aparri's nearby towns. Beech's report expressed observations of tragedy as she mulled over the thought of how repair and reconstruction could proceed in a place of considerable poverty. Beech's short but succinct closing statements to her article summed up what appears to be an unending cycle of disaster vulnerability and exposure:

On Sunday, in the community of Pacupac, on the north coast of Luzon, pigs marooned on a hillock snuffled for food. Buffalo waded through the muck. Children splashed because splashing is fun, even if it's muddy floodwater...Villagers spread sodden rice on the road to try to save their crop. Men beat sheets of tin into new roofs. The storm had passed, until the next one. (Beech, 2018)

What is not immediately manifest in this narrative is that the cyclone towns' residents also 'profit' from cyclones. While the residents shared their difficulties partly because of their exposure to climate and weather-related phenomena, they also supplied that these same events provide economic revenues for them.

Syncing with the seasons

In Aparri, the year ends and begins cold and rainy. The sea is foaming from December to February, making it dangerous to venture out in the open. During this time, the markets of Aparri are sparse with fresh produce. From my rented room, I could hear the sea's rumbling sounds in the distance. With the north-easterly winds howling and the sea frothy, all boats that ply the waters of the West Philippine Sea were moored. My research notes below from December 2017 captured my curiosity as to how the wet market of a coastal and riverine town was almost empty of the usual fare of fish, seaweeds, crabs, and prawns:

We went to the market to buy fish. I find it odd that the market does not have a lot to sell. *Hindi* [not] abundant. Aunty Angela [my landlady] said the fish on sale came all the way from Manila. Some shrimps and fish from Buguey (a nearby town) are very limited in quantity and unbelievably expensive! We bought a kilo of fish (farmed, not caught in the open sea) and shrimps (farmed). Aunty Remy said there are not much fish because the fishermen cannot go out *sa laot* [to the sea] because *ang lakas ng alon* [because the waves are treacherous]. People don't dare venture into the open sea at this time of the year because of the weather. Fishing, at this time, then is a dead business. What do fishermen do in the meantime? (19 December 2017, field notes).

February offers a small window to fish for *aramang*, the much-prized krill by the fishermen, but the misty environment and predominantly overcast skies prevent for the drying of any catch. With no sun to dry the *aramang*, the fishermen opt not to go out and fish during the early parts of the year. During the summer months of March, April and May, the water becomes crystal clear, making the *aramang* school descend to the lower depths of the sea. The fishermen then take advantage of a different kind of catch—*talakitok*, *monamon*, *bulong unas*, *tuel* – fish of various kinds that prefer the warmer and calmer waters. The catch is truly bountiful that “trucks are loaded up at the shore with vats upon vats of fish to be sold to different parts of the country,” according to Antonio, the president of the association of fisherfolk in Aparri. In this same season, the farmers harvest their rice crops in early March and leave the land to fallow for the rest of the summer. Those who have fruit-bearing trees such as mangoes and citrus also harvest during this time.

Thus, for all the farmers and fishermen of Aparri, the rains at the latter part of May signal the start of the busier days for their livelihood. The fishermen ready their boats and nets. As the onset of the monsoon and cyclone season turns the water turbid with mud and debris, the schools of *aramang* rise to the surface to feed. The *aramang* likes the diluted murky river and seawater. In Antonio's words, “they come up from the depths to

drink sweet water.” Fishermen are on the lookout for this golden opportunity for a good catch. The sea is then opened by the government for fishing for five to seven days, after which a 15- day interval is observed. They halt operations when a cyclone is to pass by Aparri. They then resume after the cyclone has passed, with the even murkier water promising a more bountiful catch.

As it happened, the whole town had been waiting for the rains in July during my fieldwork. The summer extended far too long in 2018, which caused much frustration to many parties. The agrarian communities on the eastern part of Aparri whose fields are dependent on rainwater heaved a sigh of relief— “finally, the rains are here,” said Rudy, a resident of Bukig and a farmer. In Bukig, the residents wait for the Cagayan River to overflow and flood their rice fields, washing away the remnants of saltwater intrusion that render the soil poor in quality. However, during my visit, the residents were complaining of less than adequate rain from typhoons. On an overcast day in Aparri, a woman I was with in a tricycle sighed, rather loudly, that the “skies have been *naimot*”, stingy, with rain.

Hariken kakae and food security

Food security is a foremost concern in cyclone towns. For instance, following a powerful cyclone in Fuga island in Aparri in the 1980s, the residents recounted how they subsisted on root crops mixed with rice until their next harvest. The possibility of ruined crops and scarce supply prompts the Aparri farmers to store seed grains and keep extra supply to tide them through beyond the next harvest season. There is also an industry to dry fish, squid, octopus, and of course, *aramang*, for commercial purposes and consumption.

In Port Hedland, the imminent road closures due to severe flooding sometimes challenge the town’s supply of necessities should such an event happens. As several participants shared, when a cyclone warning is issued, people usually “raid the shops for supplies in case a lockdown is issued” (Austin, Port Hedland resident).

It is customary for the residents to buy biscuits and easy-to-cook food before a cyclone in Efate. The residents also shared their knowledge of *hariken kakae* or the preservation of food for when the cyclone season arrives. This includes the smoking, drying, and storing mainly of plant parts such as *manioc*, *kumala*, taro, and banana.

From securing enough supplies to last the residents during the lean seasons and when disaster strikes, some residents have also engaged in ‘commoditising’ these preserved goods so that the dried fish, octopus, and *aramang* in Aparri, as well as the herbs and vegetables in Efate, have also become income-generating endeavours.

‘Dividends’ of disasters

Cyclones and rainwater bring to Bisagu, through the Cagayan River, logs from the forests in the highlands. The tree logs get washed up Bisagu’s backyard or are intercepted before they end up in the open sea. The people gather these to sell, to use for house building, or as firewood. The floods also bring downstream water creatures that are usually unavailable when the water levels are low. Such include eels, the *ludong* or lobed river mullet, as well as different types of crustaceans such as *ayuyo*. In describing the beneficial aspects of flooding in Bisagu, Sotero as the *barangay* captain aptly stated that, “As long as the Cagayan River flows, it always provides something for us to get by.”

The advent of external help also created a positive ‘side effect’ to disasters in the form of material and monetary assistance. There is great faith among the residents that their government and NGOs are ready to help them during difficult times. For instance, there appeared to be great expectations after a cyclone for aid, making such events a source of ‘blessings’ to the communities in Aparri and Efate. As noted by Nestor of Bukig in Aparri, “A strong typhoon benefits those who have houses that may need some repair. When the cyclone damages their house, the government now pays for the repair. It’s a jackpot!”

The psychological dimension

There is a mix of nonchalance, alertness, and humour in the cyclone town residents' regard of cyclones. While the destructive cyclone systems were easily recalled, the frequent small-scale hazards were hardly considered disruptive or abnormal. Repeated exposure does lead to improved knowledge, and thus, an emotional response that may be best described as robust and balanced.

Nonchalance

I landed at the Bauerfield International Airport when Cyclone Hola was hovering over Vanuatu, including the island of Efate, where I was headed. The plane circled twice over the verdant landscape below before it took its position for the final approach. The flight had been delayed because of inclement weather.

Vanuatu was under Category 2 cyclone warning on the day I arrived in Efate. On the bus, while on my way to my rented Airbnb room, I noticed people were about, with few seeking shelters in covered spaces. Instead, produce stalls were set up along the road while the mango trees' leaves swayed, and loose items get blown by the wind. While discussing Cyclone Hola to Genesis, he shared with a chuckle, "Not a cyclone. We call them banana winds". Cyclone Hola's power was just enough to tear the leaves of bananas, he further explained. Indeed, the cyclone did not create a sense of panic, and unhurriedness in the pace of the town, an observation that I also noticed in Aparri.

Typhoon Henry passed by Aparri on my second visit to the town. Similar to Efate, the residents of Aparri did not seem to mind the cyclone. The boats continued to cross the Cagayan River. The market was as busy, the main streets as clogged with tricycles (if not more densely, as people now preferred to take public transport than walk in the rain). When I asked the residents about their perspectives of cyclones, Concepcion commented that there are not many cyclones that affect Aparri. "But we are under Category 1 now. Typhoon Henry is currently here," I supplied, thinking she might have missed the morning news and daily radio announcements. "Ay, this is not a *bagyo* for us, Ma'am,"

Concepcion exclaimed. “This is just rain...a normal rainy day for us.” I would go on to encounter such a matter-of-fact view multiple times during my fieldwork. For example, upon learning about my business in their towns, the residents’ outright remark, almost to a person (including Aparri’s town mayor), is that “There had not been a cyclone lately.”

Alertness

Compared to Efate and Aparri residents, the Port Hedland participants were most conscious about an impending cyclone. Two days before a cyclone was supposed to hit land, people were always talking about it, monitoring its location, and asking me what my plans were should it come to Port Hedland. More than the cyclone itself, the people were keen to know when the alert levels will be announced, which would then prompt them to stock up on necessities and seek shelter. Port Hedland has an alert system that regularly subjects the town to lockdowns to avoid any untoward event should a cyclone affects the town.

However, the Port Hedland residents were more concerned than panicked. Similar to the Efate and Aparri residents, several interviewees also claimed cyclones were rare, with some stating that there is a ‘dome’ in Port Hedland that diverts cyclones away. The nonchalance previously mentioned even crosses over to humour and amusement, as the research participants translated the experience of a cyclone in a positive light. In Port Hedland, cyclone parties were mentioned every time I ask the residents about their usual activities during a cyclone (but none confirmed to have been in one).

Humour

I was with Mara, an employee at the Town Hall’s Office of Disaster Management at Aparri’s main dock, the *Dappat*, when a heavily pregnant woman caught my attention. The woman was nimbly getting down the stairs, onto a boat, and with an oar, she manoeuvred said boat so she could hop on to another that is about to depart. Figure 10 on the next page was a photo I took of the encounter.

Figure 10

At Aparri's Dappat



“You’re almost due. What would you name your baby this time?” Mara asked. The pregnant woman replied, “Is there a *bagyo* on the way?” which made those who heard it chuckle. Mara met my curious eyes and leaned to whisper, “She named her daughter Alwina. She was born during Cyclone Lawin”. Lawin was a super cyclone that ripped through the Cagayan Valley region in 2016. At 270 km/hour wind speed, Lawin damaged many infrastructures, including one of Aparri’s newly constructed community centres, and forced many families to evacuate. It also incapacitated several government services as roads were blocked with debris and mud. Some areas would go through weeks without power in the cyclone’s aftermath. I was taken aback by the irony of naming a child after a destructive cyclone, and so I laughed along.

The social-political dimension

Much of the positivity seen in the cyclone towns which partly explains why the residents seemed not to mind the challenges posed by recurrent hazards is the strength of social and political support from the residents themselves, their governments, and external parties. For instance, the residents would often refer to the social ties forged, relations developed, and systems in place that helped their communities get back up in the event of a destructive cyclone.

“We do not leave anyone behind”

Maricel of Aparri narrated how, during cyclones and everyone is huddled up at home, it is not unusual for a neighbour to pass across the fence a hot meal to share. Over at Port Hedland, Benjamin marvelled at the community spirit that blossomed in town in the aftermath of Cyclone Joan. With no electricity, the people of Port Hedland took their cooking outdoors:

We all went out and did outdoor cooking. And outdoor cooking, in my opinion, after Cyclone Joan was the most incredible community thing I've seen. In our street alone, we have twelve houses. And each one of us used to cook the food for each one. Then when all booked in together, all helped. Someone brought in the sweets, someone with the soup. Every single house, they brought something for everyone. And then the welfare, the love for the kids, it was like a community mushroomed. Everybody was becoming involved as one. One was ringing up, “Are you going to work today? If you're going to work, I'll look after your children.” The whole thing, community, worked as one. And that was the positive that came out of Cyclone Joan. There were many negatives, but the community involvement and the amalgamation of people in terms of help and aid were significant. I'll never forget it. (Benjamin, Port Hedland resident)

In the aftermath of a cyclone, the communities band together to clean the surroundings and help in the rebuilding and reconstruction of damaged infrastructure. As

shared by the residents, this was coming together, including checking on each other, rebuilding houses, cleaning up debris, repairing boats and damaged rice paddies, and re-planting. For instance, the research participants from Epau in Efate described how the village banded together in the aftermath of Cyclone Pam. “We do not leave anyone behind,” said Luke, the area secretary. Describing how Ralph’s house was damaged, Luke shared that:

All of us, the men, pitched in to repair or build the houses. It’s not repair-your-own- house. Not like that. We worked to build one house at a time. We prioritised those that were severely damaged. Some of us supplied wood, or materials for the roof, nails. We did like that as a village. We worked together. There were relief goods and help from the government and NGOs, but we as a community held each other up first. (Luke, Efate resident)

Government leadership

Local councils also play a significant role in getting everyone informed and alerted. With evacuation as a constant possibility, each location has evacuation systems and procedures in place. In Port Hedland, the designated evacuation shelter is a sports centre equipped to accommodate 3,000 people. In Aparri, it is common for those whose houses are made of sturdier materials to become the *de facto* evacuation centres. There are also government-erected shelters. Communities that are not affected by floods become the hosts for those flooded in lower areas.

The biological/ecological dimensions

Knowing a place means being acquainted with the changes of the seasons, the differences in flora and fauna, and how these relate to the weather and climate. The residents’ affinity with place was often indicated by their distinct familiarity with the changing seasons, and as passed on knowledge from one generation to the next. In this section, the bio- ecological dimensions of place-based knowledges are illustrated by the

weather forecasting knowledge of residents in Epau, and through the Nyangamurta calendar from Port Hedland.

Forecasting through bio-indicators

Weather forecasting is a crucial aspect of living with recurrent cyclones. While all the residents professed to receive forecast reports from mass and social media outlets, some respondents from Efate related that they also observe bio-indicators to alert them of an impending cyclone. For example, responding to the question, ‘How do you know that a cyclone is coming,’ often garnered two different answers in Efate. In more immediate timing, some participants mentioned the appearance of frigate birds as signaling that a cyclone is to reach land in the coming days. In addition, a strong cyclone is anticipated when fruit-bearing trees such as mango and *naos* flower abundantly. Marie of Port Vila shared that:

When the fruit trees have many flowers, the mangoes, and *naos*, a strong cyclone is coming. Before Cyclone Pam, the trees had many flowers. When we were younger, our parents told us to observe the trees and prepare months before a cyclone arrives. (Marie, Efate resident)

Bio-indicators also figure in the weather forecasting practices of Aboriginal groups in Australia’s northern regions, including Port Hedland. Indeed, cyclones are part of the Aboriginal cosmology in subtropical Australia (See the *Burmalala* in James, 2017). In the Nyamal language of the north Pilbara region, the vocabulary reflects the place’s experiences of severe weather conditions. *Wiringarra* is a cyclone, *pintura* refers to flood time, and *jaramarra* means floodwater. *Mankangkarra* is a hill with a cave where people shelter from cyclones (Burgman & Wangka Maya Pilbara Aboriginal Language Centre, 2007).

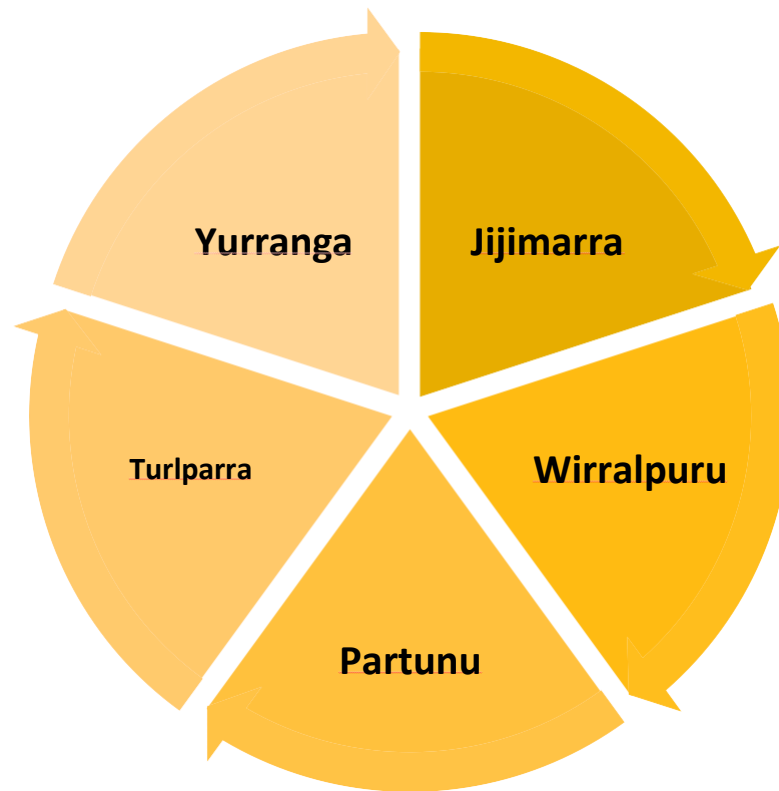
Seasonal calendars

In addition, bio-indicators in the Aboriginal Nyangamurta calendar from Port Hedland mark the shifts in vegetation and animal movements at a particular time. From my interview and shadowing of Philip, an Aboriginal elder, and in reference to a copy of the Nyangamurta calendar, I adapted the image of a wheel to illustrate the seasons of *jijimarra*, *wirralpuru*, *partunu*, *turlparra*, and *yurranga*.

Each of the five seasons in the Nyangamurta calendar is indicated by shifts in the weather patterns, which then modifies the vegetation and movement of animals in the desert. The *Jijimarra* is the green time of the year. With the dominance of the west wind, rain comes along with thunder and lightning and cyclones. During this time, there is lush vegetation and abundant sources of good food, including those excreted from ants or *marlaja*. In the colder days of *Wirralpuru*, the wind and rain toss around seeds, where they then get buried and germinate. The animals of the land also do not roam as much as they did in *Jijimarra*. Come *Partunu*, an edible berry called *jima* becomes abundant. *Partunu* could be called the wintertime. This is also when the turkeys and emus lay and hatch eggs and a time for dingo puppies to be born. In the warmer days of the *Turlparra*, the animals emerge from their hibernation and begin to roam the land again. The vegetation starts to regrow lushly, including the wama, a wattle loved for its sweetness. The arrival of the *Yurranga* with the hot wind blowing from the east in the morning means all the animals born in *Turlparra* are now fully grown (Strelley Literature Centre, 1981). Overall, the Nyangamurta Aboriginal calendar from Northwest Australia illustrates land-weather patterns relationship, cyclones included, as observed and recorded by the custodians of the Country (See Figure 11 for an illustration of the Nyangamurta calendar, next page).

Figure 11

The Nyangamurta Seasonal Calendar



Notes: The image is the author's interpretation of the Nyangamurta calendar

The spiritual and cultural dimensions

An intimate association with the land also offers insight into cyclones as phenomenon with spiritual and cultural dimensions. In the examples below from Port Hedland, the embeddedness to place is illustrated by how cyclones figured in the songs and lores of the Ngarla and Nyamal Aboriginal peoples, respectively.

Cyclones in yirraru

References to cyclones in Port Hedland abound in songs, such as in the lyrics of *yirraru* Ngarla songs, showing the composer's intimate knowledge of the place's environments, creatures, and weather patterns. *Yirraru* are anecdotal songs composed and sung for pleasure (Brown & Geytenbeek, 2003). From Brown and Geytenbeek's (2003) book of

yirraru, several entries talk about floods, rain, clouds, storms, and cyclones. I have specifically chosen the author Katakapu titled *Wanngirrimannya* (Storm Heraldng a Cyclone), as an example here (Figure 12, below). In the said song, Katakapu described a cyclone curving, *yarlarrku wakartayinyjangurra*, to later merge with a storm on a detour, *wilyparr pungarnu* as the two forces head westwards (Brown & Geytenbeek, 2003, p. 23).

Figure 12

A Yirraru Song

WANNGIRRIMANNYA	STORM HERALDING A CYCLONE
Kanji para wilyparr pungarnu, yarlarrku wakartayinyjangurra. ‘Palanya wanyaparri man puluu, warnta ngurumara!’	The storm on the side is heading on a detour, the cyclone is curving to join up with it. ‘Listen to that blow, it’s an unstoppable tree smasher!’
Yangkarla yangka-yangka marnu muurrkarralu, murlungka kankarni jurta paarn marnu, wanngirrimannya.	The house was flimsy, and the howling wind and rain shook the lot! The wind slammed onto the rooftop, the full force of the storm.

The water snake is Marapikurrinya

Cyclones also feature in Dreamtime and the rainbow snake of Australian Aboriginal lore. In the Nyamal language, the serpent is *katakatarra* (Read & Coppin, 1999). The serpent takes the features of a blind water snake that calls the deep pool in *Marapikurrinya* the serpent’s home (Hardie, 1981). William Nyaparu Gardiner is a Nyamal man and was a resident artist in Port Hedland’s Spinifex Hill Studio. In Gardiner’s view, the snake is the protector of Port Hedland from cyclones (“We call it home,” 2015).

The Dreamtime lore is enhanced with the addition of recent demographic changes

and modifications to the land. With industrialisation and the arrival of the first big ship in the port, the snake left its pool abode and headed out to the sea (Hardie, 1981). Gardiner's recent artistic rendering of *Marapikurrinya* in 2015 depicted the snake as male, of the Nyamal people, and Marapikurrinya itself:

That snake understands Aboriginal [language, Nyamal]. He stopping outside over there, but he can hear when the winds come, he know when the cyclone's coming this way. He used to live in there, before, a long time ago, but when they came to make this jetty bit wide to, for the ship to come in, iron ore ship and all, that's why he can't moving back, so he had to go out and give them room. He further out now. He's a pretty quiet water snake. He's staying round there in the sea. He just watching and hunting, he trying to find out what kind of rain is coming, because that's his home town here, Hedland. We call this, him, in our language, we call Marrupikurrinya. Marrupikurrinya, the town and the snake, that's his name ("We call it home," 2015).

The snake as a protector in Gardiner's depiction is a quiet observer who gives way to his habitat changes. It moves out of the way even as it continues to watch over the town for rain, wind, and cyclones:

He's alright [now], but he probably quiet. He's alright. He don't worry about anything, but when the rains comes he sort of turn it other way around, cyclone or whatever. He watch out for that kind of thing. They just call to that snake, water snake, and he hear them, and he turn them winds and whatever, cyclone comes to another whatever, turn another way, change that way around ("We call it home," 2015).

The structural/architectural dimension

A key activity related by the residents of the towns prior to the cyclone season is the repair and reinforcement of their houses and cyclone shelters. While most prefer

concrete houses, many of the residents live in abodes that use local materials such as palm fronds and reed.

Saeklon haos and vernacular architecture

Vernacular architecture refers to the use of materials, structural designs, and techniques to manifest cultural adaptation to risk in hazard-prone areas (Bankoff, Cannon, Krüger, & Schipper, 2015). In Aparri, the local materials used by most of the participants to the study were *pan-aw* (reed) in Fuga and *pingngget* (nipa leaves) in Bisagu. Similarly in Efate, the *natanggura* (palm leaves) were used. *Pan-aw* blades, *nipa* fronds, and *natanggura* leaves are gathered, sewn together, and used as roof thatching and walls of houses in the communities. Bamboo and timber are used widely as posts and reinforcement materials. Figure 13 below shows the women in Eratap preparing *natanggura* leaves as roofing materials.

Figure 13

Natanggura palm fronds as housing material



The residents emphasised the need for houses to be built low to prevent wind damage. “You won’t see a tall house in Fuga because of cyclones,” said Andres. The same principle operates in Efate with the *natanggura* houses built low on the ground. Many of the residents referred to *saeklon haos*, a temporary place to seek shelter built specifically to withstand the wind, as a distinctive feature of the Ni-Van culture. However, the Efate participants stated that these were not being built in the island anymore. A lone cyclone house in Epau was built after Cyclone Pam to showcase traditional architecture and its uses.

Figure 14

A House in Bisagu



In Bisagu, the imminent threat of flooding means the houses must be elevated to avoid total inundation. With no natural barrier to wind, such as a mountain or a forest, a house on stilts, or even a too-tall house, it is more susceptible to damage than one low on the ground. Second, the ever-present threat of erosion and deposition means the water will eventually reach the house and its surroundings. Thus, the body of houses in Bisagu is elevated up to a metre high and usually with exposed posts. The elevated portion is the family's place of refuge when the water gets high, with the newer, concrete houses built with a few metres of raised foundations (Figure 14, previous page).

While acknowledging the usefulness of local supplies, the residents also expressed their desire for sturdier materials such as cement, steel, and galvanised iron to build their houses. These are used together, a mixed media, of a house with a concrete frame and steel with *nipa* for a roof. On the one hand, local materials are easily accessible and cost-effective. When a house becomes damaged because of a cyclone, one recovers what could be salvaged to build a new one. On the other hand, the Bisagu respondents said that the wind could quickly subdue *nipa*. Like the *pan-aw* in Fuga, the *nipa* fronds grow soft and rot when repeatedly or exposed for a long time to water.

Cyclone shelters and windows

In Port Hedland, the residents shared that the houses are built according to state regulations and specifications. Some structures' roofs are secured with steel cables that are attached to blocks or boulders buried in the ground. All houses are also fitted with cyclone windows, such as the ones shown in Figure 15. Some houses, including Diane's have a cyclone shelter in their yard (Figure 15, next page).

Figure 15

The cyclone shelter and cyclone windows in Diane's house, Port Hedland



Emerging knowledge dimensions

This section shows the fluidity of knowledge as the residents shared their evolving understanding of the place and the hydrometeorological phenomena that shape its realities. In this section, the future-scenario features of place-based knowledges are illustrated by examples from the perspectives of residents of Aparri.

Shameless cyclones

“Awan babain ti bagyo tattan”, said Cion, a farmer from Aparri. Roughly translated, Cion explained to me that cyclones have become shameless in recent years. In Aparri, several interviewees observed that cyclones have become stronger, more frequent, and have longer lifespans. Likening cyclones to house guests, Cion called them “shameless cyclones,” for instance. Whereas cyclones in the past would not see the morning light, she observed that those of late had stayed longer than expected, lasting even a day or two. While the residents of cyclone towns do not pay much attention to low-grade cyclones,

they also mentioned climate change to have changed the weather patterns in their areas—as ‘hotter’ or ‘more humid’ and even ‘stronger cyclones.’

The halfway house

While evacuation is an imminent option to those most exposed to cyclones, leaving a place appears not to be an option to any of the residents. “There’s no place like home,” Valentin, of Fuga in Aparri supplied. While the mainland has most of what they need, the residents of Fuga island maintained that the resources available on the island are enough and bountiful for them. On the island, forests are rich for foraging. The waters supply octopus, fish, lobster, and seashells. In addition, they raise chickens and pigs to supplement their diet and gather dried twigs and branches for fuel. In Fuga’s resource abundance, “only the lazy residents go hungry,” says Valentin.

In Bisagu, the place’s precarity does not faze its residents. Cion stated that as fishing is the occupation that the community is excellent at, the conditions of their surroundings become negligible. “Even if it is whittling away,” she shared, “this place is to sustain and nurture us.” *Pagririnnammisayan* was a term that was coined time and again. Loosely translated, the word means to be shared, morsel by morsel, by the community. Yet there are instances when a place is deserted, with the mass evacuation of Eratap island earlier discussed as an example, when the risks are perceived to outweigh the benefits of staying put. In Aparri’s Fuga and Bisagu barangays, the indicators of an impending total evacuation are apparent despite the residents’ declaration that they will stay put.

For Fuga residents, whose primary concern is being stranded in the mainland, the long-term strategy is to build a second house. The second house in the mainland is supposed to function as a halfway house for those who have a business to do in the mainland, such as buying or selling goods. Before they would be stranded for three days, they would stay over with relatives or camp out by the sea, using picnic cottages as sleeping areas, with tables and umbrellas sheltering them from the rain. Other times, they

would brave the weather, especially if their cargo with them is essential and in short supply on the island. Over time, the halfway house evolved from small huts to concrete houses. When the children of the island started going to high school, the house became a permanent abode for families, now a tangible link to the economies and relations between Fuga island and the mainland.

Meanwhile, the constant movements of water of the Cagayan River have been central to the shapeshifting geography of Bisagu. “Back then, the sea was far from the village. It was quite a walk. You’d be tired if you walk your way to the beach,” said Marisa. The unstable topography of Bisagu is brought about by the constant, creeping phenomenon of erosion and deposition. This is further exacerbated by the drastic effects of cyclones and floods when the waves from the sea meet the raging water of the river, which episodically overwhelm the community of Bisagu.

Figure 16

A damaged house in Aparri



By the river, some houses are leaning precariously to one side and foundations exposed. Perla has had six houses destroyed of my interviewees, while Antonio and Sotero had two, respectively. Rolly, the oldest among my interviewees, has had five houses wrecked. Relatively young, Edmar and Mara, who are husband and wife, have parted with three houses. Once I asked Mara where the ‘old house’ she was referring to in her story. “It’s there. At low tide, its frame is still visible”, she replied. Out at sea, where it becomes indiscernible to my untrained eyes where the two bodies of water begin or end, there are skeletons of concrete houses, gutted of their roofs and salvageable wooden parts, with only their cement walls and rotting timbers in place (See Figure 16, previous page).

Table 6

Dimensions of Place-based knowledges in the Cyclone Towns

Dimensions	Indicators
Temporal Dimension Main adaptation practices	Secure houses Store fuel and food Protect livelihoods Listen to forecasts Observe indicators
Death and destruction	Recent experiences of strong and damaging cyclones <ul style="list-style-type: none"> • Forced or voluntary evacuation • Fatalities, wrecked structures • Visible indicators such as uprooted trees, roofless buildings, skeletons of houses Memorialisation of cyclones <ul style="list-style-type: none"> • Street names, museum artefacts • Photos, written accounts • Monuments, memorials • Juxtaposition to a life event • A deserted island

Rebirth and regeneration	<p>Natural pruning</p> <p>The anticipated rain</p> <ul style="list-style-type: none"> • To green the place • To replenish water supply • To wash the dust off the houses • To jumpstart the planting season • To signal the beginning of the fishing season <p>The needed flood</p> <ul style="list-style-type: none"> • To wash the salt from the fields
<p>Economic dimension</p> <p>Syncing with the seasons</p>	<p>Farming schedules; in anticipation of rain, floodwaters</p> <p>Fishing schedules; in anticipation of flood waters</p> <p>Gardening plans; what plant to grow</p>
Food security	<p><i>Hariken kakae</i></p> <p>Storing food Drying/preserving food</p> <p>Selling excess food</p>
‘Dividends’ of disasters	<p>Logs from upstream Marine creatures abound</p> <p>Relief supplied by government and other parties</p>
<p>Psychological dimension</p> <p>Nonchalance</p>	<p>There had not been a cyclone lately</p> <p>The dome over Port Hedland</p> <p>This is not a <i>bagyo</i> for us</p>
Alertness	<p>Observe indicators</p> <p>Monitor cyclone’s path</p> <p>Listen to forecasts</p>
Humour	<p>‘Alwina’</p> <p>Cyclone parties</p> <p>‘Banana wind’</p>
<p>Social-political dimension</p> <p>Social relations</p>	<p>Share food/cook together</p> <p>Open house to evacuees</p> <p>Men staying behind to secure houses</p> <p>Help in reconstruction of damaged houses</p> <p>Elders, chiefs are consulted</p>
Government leadership	<p>Issue warnings</p> <p>Lead in evacuation</p> <p>Lead in relief operations</p> <p>Assist in reconstruction</p>

Bio-ecological dimension Forecasting through bio-indicators	The frigate birds appear Flowering of fruit trees; bountiful harvests
Seasonal calendars	The six seasons of the Nyangamurta calendar
Spiritual and cultural dimension Songs	Cyclones in <i>yirraru</i>
Lores	The water snake is <i>Marapikurrinya</i> Dreamtime stories
Structural/architectural dimension Vernacular architecture	The <i>natanggura</i> house The <i>pan-aw</i> house The <i>nipa</i> house <i>Saeklon haos</i> House on stilts
Houses in the mining town	Steel cables Cyclone shelter Cyclone windows
Emerging observations/future scenario Shameless cyclones	Changes in weather patterns Stronger, longer duration of cyclones
The halfway house	Slow evacuation; possible abandonment of place Shifting geographies

Synthesis and Conclusion

What counts as ‘knowledge’ in the cyclone towns? Table 6, from page 107-109, shows the multiple perspectives and different dimensions of place-based epistemologies from the cyclone towns where this study was conducted. As the discussion demonstrated, place-based knowledges in goes beyond the utility of managing cyclones and their epiphenomena of storm surge, flooding, and wind damage. As intrinsic features of the land, cyclones are referred to with both positive and negative outlooks, their recurrence also renders them to be regarded with ambivalence. Indeed, hazards and disasters as a frequent life experience (Bankoff, 2003; Voorst, 2016) induce these events common and

negligible to those exposed to perennially, even as they sometimes cause shocks.

Here, I link back to the theoretical framework and identify the indications of border thinking based on the knowledge dimensions discussed. I used the concepts of geo-ecological knowledge, lived knowledge, and embodied knowledge as meso-dimensions (Chapter 3) to further group the knowledge dimensions identified. Under the *geo-ecological* dimension are the bio-indicators and seasonal forecasts, the temporal references to death and destruction, and architectural, economic, and spiritual/cultural orientations to what is referred to as ‘traditional’ knowledge. These include the lore of the water snake in Port Hedland and the *saeklon haos* and *hariken kakae* in Efate. Most of these dimensions register as memories or documented practices and processes that the residents professed to know but may not necessarily observe. The *lived* knowledge dimension refers to current practices which feature mostly the economic, social-political, and structural-architectural features of place-based knowledges. This dimension highlights the contemporary, dynamic, pragmatic, and utilitarian features of place-based knowledges. Finally, the *embodied* dimension of knowledge attends to the emotions, relations, and embeddedness to place, marked by the psychological and spiritual-cultural dimensions. In addition, the temporal dimension indicator of rebirth and regeneration, the social-political indicator of evacuation decisions, and the emerging knowledge of ‘shameless cyclones’ also indicate emotions and attachment to place.

These dimensions are not presented as distinct categories, because there are evident overlaps and intersections between them. For instance, all knowledge dimensions can be considered *lived knowledge* by virtue of their dynamic features. In addition, both *geo-ecological* and *embodied* knowledge attend to references to memory and relations of and to place. Far from being an exhaustive account, this chapter, through a horizontal analysis, illustrated place-based knowledges beyond the labels of ‘traditional’ and ‘indigenous,’ highlighting in the process their dynamic, pragmatic, spiritual, and cultural aspects.

Climate change and hazards are entangled with social injustice in the local scene.

The view from 'below' shows that local knowledge is geared towards risk-minimisation and maximum resource-exploitation, while the land and waters still allow. The chapter also showed that a group's collective adaptation practices may cushion or buffer the impact of repetitive and increasingly intensifying hazards. Climate change, a human-made element of global and industrial origin, thus impinges on the lives of residents in cyclone towns. Some dimensions to place-based knowledges are unknown even to the residents, including the protracted evacuation of the place as it becomes uninhabitable. In the next chapter, I move to look at how global policies framed the inclusion of place-based knowledges in the global framework of DRR.

Through Chapter 5, the different knowledge dimensions in three cyclone towns were illustrated and discussed. The knowledge dimensions, non-exhaustive and partial as they are, were based on the insights shared by the residents of the towns. Through a decolonial lens (Chapter 3), I allowed the residents to impart their perspectives of cyclones and related phenomena beyond the 'hazard' or 'disaster' narrative as often delineated with the identification of coping mechanisms, technologies, and methods to avert disaster, and survival techniques. I also veered away from cross-checking the residents' perspectives to 'science' or any existing framework for disaster governance. Chapter 5 will be the reference for the analysis on claims of epistemic inclusion and integration in the next chapters, specifically Chapters 7 and 8.

CHAPTER 6

The Rhetoric of Global Disaster Risk Reduction (DRR) Policies

Having established local perspectives on cyclonic experiences and examined the different dimensions of place-based knowledges, in this chapter, global policy texts as soft laws are examined on how place-based knowledges, as discussed in Chapter 5, figured and were represented in global policies. As discussed in Chapters 1 and 2, the Hyogo and Sendai Frameworks are considered the base policy instruments for national governments and international organisations to pattern their approaches to disaster management. Identified as ‘global’ policies that follow the soft law regime approach (Chapter 2, p. 27; Wanner, 2019), both frameworks are non-binding agreements, are not mandatory, and cannot sanction erring parties. This limited legal and practical basis of the frameworks’ political mandate means that the identified stakeholders to the policies are not obligated to align their strategies and practices to the policies’ tenets. Nonetheless, research shows that the two documents have been the primary reference for policy initiatives at the country-level policymaking. This pattern was evident both in the literature on Disaster Risk Reduction (DRR) education, discussed in Chapter 2 (See pp. 20-26), as well as in this study’s analysis of organisation- and government-authored documents and interviews with key participants (Chapter 7, pp. 153-202). Thus, despite their limited regulatory power, the Hyogo and Sendai Frameworks remain the foremost influential documents in shaping the global narrative of disaster management, including in education for DRR.

The purpose of this chapter is to examine such influence. In addition, Chapter 2 also indicated that the two policy materials were regarded to have encouraged for epistemic inclusion and integration of place-based knowledges to DRR. Through a transversal analysis of policy materials that traces the prevailing rhetoric of the texts, this chapter focuses on the interrogation of whether the policies indeed reflect this sentiment. With an expanded corpus of texts that included the Decade Framework and Yokohama Strategy that preceded the Hyogo and Sendai Frameworks, the analysis proceeded to examine the rhetorical dimensions and spaces wherein education and engagement with

knowledge for DRR were integrated.

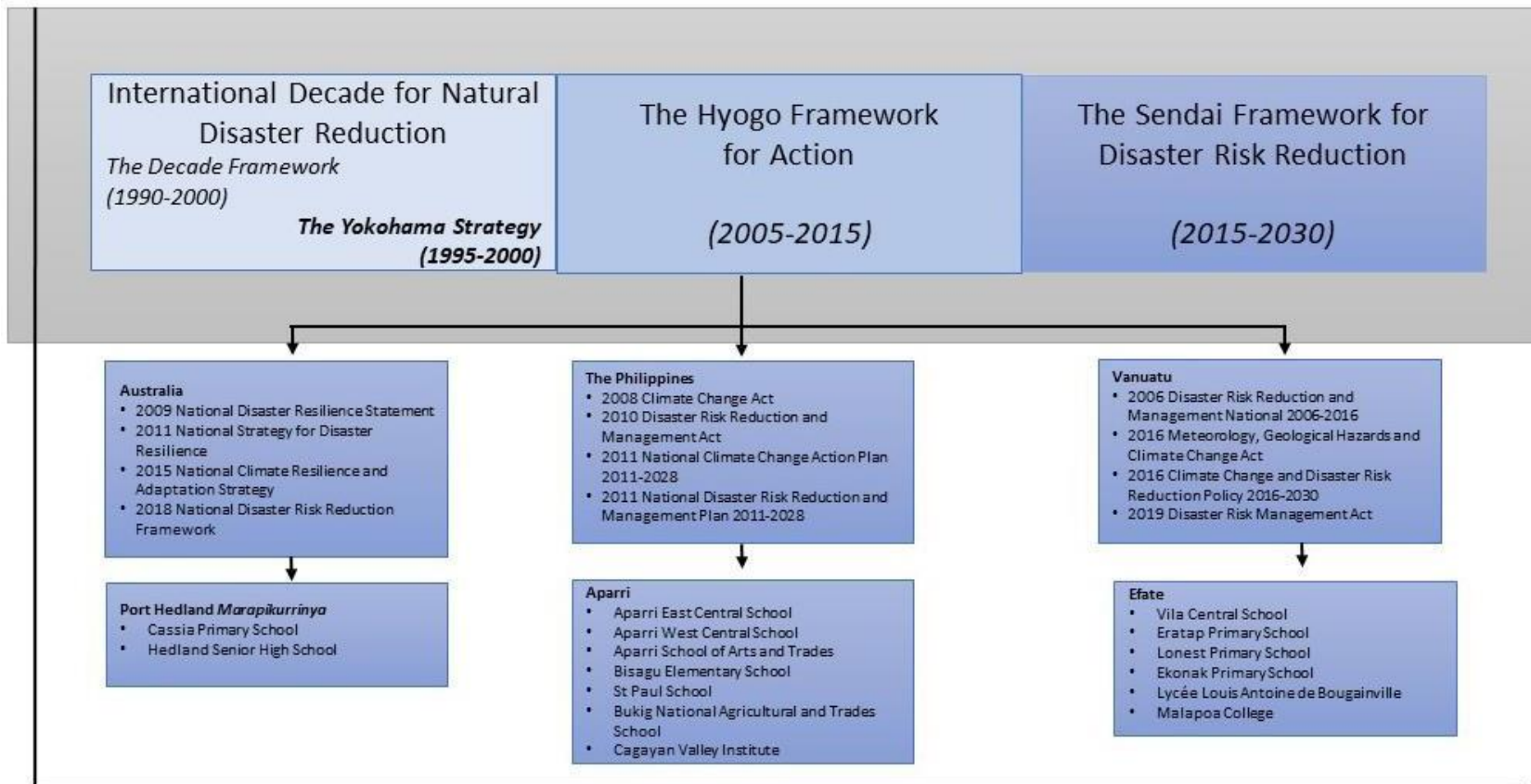
The corpus of the texts that analysed included the International Decade for Disaster Reduction Framework (the Decade Framework, henceforth) (United Nations, 1989), the Yokohama Strategy for a Safer World: Guidelines for Natural Disaster Prevention, Preparedness and Mitigation and its Plan of Action (the Yokohama Strategy, henceforth) (IDNDR, 1994), the Hyogo Framework for Action (the Hyogo Framework, henceforth) (United Nations, 2005), and the Sendai Framework for Disaster Risk Reduction (the Sendai Framework, henceforth) (UNISDR, 2015). The highlighted portion of Figure 17 on the next page (top blocks) indicates the transversal comparison across these global policies.

There are three fundamental elements to rhetorical analysis: the exigencies, the audience/s, and the persuasive genre. An exigency is “an objectified social need” (Miller, 1994 in Edwards et al., 2004, p. 18), an urgency, a problem to which a policy demands a response. The audience refers to the individuals or groups to whom the text is addressed. Finally, a genre denotes the use of rhetorical devices to praise or blame (epideictic), to discuss past actions and decisions (forensic), or to highlight future-oriented projections (deliberative) (Edwards et al., 2004). A rhetorical investigation is enhanced by engaging the canons of invention, disposition, style, memory, and delivery (Edwards et al., 2004; Leach, 2000). While I engaged each of the canons in the discussions below, I paid particular attention to the use of invention or devices for the appeal to win an audience. Specifically, rhetoric could appeal to logic (*logos*), to the authority of the author (*ethos*), or emotion (*pathos*) (Gottweis, 2007).

The engagement with the data was iterative and recursive, involving multiple readings and open coding to allow specific themes to emerge. The codes generated through this inductive approach were then condensed to more general categories. The coding and analysis followed a thematic approach while considering the exigencies and audiences of the text, as well as the rhetorical genre and persuasive tropes employed in each and across policy documents. This chapter partially answered the first two research

Figure 17

Transversal Rhetorical Policy Analysis



questions on the development of DRR policies and discussed the discursive and rhetorical structure upon which knowledge and education were integrated.

The Ancash earthquake as a rhetorical situation

What events, locations, and geopolitical dynamics prompted global attention to disasters to become a ‘rhetorical situation’? A rhetorical situation, according to Bitzer (1992), is the “context in which speakers or writers create rhetorical discourse” (p. 1). Similar to the Indian Ocean tsunami discussed in Chapter 2, the Great Ancash earthquake in Peru in May 1970 also spurred global interest in disaster management governance. The earthquake, along with the avalanche and flooding it triggered, killed more than 60,000 people and rendered many more homeless in years to come (Lütem, 1985; Macalister-Smith, 1980; Schemper, 2019). The event had also drawn the world’s attention, with sixty-six countries offering various forms of assistance in the aftermath. This show of support was then new in the region and a prelude to an era of humanitarian activities in South America (Doughty, 2020) and the world.

The Ancash earthquake occurred within the *détente* period of the Cold War. The timing, in retrospect, was critical considering the extensive efforts of countries from both sides of the political divide to engage in aid diplomacy. For instance, De Onis’ (1971) description of a landscape where the Russians, Americans, Cubans, West Germans, and the British descended to the sites with their medical tents, relief goods, volunteers, technical experts, and aid packages for reconstruction gives a glimpse of the competitive ‘generosity’ (Doughty, 2020) extended in exchange for much-desired preferential political response by the disaster-stricken host.

More significantly, the disorder that ensued in the aftermath of the earthquake brought to the fore the lack of a central body to coordinate relief and rescue activities and the movement of goods and people. Among the issues that emerged included “tons of clothing, blankets, tents and exotic housing,” as well as “inappropriate, or useless” goods such as high-heeled shoes distributed in rural and indigenous areas (Doughty, 2020, p.

283). Indeed, the overflow of relief supplies rivalled the logistical challenge of managing what was then considered as the enormous natural cataclysm in the Western hemisphere (de Onis, 1971; Lütem, 1985).

A pivotal response at the global level was the establishment of the United Nations Disaster Relief Office (UN DRO) in 1974. The UN DRO would become the official UN agency to take charge of disaster response (Macalister-Smith, 1980) and serve as the international community's conduit for a centralised relief mobilisation (Lütem, 1985). Whereas relief operations were considered the province of non-profit, religious, and philanthropic organisations before the earthquake, it has also become the realm of foreign and diplomatic affairs. The Ancash earthquake, then, created the rhetorical situation.

The International Decade for Natural Disaster Reduction

The Ancash earthquake was both the backdrop and the catalyst for international disaster relief to take shape as a foreign affairs activity (USAID, 1970), giving birth to the instrumentalisation of aid as a form of diplomacy and for hazards and disasters management to transcend the borders of states and national governments. The UN DRO was to have limited power and resources for two decades, functioning as a minor institution in the broader UN umbrella of operations. At the latter end of the 1980s, the UN convened high-level meetings to discuss the dynamics of a dedicated and targeted approach to global disaster governance beyond relief operations. These assemblies led to the designation of the 1990s as the International Decade for Natural Disaster Reduction (the Decade, henceforth) for an expanded reach of the UN DRO beyond disaster response to include disaster prevention, reduction, and preparedness. Two key policy documents were produced during the Decade. These were the Decade Framework (United Nations, 1989) and the Yokohama Strategy (IDNDR, 1994).

The Decade Framework (1990-2000)

The stimulus for the Decade's formation came not from within the United Nations but from the scientific community, specifically from the ranks of scientists and earthquake engineers. Frank Press, then the president of the United States National Academy of Sciences headed the endeavour to gather scientists and lobby for disasters to become an official UN program (Schemper, 2019). Press' efforts led to UN Resolution 44/236, which created the Decade Framework (United Nations, 1989). Through the said framework, the scientists-led Decade made science the core discipline to steer the directions of global disaster management to dismantle what was then referred to as prevailing fatalistic mindset about hazards (United Nations, 1989).

The Yokohama Strategy (1995-2000)

A mid-term review of the Decade Framework revealed inconsistencies and issues in its implementation and led to the internal reorganisation within the UN. As a result, the UN DRO would cease operations and be replaced by the UN International Strategy for Disaster Reduction (UN ISDR) in partnership with the UN Office for the Coordination of Humanitarian Affairs (UN OCHA). In 1994, the First World Conference on Natural Disasters was held in Yokohama, Japan, where the Yokohama Strategy was adopted and endorsed by the UN General Assembly. From a discourse replete with emphasis on science and technology, the Yokohama Strategy deflected the texts' focus on disaster management's social and economic aspects such as sustainable development, risk, and poverty alleviation (IDNDR, 1994).

During the Decade with both the Decade Framework and Yokohama Strategy in place, there was a heavy emphasis on tapping 'existing' knowledge to address the present and continuing perceived threat of hazards and disasters. Education was put forward as a tool to disseminate information in the form of 'public education,' and 'education and training' of responders and officials. Overall, the Decade's policy directions and structures put a disaster governance architecture with technology and science at its core, tempered

only by recalibrations in the Yokohama Strategy, and cementing the UN as the central body for information exchange, document storage, and coordination for disaster governance. The Decade ended in 2000, but its message would be carried forward to the interim period of 2001-2004 and the Hyogo Framework's confirmation (United Nations, 2005).

The Hyogo Framework (2005-2015)

The Hyogo Framework was adopted at the Second World Conference on Disaster Reduction by 168 delegations in January 2005. As a policy document, the Hyogo Framework was considered a “groundbreaking international commitment to implement a global disaster reduction agenda” (Wisner, 2006, p. 4), as the policy was regarded as articulating a worldwide consensus on the centrality of disaster risk reduction in the then developing discourse on sustainable human development (Wisner, 2006). With the added pressure of climate change, there was also an international acknowledgment that efforts to reduce disaster losses must be systematically integrated into national policies, plans, and programs and supported through bilateral, regional, and international cooperation (United Nations, 2005).

The Hyogo Framework was organised around five main Priorities for Action (United Nations, 2005, p. 6). These were:

1. Ensure that disaster risk reduction is a national and a local priority with a strong institutional basis for implementation.
2. Identify, assess and monitor disaster risks and enhance early warning.
3. *Use knowledge, innovation, and education to build a culture of safety and resilience at all levels [emphasis added].*
4. Reduce the underlying risk factors.
5. Strengthen disaster preparedness for effective response at all levels.

As the list above shows, Priority 3 delineated the Hyogo Framework's emphasis on education and knowledge as critical elements to disaster management. This explicit

acknowledgment opened the space for policy initiatives within and outside the United Nations to engage in DRR-focused education such as those discussed in Chapter 2 by UNICEF, Save the Children, and national governments. The Sendai Framework succeeded the Hyogo Framework in 2016 (UNISDR, 2015).

The Sendai Framework (2016-2030)

The Sendai Framework broadened the call for resilience building and shifted the focus of disaster management from loss reduction to risk reduction (UNISDR, 2015). The Sendai Framework has four Priorities of Action, with Priority 1 extending the Hyogo Framework's engagement of education, innovation, and knowledge building in its policy texts. The Sendai Framework's Priorities for Action were (UNISDR, 2015, p. 14):

1. Understanding disaster risk.
2. Strengthening disaster risk governance to manage disaster risk.
3. Investing in disaster risk reduction for resilience.
4. Enhancing disaster preparedness for effective response and to "Build Back Better" in recovery, rehabilitation and reconstruction.

Similar to its predecessors, the Sendai Framework was a product of a multi-sectoral assembly, the Third United Nations World Conference on Disaster Risk Reduction, in 2015. With DRR's focus now closely linked to the climate change discourse, then UN Secretary-General Ban Ki-moon focused the lens on global warming in claiming that there had been a "dramatic increase in extreme weather events and mega-disasters" (United Nations, 2013, p. 3). Thus, the heightened focus on climate change made hydrometeorological events such as cyclones become the poster child of DRR. In addition, there was now a more substantial alignment of DRR to the UN's renewed global goals for development with the Sustainable Development Goals (SDGs). Indeed, ten of the seventeen SDGs have targets related to disaster risk, confirming the place of DRR in the broader reach of the UN development agenda (United Nations, 2017). The Sendai

Framework reiterated the same principle expressed through the Hyogo Framework for DRR education, further emphasising the need for stronger commitment among UN member states to a multi-level and multi-scale DRR knowledge building at the community, regional and national levels.

The exigencies of global policy texts

While hazards and disasters in themselves are not rhetorical situations per se, framing the issue as requiring action presents compelling rhetorical exigencies that invite discourse assistance (Gottweis, 2007). There were consistent threads of rationalisations across the four policy documents over time that called for action. As the analytical starting point, the objective of the Decade Framework, which outlined the overarching exigencies for the Decade (United Nations, 1989), was used in this transversal analysis to illustrate their resonance to latter policymaking epicycles.

The objective of the International Decade for Natural Disaster Reduction is to reduce through concerted international action, especially in developing countries, the loss of life, property damage and social and economic disruption, caused by natural disasters such as earthquakes, windstorms, tsunamis, floods, landslides, volcanic eruptions, wildfires, grasshopper and locust infestations, drought and desertification and other calamities of natural origin. (p. 161)

There are four rhetorical exigencies indicated in the Decade Framework's objective to be carried forward to the Yokohama Strategy, the Hyogo Framework, and the Sendai Framework. Throughout the chapter, the term 'exigency' is used in close reference to Miller's definition of an "objectified social need" (Miller, 1994 in Edwards et al., 2004, p. 18) mentioned earlier. The first exigency draws attention to *hazards and disasters as disruptions* in the working of society as indicated by fatalities, structural destruction, and interruptions to social and economic activities. This specific exigency did not change much across policymaking epicycles, with the Hyogo Framework's emphasis on "*the substantial reduction of disaster losses, in lives and in the social, economic and*

environmental assets of communities and countries” [emphasis in the original]

(UNISDR, 2005b, p. 3), and the Sendai Framework’s extended narrative focusing on risks reduction over loss reduction, highlighting that there should be “substantial reduction of disaster risk and losses in lives, livelihoods, and health and the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries” (UNISDR, 2015, p. 12).

The second exigency directs the discourse on the plight of ‘*developing countries*.’ While the proponents of the policy documents insisted on global coverage to ‘all countries’, the texts also consistently demarcated a specific space for countries identified by the United Nations and other global organisations as ‘developing’ as a special area for intervention. For instance, the Decade Framework emphasised improving “the capacity of each country to mitigate the effects of natural disasters” (United Nations, 1989, p. 161) and also singled out for efforts to focus on “assisting developing countries” (United Nations, 1989, p. 161). Later, the Yokohama Strategy reiterated that the policy’s goal was to prioritise developing countries, particularly “the least developed, land-locked countries and the small island developing States” (IDNDR, 1994, p. 3). Developing countries as exceptional cases would resonate in both the Hyogo and Sendai Frameworks, with the categorisation extending to African countries and middle-income countries in the Sendai Framework (UNISDR, 2015).

Central to the argument of a ‘developing country’ focus is the idea of vulnerability and how materially scarce areas are the most susceptible to the impact of disasters. Disasters are regarded as a reflection of the underlying crisis in socioeconomic development facing developing countries (United Nations System, 1991), most tangibly indicated by substandard dwellings, inadequate infrastructure maintenance, and slow economic growth (United Nations, 1988). Therefore, they are considered irruptions to development trajectories.

Disasters as overwhelming forces connect to the notion that with insecure material wealth, the coping capacities of some people in ‘developing countries’ are also

compromised. In addition, recurrent challenges of having to recover from frequent hazards exposure, are seen to exacerbate these insecure conditions and thus contribute to the cycle of slow economic development.

The third exigency points to the need to forge *international cooperation* in light of the perceived lack of synergised global action to address the challenges posed by hazards and disasters. The Yokohama Strategy, while invoking countries to take responsibility for the welfare of their citizens (IDNDR, 1994), also maintained that national governments should be “accepting at the same time that, in the context of increasing global interdependence, concerted international cooperation and an enabling international environment are vital for the success of these national efforts” (p. 7), a stance that was to be extended by the Hyogo Framework and Sendai Framework.

The fourth exigency points towards the solution of harnessing and transferring resources as facilitated by a global network of actors. In this light, disasters were also regarded as a *deficit problem*. Specifically, the perceived inadequacy of knowledge, technology, and infrastructure such as early warning systems in developing countries is emphasised as the rationale for intervention. Education, knowledge, training, research, capacity-building, technology, and know-how are lumped together in this exigency. In the Decade Framework, this exigency was emphasised through the promotion of existing scientific and technical knowledge, programmes of technical assistance, and technology transfer and demonstration projects. In connection to exigencies two and three, exigency four directs a linear solution that further delineates the owners from the beneficiaries of desired resources, as indicated in the excerpt from the Sendai Framework (UNISDR, 2015) below:

Developing countries, in particular the least developed countries, small island developing States, landlocked developing countries and African countries, as well as middle-income and other countries facing specific disaster risk challenges, need adequate, sustainable and timely provision of support, including through finance, technology transfer and capacity building from developed countries and partners

tailored to their needs and priorities, as identified by them. (p. 14)

As will be expounded on below, the four exigencies created the base arguments for a sustained deliberative global governance of disasters and hazards. Together, they delineated disasters and hazards from the view of social and economic advancement, along techno- scientific and resource mobilisation lines, requiring an intervention initiated at the international level of cooperation. In the following parts of the discussion, I examined the rhetorical devices within the policies to establish the leadership of the UN to designated audiences of policies, and tropes to engage and persuade said audiences. As these policy materials were written and negotiated in different time frames and by several parties and institutions, a caveat is necessary here that I was not a party to any of these policymaking activities. Thus, the breadth of the analysis and discussion is solely based on the policy texts' content.

Reflexive deliberation

Policies, such as the ones analysed in this chapter, are by nature deliberative. Their authors and proponents advocated for potential future outcomes, with itemised objectives, goals, and expected course of actions from stakeholders. The deliberative features of the documents were most apparent with references to the global meetings that created them.

These meetings included the council of scientists gathering and the UN Assembly that endorsed the Decade Framework and the three consecutive world conferences for the Yokohama Strategy, Hyogo Framework, and Sendai Framework. These world conferences were attended by various sectors in a venue where actors and groups lobbied, winnowed issues, and made their concerns known and included in the agenda for DRR within limited days of negotiations (See Revet, 2020 for an exemplary discussion of the deliberation process).

Further, the time-bound nature of the frameworks also adds to the deliberative character of the policies. The Decade Framework and the Yokohama Strategy would frame

the Decade. The Hyogo Framework ran for ten years, while the Sendai Framework spans fifteen years, to be concluded in 2030. The inception and expiration dates of the policy documents, along with mid-term reviews, concur with the process of continuous deliberation and evaluation against set objectives.

In setting the future-oriented character of policies following the deliberative genre, the authors of the policy documents also employed a mixture of forensic and epideictic rhetorical devices, especially in their front matters (e.g., Introduction, Preamble). The forensic-epideictic genre manifests in how the policies referred to past actions, including what a previous policy addressed and what it failed to do. For instance, the Yokohama Strategy's emphasis on building a 'safer' world (IDNDR, 1994) alluded to insufficient facilities or systems in place to address emergencies, as it reported on the accomplishments and failures of the first half of the Decade. In a rather impassioned statement, the authors of the Yokohama Strategy employed a variation of the name-and-shame tactic to draw attention to a more engaged and future-oriented recalibration of strategies (IDNDR, 1994), as illustrated by the excerpt below:

The Yokohama Conference is at a crossroad in human progress. In one direction lie the meagre results of an extraordinary opportunity given to the United Nations and its Member States. In the other direction, the United Nations and the world community can change the course of events by reducing the suffering from natural disasters. Action is urgently needed. (p. 5)

Later, the Hyogo Framework's review of the Yokohama Strategy praised the latter as providing the "landmark guidance on reducing disaster risk and the impacts of disasters" (United Nations, 2005, p. 2) and reiterating that the Yokohama Strategy retains its relevance in the then-developing policy context of the Hyogo Framework. Following the forensic-epideictic trope, the Hyogo Framework also highlighted the gaps in the Strategy's implementation, including the representation – or lack thereof – of stakeholders in their local communities and the scarcity of resources allocated to disaster risk reduction. These gaps then became the jump-off point for new policy intervention.

The Sendai Framework followed the same style, praising its predecessor in stating that, “since the adoption of the Hyogo Framework for Action... progress has been achieved in reducing disaster risk at local, national, regional and global levels...leading to a decrease in the case of some hazards” (UNISDR, 2015, p. 9). At the same time, during the run of the Hyogo Framework, the Sendai Framework emphasised that disasters have continued to exact a heavy toll so that:

Despite significant progress in spreading a culture of disaster risk reduction around the world over the past Decade of implementing the Hyogo Framework for Action, the international community is running to a standstill as economic losses grow, and mortality remains stubbornly high in many parts of the world.

(UNISDR, 2015, p. 2)

Overall, the authors of global DRR policies predominantly used the deliberative genre in their rhetoric. However, they balanced the discourse with indications of reflexive evaluation, employing forensic-epideictic rhetorical tropes. This rhetorical technique builds up the authority of the UN as the lead and proponents of policies. It provides a strong impetus for a sustained and programmatic intervention for disaster risk management. In discourse, this technique was a rhetorical strategy to establish coherence and resonance across policies and continuity between one policy document to another.

Designating the audience/s

The documents identified distinct audiences of the policies belonging to the local, national, regional, and international contexts. The policy documents itemised the expectations of the guidelines from actors and stakeholders in each audience category. For instance, the Hyogo and Sendai Frameworks would explicitly categorise each group of actors with matrices of roles, guidelines, and indicators that showed each sector’s expectations.

From the Decade Framework to the Sendai Framework, states and national governments were categorised as the primary audience of policies. The Yokohama

Strategy invoked countries to “defend individuals” (IDNDR, 1994, p. 5), emphasising in the same statement a reminder that “each country bears the responsibility for protecting its own people” (IDNDR, 1994, p. 7). The Hyogo Framework’s stress on building resilience in communities created the precedence for a stronger emphasis on the national/local nexus, with the expected outcome of intervention centred on resilience building. Indeed, Priority 1 of the Hyogo Framework (i.e., Ensure that disaster risk reduction is a national and a local priority) (United Nations, 2005, p. 6) already sets the policy’s primary audience. In addition, the Sendai Framework reiterated its predecessors’ statement that the responsibility for disaster management is and should be borne by state governments even as policies advocated for international assistance and global cooperation. The Sendai Framework (UNISDR, 2015) states that:

The realization of [the Framework’s] outcome requires the strong commitment and involvement of political leadership in every country at all levels in the implementation and follow-up of the present Framework and in the creation of the necessary conducive and enabling environment (p. 12).

The reiteration of disasters as a particular case for developing countries suggests that messages and interventions be explicitly directed to this sub-category. While national governments were considered the primary audience of global policies, non-state actors at the regional/ international level also emerged as other addressees. The Decade Framework is directed to the UN system’s organisations, bodies, and agencies as the secondary audience, particularly in actively implementing the goals and objectives of the Decade. Here, I draw attention to the ‘international’ not only about the UN as the governing body but also the ‘international community,’ as often acknowledged in the texts to be working with the UN in deciding policy directions, financing, and implementation of planned strategies. Further, the ‘international’ is expanded to congregate a multi-spatial, geo-neutral set of actors acting through bilateral arrangements and multilateral cooperation. From the Yokohama Strategy (IDNDR, 1994), the policy document indicated “to reaffirm its commitment to pursuing, through national, regional, and international

efforts, the transformation of the International Framework of Action for the Decade into a decisive intersectoral Plan of Action” (p. 7).

The idea of an ‘international community’ is summoned to support the UN in multiple ways: to provide scientific, technical, and financial assistance, to assist developing countries in creating national DRR strategies, and as partners in the implementation of the DRR framework to the community level. The international community is a loosely constituted assemblage of actors and institutions. With the establishment of the Decade Framework, the group was identified closely with earthquake engineers and the ‘scientific community,’ whose input was to be used in developing the agenda of the Decade. The group would soon vary in composition to include different epistemic communities (Adler & Haas, 1992; Haas, 2004), international financial institutions, non-government organisations, and the private sector.

The audiences of policies, then, are on a spectrum. On one end, the policies’ audience is actors that identify with the national/local landscape. On the other end, the regional/international. While the regional/international sphere may appear as a secondary audience in the Decade Framework, the later iterations of policies and the involvement of different actors put the two ends on equal footing. The middle part of the spectrum is extended to the special audiences of ‘developing countries’ and the ‘international community.’

Invention: authority that deploys affect

In this section, the discussion focuses on how the rhetorical canon of *invention*, the devices to influence or win an audience, was deployed to communicate a persuasive appeal to authority and emotions (Edwards et al., 2004; Leach, 2000). Across the four policy documents, there was nominal use of *logos*-centric persuasion, or appeal to reason, as commonly indicated by statistical usage and if-and-then scenarios. Some exceptions include the Yokohama Strategy’s use of *logos*, as indicated by how the authors of the policy referred to multiple national summary reports and scientific and technical presentations in the text. Similarly, the cause-and-effect strategy was also used in the

Hyogo Framework to justify the policies' proposed course of action (United Nations, 2005), as shown by the excerpt below:

Disasters can be substantially reduced *if* [emphasis added] people are well informed and motivated towards a culture of disaster prevention and resilience, *which in turn* [emphasis added] requires the collection, compilation and dissemination of relevant knowledge and information on hazards, vulnerabilities and capacities. (p. 9)

Statistics were sparse but present in both the Hyogo and Sendai Frameworks. For instance, the Hyogo Framework claimed that in “the past two decades, on average more than 200 million people have been affected every year by disasters” (United Nations, 2005, p. 1). On the other hand, the Sendai Framework provided a much more elaborate *logos*-related, evidence-based description (UNISDR, 2015) as illustrated below:

Over 700 thousand people have lost their lives, over 1.4 million have been injured and approximately 23 million have been made homeless as a result of disasters. Overall, more than 1.5 billion people have been affected by disasters in various ways, with women, children and people in vulnerable situations disproportionately affected. The total economic loss was more than \$1.3 trillion. In addition, between 2008 and 2012, 144 million people were displaced by disasters. Disasters, many of which are exacerbated by climate change and which are increasing in frequency and intensity, significantly impede progress towards sustainable development. Evidence indicates that exposure of persons and assets in all countries has increased faster than vulnerability has decreased, thus generating new risks and a steady rise in disaster related losses, with a significant economic, social, health, cultural and environmental impact in the short, medium and long term, especially at the local and community levels. (p. 10)

The minimal use of *logos* may mean that the evidence related to the documents' claims was implied or has been discussed elsewhere through a different format and media. However, the policy documents carried a predominant bearing of *ethos*, or appeal to

authority, and specifically to the corporate ascendancy of the UN as the initiator and lead of policy initiatives. Further, the deliberative genre discussed previously lends a strong authoritative scaffold for the policy documents of a well-thought-out, consultative, and measured approach to the global governance of hazards and disasters.

The *ethological* focus is further enhanced by engaging the rhetorical devices of *memory and disposition* (Edwards et al., 2004; Leach, 2000). In engaging *memory*, the texts of policy documents linked their audience to a collective remembrance of what previous interventions accomplished, reminiscent of the forensic-epideictic trope. Further, memory was also activated through the practice of self-referencing or, in critical discourse analysis, inter-textuality (Fairclough, 1992; McCormick, 2011b). The Yokohama Strategy's assessment of the status of disaster reduction midway into the Decade, for instance, reminded its audience of related previous actions that preceded the Framework. The following are examples from the Yokohama Strategy for self-referencing (IDNDR, 1994, p. 4):

- [1] Recalling the decision of the General Assembly in its resolution 44/236 of 22 December...
- [2] Recalling also the forward-looking decision of the General Assembly in its resolution 46/182...
- [3] Reaffirming also the role assigned by the Secretary-General of the United Nations...

In the later iterations of the policies with the Hyogo and Sendai Frameworks, self-referencing to their predecessors and UN documents, events, and initiatives were interspersed in the body of the text, in footnotes, and the annexes. These examples included statements referring to General Assembly resolutions and special sessions, related events, and documents, such as the Johannesburg Plan of Implementation of the World Summit on Sustainable Development, the UN Decade of Education for Sustainable Development, as well as “internationally agreed development goals” (United Nations, 2005, p. 2) such as the Millennium Development Goals. Again, using memory as a

rhetorical device, the readers are reminded that the objectives and pronouncements made in the policy documents “on the international and regional levels as well as the national and local levels has been recognized in the past few years in a number of key multilateral frameworks and declarations” (p. 2). Reiterating and relating to these UN events and activities concretised the UN’s continuing leadership and authority.

The *disposition* or *arrangement* of the texts also bolstered the *ethos*-centred persuasive genre of the policies. The content of the documents was written in such a way that the objectives, expected outcome, strategic goals, priorities for action, a follow-up plan, as well as expectations of stakeholders and their responsibilities were stated in a similar fashion across all four documents. The provision of a definition of terms in the footnote on terms such as vulnerability, hazard, and resilience in the Hyogo and Sendai Frameworks, and referring to specific UN documents on where these definitions were lifted, also added to this veneer of authority (UNISDR, 2004, p. 3). By reminding the audience of these terms and their definitions, the UN delineated how they should be defined and, implicitly, how they should not be defined.

The predominant *ethos* displayed in the texts is balanced by *pathos* for strong coupling of appeal to both authority and emotions. Elsewhere, Brown (2012) discussed the power of ‘emotional resonance’ in framing policies at length. *Pathos* or the emotions of the policies were most expressed in the Yokohama Strategy, with language that used the terms ‘concern’, ‘suffering,’ ‘sudden harmful effects,’ and ‘safer world’ (IDNDR, 1994) in the discourse. The authors of the Strategy justified the impetus for a mid-term review as “expressing our deep concern for the continuing human suffering and disruption of development caused by natural disasters” (IDNDR, 1994, p. 1). In addition, the toll of disasters was reiterated through affect-laden words such as “rapidly rising world-wide toll” (IDNDR, 1994, p. 4) that did not use quantitative ‘facts’ or figures that could be considered as *logos*.

The Yokohama Strategy then pushed the narrative for action (IDNDR, 1994), invoking the “need” for the UN system to “pay special attention” (p. 4), “appeals to the

world” (p. 5) and called on countries “to defend individuals from physical injuries and traumas” (p. 5), alluding to fragility and instability of existing systems as reasons for such a call to action. In the same way that it reaffirmed the role of the United Nations, the Yokohama Strategy also asked the “international community” to “demonstrate strong political determination required...” (p. 6) for the objectives of the Decade to be realised. The Hyogo and Sendai Frameworks scaled back on *pathos* and reverted to *ethos*-centred rhetoric. Nonetheless, and as evident in all the policy documents, portrayals of emotion congregated around the affective elements of concern and care and linked to the exigencies of the need for aid and transfer of technologies, knowledge, and expertise to developing countries. The particular emphasis on ‘developing countries’ rounded up the overarching ‘problem’ of loss and destruction as focused in these areas. Several excerpts from the policy documents below illustrate emotion to convey rhetoric of concern and care. From the Hyogo Framework (United Nations, 2005):

Disaster loss is on the rise with grave consequences for the survival, dignity and livelihood of individuals, particularly the poor, and hard-won development gains.

Disaster risk is increasingly of *global concern* [emphasis added] and its impact and actions in one region can have an impact on risks in another, and vice versa. (p. 1)

Concern and care as concepts of affect and used as rhetorical tools were deployed as strategies to convey how international cooperation could foster a synergised approach to buffering the threats of hazards and disasters, while at the same time reiterating that the accountability for the welfare of individuals and communities rests with national governments. Again, an excerpt from the Hyogo Framework (United Nations, 2005), below, illustrates this point:

Taking into account the importance of international cooperation and partnerships, each State has the primary responsibility for its own sustainable development and for taking effective measures to reduce disaster risk, including for the protection of people on its territory, infrastructure and other national assets from the impact of disasters. At the same time, in the context of increasing global interdependence,

concerted international cooperation and an enabling international environment are required to stimulate and contribute to developing the knowledge, capacities and motivation needed for disaster risk reduction at all levels. (p. 4)

This form of governance ‘at an arm’s length’ maintains the importance of international cooperation and partnership while at the same time reiterating that failure or success of intervention still is the responsibility of states.

Metaphors that reflect and deflect

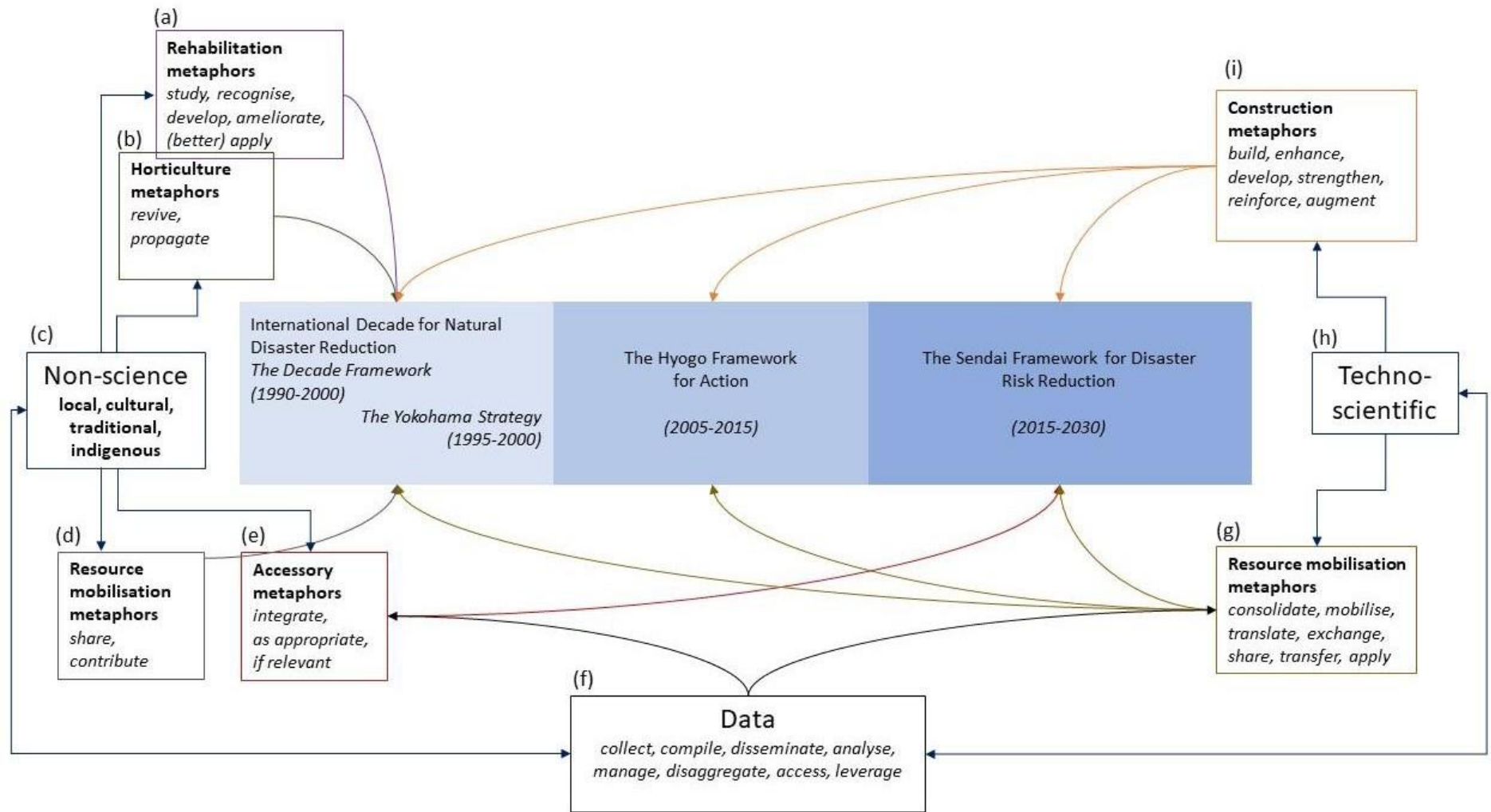
The preceding sections illustrated the overall rhetorical features of DRR policies produced over three decades of policymaking. In this section, the focus is directed towards the rhetorical canon of *style* (Edwards et al., 2004; Leach, 2000) in examining the use of metaphors to delineate and elucidate how education and knowledge were integrated into the overall rhetorical structure of DRR policies. Metaphors in language use operate through transference (Taylor, 1984). As a figure of speech, metaphors illuminate complex matters (Charlton, 1984) and assist in structuring conceptual systems and discourses (Taylor, 1984). As Taylor (1984) explained:

Metaphor is not just the business of the poet or the literary critic but represents one of the ways in which many kinds of discourse are ordered and structured- including discourse about education – a central feature of the production and reproduction of meaning. (p. 20)

The use of metaphors is customary as they form the discursive structure of the texts, as documented in various rhetorical analyses (Edwards et al., 2004; Saari & Säntti, 2018; Winton, 2013). In this section, the analysis aimed to identify metaphors relating to education and knowledge and understand attempts to elucidate complex ideas, bearing in mind that “every attempt at illumination, produces its own shadows” (Charlton, 1984, p. 55). The following parts discuss the knowledge types and metaphors used across the policies, as illustrated in Figure 18 on the next page.

Figure 18

Knowledge dimensions and metaphors in global DRR policies



‘Techno-scientific’ knowledge

The emphasis on deficiencies in the exigencies and the forward-looking, deliberative features of the policies inspired a semantic preference for a network of metaphors centring on construction, with terms such as ‘build,’ ‘enhance,’ ‘develop,’ ‘strengthen,’ ‘reinforce’ and ‘augment’ (Figure 18, textbox *i*). In reference to exigencies two (on ‘developing’ countries) and four (as a deficit issue), construction metaphors were deployed to rally for the need to address an identified lack, or “insufficient capacities” as highlighted in the text below from the Hyogo Framework (UNISDR, 2005b):

Particular vulnerabilities and insufficient capacities of least developed countries to respond to and recover from disasters, support is needed by the least developed countries as a matter of priority, in executing substantive programmes and relevant institutional mechanisms for the implementation of the Framework for Action, including through financial and technical assistance and for capacity building in disaster risk reduction as an effective and sustainable means to prevent and respond to disasters. (p. 14)

Capacity-building is an all-encompassing hyphenated construction metaphor that was widely used from the Decade Framework all the way to the Sendai Framework and more widely in ‘development’ discourses (McCormick, 2011b). The term referred broadly to activities aimed at equipping the broader public of communities, officials, individuals, and responders in areas that lack an identified critical capacity. In DRR, capacity-building included education, training, public information, culture-building, and knowledge-building.

Capacity-building is a construction metaphor that links well to the trope of resource mobilisation employed regarding knowledge. Knowledge, as a material needed for and with building capacities, is a resource for “transfer and application”; in the first round of policies, this meant the mobilisation of advanced scientific knowledge and technological know-how that would soon constitute the central concept of the Decade.

The use of resource mobilisation metaphors began with the ‘dormant resource’

trope in the Decade. As the beginning of the Decade was led by scientists, there was substantial banking on technoscientific knowledge. Technoscientific knowledge as an existing resource was accorded the label of an untapped resource waiting to be used.

For the most part, the rhetoric on knowledge in the Decade oscillated between firm conviction and modest reservations on the potential and uses of existing technoscientific knowledge. On the one hand, the Decade proponents repeatedly expressed their confidence that the international community had at its disposal a knowledge base that could be used to train and educate people about managing disaster risks and hazards. As the Decade was envisioned as a recalibration of the UN's approach to disaster governance from response to prevention, the rallying cry was for technoscientific knowledge to permeate all aspects of intervention from development planning, international collaboration, and policymaking (United Nations, 1991). As stated in a material produced mid-Decade (United Nations, 1995):

As the judgements and decision processes of experts and large amounts of scientific information can be compiled in computerized decision support systems and disseminated at minimal cost, there is an expanding opportunity to translate specialist knowledge into forms suitable for local applications. The development of CD-ROM technology in connection with personal-computer applications can bridge technical information gaps economically in many countries. Expert systems can be used to provide guidance for decision-making by disaster managers or in guiding an appropriate response for specific types of warnings. (p. 12)

On the other hand, the policy papers suggested the authors' misgivings of whether the same knowledge base is adequate to address the Decade's requisites (United Nations, 1995) for disaster governance. It was suggested that there were gaps and loopholes in this knowledge, and a number of these have not been identified nor amended. In addition, reports coming in from participating country governments revealed significant disconnect and disparities in capacities to use the endorsed techno-scientific approach (United

Nations, 1991b). Thus, another setback identified was the futility of existing expert scientific knowledge in the target areas of intervention, as the excerpt below indicates:

Although many cost-effective disaster-mitigation techniques do now exist and have been used extensively, they often cannot be used in many vulnerable areas of the world because of a lack of knowledge and/or resources. The result is ineffective risk-management policies which hinder efforts towards sustainable development. More information is needed to guide government officials, investors, insurers and institutions involved in economic development on the importance of adopting more efficient risk-management policies. (United Nations, 1993, p. 8)

Furthermore, the espoused knowledge base was assessed to be fractured and isolated, as it remains the property of the scientific community. Within the said community, scientific and technical knowledge variants were produced and ‘parochialised’ in the exclusive enclaves of institutions, epistemic societies, and universities. The UN then had to reiterate that:

The United Nations retains a critical role in ensuring that the momentum that has developed for enhancing natural disaster reduction in the world is maintained. The impact of individual initiatives should not become limited through isolated knowledge. The United Nations system must encourage information exchange to enhance education, training and the transfer of knowledge and technology. (United Nations, 1996, p. 7)

In addition, the authors of policies also expressed their hesitation that such knowledge may not be updated as fast in response to the multiplying risks of hazards that were further aggravated by climate change. At the end of the Decade, the UN acknowledged the need to further synergise its activities in closing knowledge gaps, especially with the mounting concerns on climate change.

Within this narrow spectrum of optimism and pessimism towards knowledge in the Decade, what remained was the particular regard of expertise as a commodity, and therefore, as capital. Metaphors for resource mobilisation and management abounded,

including references to knowledge ‘consolidation,’ ‘mobilisation,’ ‘translation,’ ‘exchange,’ ‘sharing,’ ‘transfer,’ and ‘application’ (IDNDR, 1994; United Nations, 1989) (See Figure 18, textbox *g*).

The metaphors for resource mobilisation were also apparent in the Yokohama Strategy, while at the same time delineating two kinds of knowledge in its vocabulary. On the one hand, the Yokohama Strategy reiterated the need for the utilisation of scientific and technical knowledge. On the other hand, there is the explicit acknowledgment of place-based knowledges, referred to as traditional, indigenous, local, and community knowledge. With the Yokohama’s distancing from the technocratic discourse of the Decade Framework, its most apparent pivot is the introduction of community involvement as a concept (IDNDR, 1994), as the excerpt below indicates:

Active participation should be encouraged in order to gain greater insight into the individual and collective perception of development and risk, and to have a clear understanding of the cultural and organizational characteristics of each society as well as its behaviour and interactions with the physical and natural environment. This *knowledge* [emphasis added] is of utmost importance to determine those things which favour and hinder prevention and mitigation or encourage or limit the preservation of the environment for the development of future generations, and in order to find effective and efficient means to reduce the impact of disasters. (pp. 2-3)

The ambivalences of the Decade towards knowledge would dissipate with the Hyogo Framework’s emphasis on knowledge capitalisation (United Nations, 2005). After the consolidation of cross-sectoral disaster information expertise, much confidence is built to advance such knowledge for broader dissemination. From a deficit-based preoccupation with closing the ‘gaps,’ the discourse has moved towards concerted international cooperation to develop further knowledge, capacities, and technical tools to assess risks and communicate forecasts and warnings.

The rhetoric for resource mobilisation persisted (e.g., knowledge transfer);

however, there is now more emphasis on the utility of knowledge as a point of departure for DRR projects. In a rhetorical move that aligns more with reason or *logos*-centric appeal, the Hyogo Framework, as enunciating in its Priority 3, utilised the “if-and-then” technique in positing knowledge as a prerequisite for success DRR. Below, three examples illustrate this point from the Hyogo Framework (United Nations, 2005):

- [1] The *starting point* [emphasis added] for reducing disaster risk and for promoting a culture of disaster resilience *lies in the knowledge* [emphasis added] of the hazards and the physical, social, economic and environmental vulnerabilities to disasters that most societies face, and of the ways in which hazards and vulnerabilities are changing in the short and long-term, followed by *action taken on the basis of that knowledge* [emphasis added]. (p. 7)
- [2] *Disasters can be substantially reduced if people are well informed* [emphasis added] and motivated towards a culture of disaster prevention and resilience, which in turn *requires the collection, compilation and dissemination of relevant knowledge and information on hazards, vulnerabilities and capacities* [emphasis added]. (p. 9)
- [3] At times of disaster, impacts and losses *can be* [emphasis added] substantially reduced if authorities, individuals and communities in hazard-prone areas are well prepared and ready to act and *are equipped with the knowledge and capacities* [emphasis added] for effective disaster management. (p. 12)

The Hyogo Framework referred to knowledge, along with policies and awareness, as “non-structural measures” (United Nations, 2005, p. 10) for DRR. In addition, in stark contrast to the policy documents produced during The Decade, the Hyogo Framework de-identified knowledge from its standard techno-scientific prefix. While still following the utilitarian resource mobilisation metaphor, knowledge transfer and sharing have now become more concrete, including specific directions on the post-disaster recovery phase to use “lessons learned.” More importantly, and as emphasised in this thesis, the Hyogo Framework specified instructions for including DRR knowledge in school curricula and

informal channels of education to reach the youth and children sectors of society (United Nations, 2005).

Construction and resource mobilisation metaphors persisted in the texts of the Sendai Framework (UNISDR, 2015). There was continuing assertion for strengthening capacities of countries identified as ‘developing’ and building the knowledge of government and non-state stakeholders. The texts became clearer in terms of the direction of the flow for mobilisation, from developed countries and the international community to developing countries, as shown by the two excerpts below:

[1] In addressing economic disparity in technological innovation and research capacity among countries, it is crucial to enhance technology transfer, involving a process of enabling and facilitating flows of skills, knowledge, ideas, know-how and technology from developed to developing countries in the implementation of this Framework. (p. 24)

[2] To enhance access of States, in particular developing countries, to finance, environmentally sound technology, science and inclusive innovation, as well as knowledge and information sharing through existing mechanisms namely bilateral, regional and multilateral collaborative arrangements, including the United Nations and relevant bodies. (p. 25)

The Sendai Framework also revisited the contributions of ‘science,’ encouraging for the more decisive influence of science in policymaking, as indicated by the illustrative excerpts below:

[1] To strengthen technical and scientific capacity to capitalize on and consolidate existing knowledge and to develop and apply methodologies and models to assess disaster risks, vulnerabilities and exposure to all hazards. (p. 15)

[2] To promote and improve dialogue and cooperation among scientific and technological communities, other relevant stakeholders and policymakers in order to facilitate a science-policy interface for effective decision-making in disaster risk management. (p. 15)

Knowledge as ‘non-science’

While metaphors for resource mobilisation referred to scientific and technical knowledge, rehabilitation metaphors that included references to horticulture were used for place-based knowledges (Figure 18, textboxes *a* & *b*). For instance, verbs such as “recognise,” “apply,” and “share” was used in addition to “revive” and “propagate,” with the Yokohama Strategy (IDNDR, 1994) indicating that “there is a strong need to strengthen the resilience and self-confidence of local communities to cope with natural disasters through recognition and propagation of their traditional knowledge, practices, and values as part of development activities” (p. 8).

Vulnerable countries and local communities were singled out such that their “existing knowledge and know-how should be studied, and efforts should be made to ameliorate, develop and better apply them today” (IDNDR, 1994, p. 7). As opposed to the then dormant but advanced and yet-to-be harnessed scientific and technical knowledge, the Yokohama Strategy also presented a view of traditional knowledge as inactive—and stunted. The use of horticulture metaphors of reviving and propagation point to the idea of rehabilitation with the aid of supplements in the form of “modern scientific and technical knowledge” (IDNDR, 1994), as shown in this excerpt from the Yokohama Strategy: “Vulnerable developing countries should be enabled to revive, apply and share traditional methods to reduce the impact of natural disasters, supplemented and reinforced by access to modern scientific and technical knowledge” (p. 7).

Resource mobilisation metaphors were deployed as well with terms such as “share” and “contribute (Figure 18, textbox *d*). However, as opposed to the ‘movement’ reference accorded to technoscientific knowledge, traditional knowledge, practices, and values of local communities were seen more as insular and static, and functional, as supplemented by science. Thus, while technoscientific knowledge is to be transferred and mobilised across geographies and political boundaries, traditional knowledge was to be recognised and empower the local (IDNDR, 1994), only:

Aim at the application of traditional knowledge, practices and values of local

communities for disaster reduction, thereby recognizing these traditional coping mechanisms as a valuable contribution to the empowerment of local communities and the enabling of their spontaneous cooperation in all disaster reduction programmes. (p. 12)

The Yokohama Strategy then reinforced the modern-traditional, scientific-indigenous binaries regarding knowledge. At the same time, the policy document opened the discourse to other forms of knowing to the then singular regard of technoscientific information as the only reference for 'knowledge.'

The Hyogo Framework's lone reference to traditional knowledge maintained this manner of labelling as "traditional and indigenous knowledge" (United Nations, 2005, p. 9) along with cultural heritage. This resource is to be incorporated into information released to citizens in high-risk areas. Traditional and indigenous knowledge, in this sense, fits the idea of an accessory metaphor to be discussed in length below.

Knowledge as 'data'

Knowledge as data emerged with the emphasis on disseminating relevant knowledge and information on hazards, vulnerabilities, and capacities (Figure 18, textbox *f*). Whereas technoscientific and non-science knowledges were considered 'existing' knowledge, knowledge as data is yet to be collected, compiled (United Nations, 2005), analysed, disaggregated, accessed, and leveraged (UNISDR, 2015). The Sendai Framework's emphasis on dialogue and cooperation also meant the expansion of data sources to be from 'all of society' including women, children and youth, persons with disabilities, older persons, indigenous peoples, migrants, the academia, and the private sector (UNISDR, 2015).

Within this data and data management trope is the sorting and dissemination of information following the resource mobilisation metaphor. Consequently, along with data collection and analysis processes, data management also involves data reduction, exclusion, and cleaning. The Sendai Framework then used modifiers such 'relevant'

information, ‘as appropriate’ knowledge, and ‘non-sensitive’ information, as the excerpt below shows:

To ensure the use of traditional, indigenous and local knowledge and practices, *as appropriate*, [emphasis added] to complement scientific knowledge in disaster risk assessment and the development and implementation of policies, strategies, plans and programmes of specific sectors, with a cross-sectoral approach, which should be tailored to localities and to the context. (p. 15)

Thus, while the Sendai Framework appeared inclusive of voices outside the techno-scientific circle as indicated above, its view of non-science knowledge remains constrained and relegated non-science knowledge to the margins using accessory metaphors (Figure 18, textbox e). Overall, the Sendai Framework then expanded and contracted the DRR lexicon for knowledge simultaneously. On the one hand, the framework was attendant to perspectives that do not emanate from the viewpoint of scientists, technicians, and government officials. It also expanded the non-science knowledge as strictly traditional or indigenous to include contemporary place-based knowledges. Older persons, for instance, are tapped to have valuable “knowledge, skills and wisdom” that should be included in early warning. Indigenous peoples’ experience and traditional knowledge as well are seen as “important contributions to the development and implementation of plans and mechanisms, including for early warning” page.

On the other hand, the vocabulary is also narrowed down, ‘as appropriate,’ as a complement, an accessory to scientific knowledge, and befitting the DRR framework. However, while techno-scientific knowledge was to inform policies, traditional, indigenous, and local knowledges are to be kept at a safe distance. As will be discussed in the next section, the themes and patterns identified in the rhetorical use of metaphors for knowledge would relate to the emphasis and inattention to certain forms of knowledge in education.

Education for ‘culture building’

In the earlier decade of policymaking, the Decade Framework and Yokohama Strategy did not discuss education as part of their agenda. Related documents produced during the Decade showed that the approach to the utilisation of education was two-pronged. On the one hand, education was put forward as a training program for actors on the frontline, such as government employees, NGO workers, and volunteers. The teaching of local experts meant “the creation of interdisciplinary and technical networking at all levels, for capacity-building and human resources development” (United Nations, 1996b). On the other hand, there was an emphasis on mass education through public information campaigns in the communities.

In mainstreaming science-informed knowledge, experts were involved in the creation of educational materials as well as in training local and community leaders. With the Decade’s emphasis on technology and knowledge transfer, public information campaigns were created to raise people’s familiarity with risk levels in an area and as an integral part of an early warning and disaster management system. In addition, there were ad hoc and specific plans to include disaster reduction issues in the school curricula and existing educational programs at primary and secondary levels (United Nations, 1991).

The Hyogo Framework anchored education under its construction metaphor of building a culture of resilience project through Priority 3. In this discussion, ‘culture’ is specifically highlighted as another useful metaphor deployed by the policy authors in designating the directions of DRR education vis-à-vis the knowledge/s discussed earlier, and in the overall discursive and rhetorical structure of DRR policies. ‘Culture’ as a trope first emerged in the Yokohama Strategy, with its urging of the international community to work towards a “global culture of prevention” (IDNDR, 1994, p. 4 & 9) in its integrated approach to disaster reduction following a mid-term review that revealed uneven results during the first five years of the Decade. Inherent in such pronouncements is a shift in perspective— culture— toward a universal direction about hazards and disasters.

In its essence, ‘culture of prevention’ refers to creating a uniform understanding of

hazards and disasters, which involves extensive knowledge building and dissemination. The rationale behind this specific perspective is the need for synergy in a concerted international action in improving coordination and technical intervention where it is needed. This then necessitated that education and training foster access and dissemination of existing and future technical and scientific information to improve countries' preventive culture and response capacity, with the end goal of reducing the loss of life and human suffering resulting from disasters.

The Hyogo Framework (United Nations, 2005) then capitalised on the currency of the metaphor with its campaign tied to culture as the undergirding concept to its ten-year programme. The endorsement of culture as a conceptual apparatus elevating technoscientific knowledge was to reach its summit with the Hyogo Framework's campaign of building a "culture of safety and resilience," zeroing in on communities. The focus on "culture of resilience," as with the "culture of prevention," reiterated the public's need to have free access to simple, usable, and straightforward risk information upon which to take action. Part of such reinforcement is the need to support stakeholders in developing standards by experts and technical organisations, advocacy initiatives, and disseminating disaster risk information, policies, practices, education, and training.

With Priority 3, the Hyogo Framework designated education as the launch-pad for the culture of resilience building (Singh, 2006). Most significantly, the Hyogo Framework (United Nations, 2005) put education at the front and centre of its directive by stipulating the following education-related key activities to attain Priority 3:

1. Inclusion of DRR knowledge in relevant sections of school curricula at all levels;
2. Implementation of local risk assessment and disaster preparedness programmes in schools and institutions of higher education;
3. Implementation of programmes and activities in schools for learning how to minimize the effects of hazards. (p. 23)

The Hyogo Framework's engagement with education gained traction immediately with the launch of the World Disaster Reduction Campaign 2006-2007, with the theme "Disaster risk reduction begins at school" (UNISDR, 2006). The campaign was to consolidate global efforts to "inform and mobilise governments, communities, and individuals to ensure that disaster risk reduction is fully integrated into school curricula in high-risk countries, and that school buildings are built or retrofitted to withstand natural hazards" (UNISDR, 2006, n.p.). The move to bolster efforts for curriculum integration further intensified with the UN General Assembly's establishment of the biennial Global Platform for Disaster Risk Reduction to support the implementation of the Hyogo Framework. At its second session in 2009, the Global Platform resolved to integrate disaster risk reduction into school curricula by 2015 (UNISDR, 2009), an initiative revisited and reinforced in the 2011 Third Session of the Global Platform (UNISDR, 2011a). In the 2011 Hyogo Framework mid-term review progress reports on school curricula, educational materials, and relevant training, slightly more than half of the 70 countries, reporting their national progress on the Hyogo Framework priorities, confirmed the inclusion of DRR in school curricula (UNISDR, 2011b).

The Hyogo Framework's explicit designation of (formal) education as a priority area of intervention encouraged sectoral actions and inter-agency collaborations to respond to the call for hazards, disasters, and risk-focused education. While most initiatives were coming from the UN umbrella (See UNESCO & UNICEF, 2014; UNESCO Bangkok, UNICEF, & Save the Children, 2014), the message also would soon travel to other global institutions such as the OECD and Red Cross, as well as international NGOs such as ActionAid (ActionAid, undated), and Save the Children. The heightened interest in education for DRR led to the emergence of clusters and networks and even a "network of networks" among actors at the global level (United Nations, 2008).

The Sendai Framework's (UNISDR, 2015) focus on culture was extended to include 'culture of disaster prevention, resilience, and responsible citizenship,' 'culture of maintenance,' 'culture of prevention and education on disaster risk,' 'culture of prevention

and community involvement’ as the new framework aims to reinforce the idea of a uniform mindset across all levels of governance of DRR. With all these iterations, resilience is to remain as the central organising principle of disaster management policies. The Sendai Framework’s Priority 1 (UNISDR, 2015) reiterated to “promote the incorporation of disaster risk knowledge, including disaster prevention, mitigation, preparedness, response, recovery, and rehabilitation, in formal and non-formal education, as well as in civic education at all levels, as well as in professional education and training” (p. 15). Public education was also strengthened through information and knowledge campaigns using social media, community mobilisation, and banking on existing initiatives in this area. Public education, among other things, was to stimulate a ‘culture of prevention’ and education on disaster risk.

Education as a policy solution upheld the aim of ‘culture-building through providing a ready infrastructure for information dissemination and training. Through education, DRR practitioners can align practices deemed necessary at the international and national, local, community, and school levels. There was no prescription for a specific kind of ‘knowledge’ to be transferred, mobilised or endorsed through education in the documents except for references to early-warning systems and risk prevention. However, the heavy emphasis on science and technology in the knowledge that is endorsed overall, as reflected in the overarching metaphors of construction and resource mobilisation, confirm that education, as examined here, was to create a common vocabulary, grammar, and behavioural responses, a ‘culture’ of science and risk-centred disaster governance. On the reverse, the divergent, if tokenistic and prudent addition of other knowledge forms, deflects attention from their values and utility, as discussed in Chapter 5, in education and disaster management.

Knowledge hierarchies in the ‘culture’ of global policies

As illustrated in the preceding discussions, global DRR policies deployed as soft laws (Chapter 2, p. 27) neither stipulated sanctions for non-compliance nor provided

specific steps for programmatic alignment. Instead, the rhetorical devices within the policies used rhetoric that encouraged universal membership (Wanner, 2021), communicated as building a global culture of resilience. Distinctively, the mode of persuasion as seen in the texts of policies were founded on a mixture of reference to the authority of the UN and the international community, with a message of benevolence marked by the affect concepts of concern and care and delineating the focus of intervention towards countries that are considered ‘developing’ and ‘at risk.’

It is posited through this chapter that the relations and rhetorical positioning of global DRR policies reflect the power matrix (Quijano, 2000) that perpetuates coloniality or the persistence of colonial-like expressions in contemporary times (Mignolo, 1995). The UN and the international community constitute the zero-point of observation and knowledge (Castro-Gomez, 2007) by ‘curating’ the hierarchies of knowledge. This ranking of knowledge stations technoscientific perspectives at the helm while specifying for non-science knowledge’s integration to the overall framework and epistemological orientation of DRR. Indigenous, traditional, and local knowledges were then relegated to mere accessories to the global framework of DRR, a regard that contravenes the empowering rhetoric of the UN DRIP (United Nations, 2007b; Chapter 1, page 7) as the foremost international instrument championing for the rights and protection of knowledges of Indigenous peoples.

In contrast to the notion that the global policies of the Hyogo and Sendai Frameworks diverged from a ‘neutral and isolated science and technology-based learning’ (Singh, 2018, p. 24) in favor of local knowledge (Le De, 2017), the biography of policies as illustrated in the analysis was consistently oriented towards a techno-managerial approach. I confirm through this analysis Pineros (2020) and de Poterie and Baudoin’s (2015) observation that the proponents of the Yokohama Framework were more overt in their language for inclusion, a significant development that would wane in the Hyogo and Sendai Frameworks. It is also maintained that while the Yokohama Strategy appeared to have been more inclusive in its rhetoric, the same material also set in place a paternalistic

view of non- science knowledge systems with the use of rehabilitation and horticulture metaphors, as again, set in a lexicon that underscores the affective properties of concern and care.

Coloniality is in full display in the elements discussed in this chapter. As an instrument of the zero-point vantage point discussed in Chapter 3, the global policies were deployed to stipulate the conditions for epistemic inclusion and integration. In contrast to the fluidity and utility of their dimensions as discussed in Chapter 5, place-based knowledges as regarded in global policies were assessed for their appropriateness and relevance to science and the DRR framework. Through a metaphorical designation of place-based knowledges as accessories to science and DRR, the policy texts then hierarchised and museumised these perspectives by defining and delimiting the space and nature of involvement. The rhetoric of inclusion, in this sense, excluded and excised dimensions that do not fit the narratives of the soft laws' call for universal membership through culture building.

Synthesis and conclusion

Through a transversal rhetorical analysis of global DRR policies, I illustrated in this chapter how the Ancash earthquake in Peru became the epicentre for geopolitical discursive and programmatic manoeuvring. In the process, the catastrophe became a catalyst for the formation of the first UN agency charged with disaster management. I then traced the biography of global policies over three decades, from the 1990s to the present, to understand how the discourse on disasters developed over time.

The analysis showed a strong emphasis on techno-scientific approaches in the earlier versions of policies, which were then tempered towards a more socio-economic orientation in later iterations. Nonetheless, there are consistent threads of rhetorical exigencies between and across policies. These exigencies, as objectified social needs, frame disasters as disruptions, a deficit issue, and 'developing' country problems needing international cooperation. Using a deliberative genre, coupled with forensic-epideictic

self-evaluation, the authors of the global policies cemented the United Nations as the proponent and lead in DRR global governance. The audiences of policies are stakeholders identified in either local/national or regional/international realm, with ‘developing’ countries and ‘international’ community as sub-audiences of policies. In communicating their intents, the authors of the policies used *ethos*, or appeal to authority, and *pathos*, or appeal to emotions. Specifically, affect-laden words were deployed when the language of policies was directed towards countries identified as ‘developing.’

This is the backdrop upon which the authors’ policies’ regard for ‘knowledge’ was packaged. The emphasis on deficiencies in the exigencies and the forward-looking, deliberative features of the policies inspired a semantic preference for a network of metaphors centring on construction, with terms such as ‘build,’ ‘enhance,’ ‘develop,’ ‘strengthen,’ ‘reinforce’ and ‘augment.’ There are three types of knowledge identified in the policy papers. The first one was technical-scientific knowledge, which was to be consolidated and mobilised. The second type is place-based knowledges, which has to be revived. The third type is data, which has to be collected.

Scaffolded within these metaphors and rhetorical tropes is education and the deployment of ‘culture’ as an all-encompassing concept to further expand the DRR education discourse across sectors and geographies and narrow to the narratives of technocrats and development professionals. Emanating from this ‘culture,’ the knowledge that is put forward elevates techno-science onto a pedestal. A rhetorical investigation of the texts for alternatives or complements to such emphasis yielded scant, if tokenistic, references to place-based knowledges, cosmologies, and technologies in communities that are most exposed to hazards and disasters.

The insights and understandings in this chapter showed that education for DRR, as integrated with in the global rhetoric for disaster management, supplies the infrastructure for information dissemination and training, on the one hand, while also perpetuating cognitive injustice on the other. Through a grammar designed by technocrats, education for DRR helps create a common vocabulary and behavioural responses to disaster

governance. With the same grammar, education also deflects the attention from other vocabularies and knowledge systems. The preference for construction metaphors of capacity-building, knowledge-building, and culture-building insinuates the ‘from scratch’ intervention and deflects the attention from existing cultures and knowledge systems, as discussed in Chapters 2 and 5. In the next chapter, the work of multi-site policy analysis is extended by following the rhetoric of global policies for DRR as they have cascaded down to the level of domestic policymaking spaces.

CHAPTER 7

Rhetorical diffusion in domestic policy contexts

This chapter examines how the global rhetoric of DRR policies as soft laws were reflected in national policies and strategies, with emphasis on education and knowledge. The discussion in this chapter picks up from the rhetorical policy analysis from the previous chapter to illustrate how specific features of global DRR policies have influenced the forging of official education policies and international development policy texts across contexts.

National governments were identified in Chapter 6 as the primary audience of global DRR policies' rhetoric, while communities were regarded as the primary beneficiaries or targets of interventions. The chapter also examined invocations from policy texts, including the Decade Framework, the Yokohama Strategy, the Hyogo Framework, and the Sendai Framework, for countries to align their programmes to the global proposal of a uniform synergised approach to hazards, disasters, and risks management. One element that was repeatedly highlighted was the development of "a global culture," a phrase coined in the Yokohama Strategy (IDNDR, 1994, p. 8) and was to serve as the central feature of the Hyogo Framework's call "to build a culture of safety and resilience" (UNISDR, 2005, p. 9) in nations and communities. According to these exhortations, resilience culture-building, as the undergirding idea for DRR, would endorse knowledge and capacity building and DRR- specific education directives. In Chapter 7, the analysis of policy rhetoric with the notion of policy transfer was extended and employing in the process the investigative tools of vertical policy analysis (Chapter 4). Figure 19 on page 154 shows the vertical direction of the analysis from global to the national level.

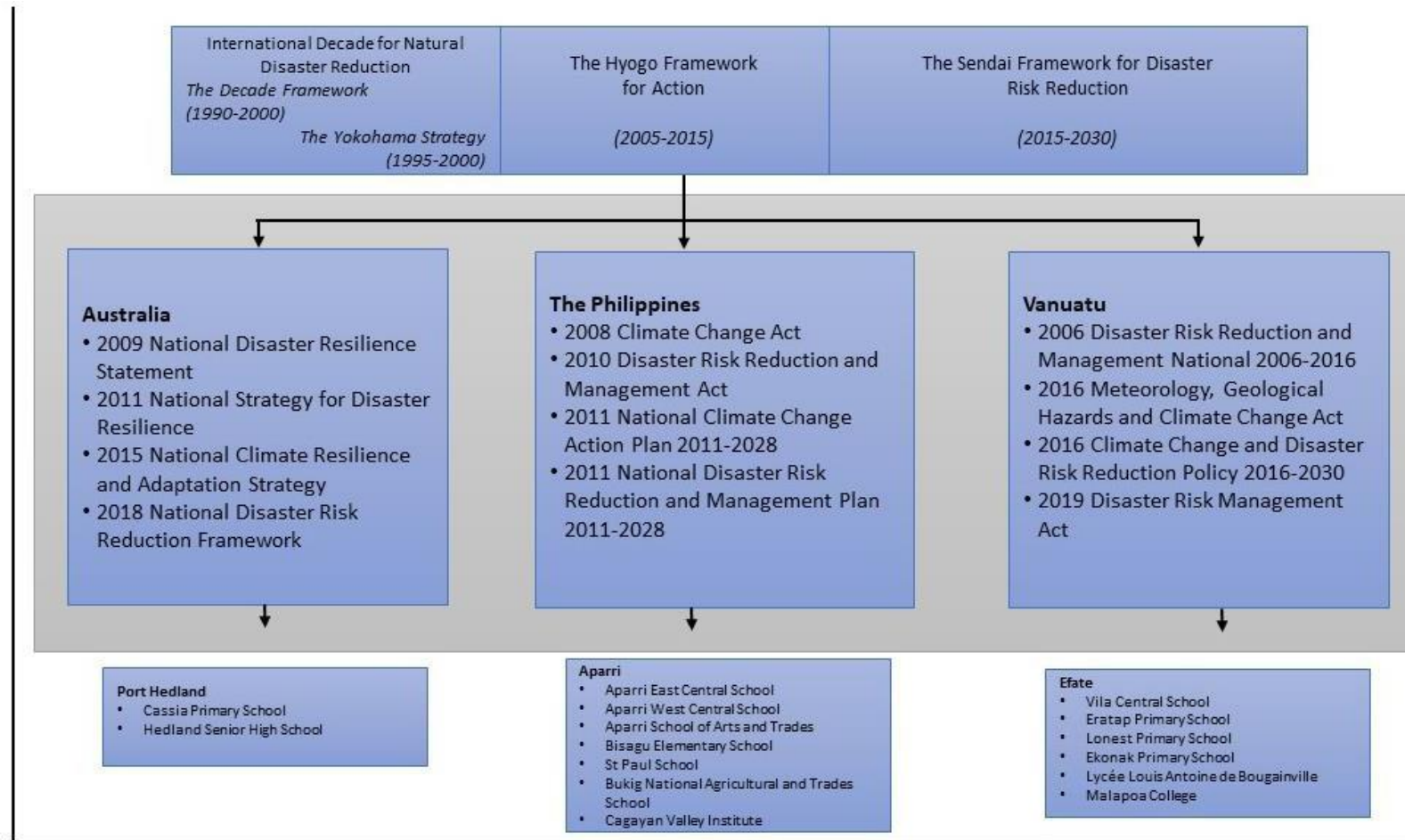
With national policies as units of analysis, I endeavoured to identify and examine the features of policies produced by the corresponding governments of the cyclone towns. These are Australia for Port Hedland, the Philippines for Aparri, and Vanuatu for Efate, respectively. The analysis entailed reading and annotating each policy document and

writing individual descriptions and section discussions for each set of texts per context. The annotations were an exercise of open coding. The emergent themes were then fused through axial coding (Saldaña, 2012). The closer scanning of the texts and codes involved systematic identification of policy features that indicated how national governments aligned their approach to the global policies. The analysis was signposted by how the documents were written to refer and follow the precepts and instructions of the Hyogo and Sendai Frameworks, including in their regard for knowledges, how each country's (non)commitment to the global policy of the UN DRIP (United Nations, 2007b) for the recognition and protection of indigenous knowledges and technologies aligned with their engagement of traditional and indigenous perspectives, and concrete plans for education, amongst other devices. I also examined how the same set of texts were instructed to align and operationalise DRR education policies and knowledge-building at subjacent levels of governance at the state, provinces, communities, and schools. I supplemented the textual analysis with interview data from governments and NGO-linked participants to understand the roles and influences different actors exert in domestic policymaking spaces. While the policy materials were all produced at the national level, the interviews included the perspectives of actors from the state, provincial, and town/municipal levels.

In the following sections, I provided a policy overview for each country vis-à-vis the timeline of global policies. Following a case-based analysis, I discussed each country's policy features first before comparatively synthesising the three locations' approach to DRR education and knowledge-building, linking the discussion back to Chapter 6's focus on rhetoric as well as Chapter 5's elucidation on place-based knowledges. Through this chapter, I provide partial answers to the first two research questions on the development of DRR policies, focusing on education and place-based knowledges, this time looking at the continuing biography of policies at the national level.

Figure 19

Vertical Case Study of Domestic Disaster Risk Reduction and Climate Change Policies



Domestic policies, legislations, strategies, and frameworks: an overview

The governments of Australia, the Philippines, and Vanuatu had in place disaster management guidelines before their conscious alignment of succeeding policies to the global DRR framework. The three countries' governments either repealed or updated their existing policies in response to the international political message of resilience building. These rebranded policies ranged in form, including legislative acts, frameworks, plans, and strategies.

Australia

Australia's policy landscape for DRR was formed three years after the promulgation of the Hyogo Framework and in line with the country's growing engagement with the issue of climate change. With a federal system of government in place, the Coalition of Australia Governments (COAG) issued policy documents to serve as the benchmark for actors at the state- and community-level policymaking spaces. The first federal communication issued by the COAG was the National Disaster Resilience Statement in 2009 (2009 Resilience Statement, henceforth) (COAG, 2009). The 2009 Resilience Statement indicated the country's bid at being at the same pace as the global drive towards resilience building. This message would be expanded in 2011 through the National Climate Strategy for Disaster Resilience (2011 Strategy, henceforth) (Commonwealth of Australia (COA), 2011). Later, and in sync with the Sendai Framework's commencement, the 2015 National Climate Resilience and Adaptation Strategy (2015 Strategy, henceforth) (COA, 2015) was released. The latest policy instrument from Australia is the National Disaster Risk Reduction Framework in 2018 (2018 Framework, henceforth) (COA, 2018), a document that illustrates the country's federal priorities for DRR until 2030.

The policy instruments described above comprise the corpus of texts that were analysed for the Australian context. The discussion also includes the perspectives of hazards, disasters, and emergency responders affiliated with key agencies with operations

in the Pilbara region of Western Australia that include Port Hedland (See Chapter 5), specifically, those who have activities for education and with schools. The list in Table 7 lists the study participants from of the Department of Fire and Emergency Services (DFES), the State Emergency Services (SES), the Department of Communities (DOC), as well as representatives from the Town of Port Hedland (TOPH) and the mining company BHP Billiton (Table 7, below).

Table 7

Interview participants from Australia

Name	Affiliation	Level
Rita	Department of Fire and Emergency Services	State
Kate	Department of Fire and Emergency Services	State
Marion	Department of Fire and Emergency Services	State
Michael	Department of Fire and Emergency Services	Regional
Julia	Department of Community Services	Regional
Preston	State Emergency Services	Regional
Samuel	Town of Port Hedland	Local
Brooke	Town of Port Hedland	Local
Cynthia	Town of Port Hedland	Local
Troy	BHP Billiton	Local

Aligning to global policies

Australia employed the concept of resilience from its first policy communications for disaster management that was released during the run of the Hyogo Framework. The 2009 Resilience Statement (COAG, 2009) and the 2011 Strategy (COA, 2011) indicated that resilience is not endorsed as a novel idea but as an acknowledgment of prevailing resilient practices in Australia even before the concept became the by-word of global policies. As stated in the 2009 Resilience Statement (COAG, 2009):

Australia has and continues to cope well with natural disasters, through well-established and cooperative emergency management arrangements, effective

capabilities, and dedicated professional and volunteer personnel. Australians are also renowned for their resilience to hardship, including the ability to innovate and adapt, a strong community spirit that supports those in need and the self-reliance to withstand and recover from disasters. (p. iii)

As employed, the concept of resilience was considered an appropriate reminder to frame the need for Australia's systems to be upgraded in response to the threats posed by climate change and as a helpful shorthand to encourage a renewed community commitment to emergency management. As the Companion booklet to the 2011 Strategy (COA, 2012) reiterated:

While the concept of resilience is not new, the endorsement of the Strategy marked a significant shift in Australian emergency management policy. This shift came on the back of several devastating disasters, as it became clear that the Australian community needed to reframe its thinking and commit to a more sustainable approach. (p. 6)

While the earlier versions of policies (e.g., 2009 Statement, 2011 Strategy) mentioned in passing some texts from the global policies, later versions, including the 2015 Strategy (COA, 2015) latched more firmly to the global call for disaster risk reduction, confirming that Australia is one of the signatories to the Hyogo Framework, and later the Sendai Framework. There was an even more overt alignment to the Sendai Framework and related global policies in the latest policy material of the 2018 Framework (COA, 2018), linking the national approach to international accords, including the Paris Agreement and Sustainable Development Goals. The texts featured direct references and naming of the United Nations Office for Disaster Risk Reduction, including its definition of disaster risk and hazards, resilience, exposure, vulnerability, and capacity.

While Australia's policy papers were time-scaled with respect to the Hyogo and Sendai Frameworks, none of the documents followed the ten or 15-year time-bounded programmes design of the United Nations. Nonetheless, the 2018 Framework (COA, 2018) indicated:

The framework establishes a 2030 vision, goals and priorities broadly aligned to the Sendai Framework and the 2030 Sustainable Development Goals and outlines foundational strategies for action to meet these across the five years from 2019 – 2023. The framework will be reviewed and updated at the end of this five-year period to ensure its relevance and accuracy across the remaining years to 2030. (p. 6)

The initiatives of the COAG were to be supported through the creation of the National Emergency Management Committee (NEMC) with representatives and experts from the Commonwealth, State, Territory, and local governments.

For the most part, the policy texts from Australia’s federal government illustrated the use of advocacy governance by acknowledging and relegating the authority in leading disaster management to state and territory governments. An excerpt from the 2011 Strategy (COA, 2011), for instance, reflects the exercise of minimal *ethos*, or influence through authority, to implement the frameworks, strategies, and statements to subjacent levels of governance:

It is expected that state, territory and local governments will use the Strategy to inform local action [emphasis added]. To succeed, it will be important that business and community leaders, as well as the not-for-profit sector, embrace this approach. We hope [emphasis added] all Australians develop a shared understanding of the critical part they play in developing their own disaster resilience and that of their communities. (p. iii)

In addition, there is no indication of active imposition of the federal plans even in the drafting of the documents. As the 2018 Framework (COA, 2018) stated, it was by ‘invitation’ that the policy drafting session was conducted:

Reducing disaster risk is critical to supporting communities and economies to be resilient when a shock occurs. Recognising this, in early 2018 the Australian Government *invited* [emphasis added] all states and territories, local government, and key private sector representatives to work together to co-design and develop

this framework. (p. 4)

Furthermore, while maintaining the national relevance of its message, the proponents of the 2018 Framework (COA, 2018) issued a caveat that “it is not exhaustive or prescriptive” (p. 6) even as it called for its holistic application across the built, social, natural, and economic sectors of the country. With a text directed towards “decision-makers within all sectors at national, state and local levels” (p. 21), the document’s purpose was to “guide” governance, as this excerpt shows: “the National Disaster Risk Reduction Framework (‘the framework’) *guides* [emphasis added] national, whole-of-society efforts to proactively reduce disaster risk to minimise the loss and suffering caused by disasters” (p. 6).

Table 8*Knowledge Categories, Australia*

Categories	Brief description	Policy documents
Local	Intrinsic to the community; local people as experts of local risks; existing community networks and structures; to inform disaster management activities, complement the work of emergency service agencies	National Strategy for Disaster Resilience (2011)
Information	Extrinsic to the community; materials provided by the government and emergency actors, including warnings, training and awareness activities, information on best practices, from websites and information-sharing technologies	National Strategy for Disaster Resilience (2011)
Indigenous, traditional	Practices for land management, including traditional burning practices, centring on the ecological management and rehabilitation of land and species	Climate Change Strategy (2015)
Science	Australia's contribution to research, climate change science, and adaptation knowledge, e.g., ice core research, climate variability	Climate Change Strategy (2015)
Data	Existing risk data, information, knowledge; 'a wide variety of knowledge practices' including Indigenous knowledge	National Disaster Risk Reduction Framework (2018)

On ‘knowledge’

The country’s emphasis on resilience underscored ‘knowledge’ as the central feature of policies such that the 2011 Strategy (COA, 2011) referred to knowledge as the underpinning concept that defines resilience. Citing the Hyogo Framework, the authors of the 2011 Strategy posited that:

The starting point for reducing disaster risk and for promoting a culture of disaster resilience lies in the knowledge of the hazards and the physical, social, economic and environmental vulnerabilities to disasters that most societies face, and of the ways in which hazards and vulnerabilities are changing in the short and long term, followed by action taken on the basis of that knowledge. (p. 8)

Table 8 in the previous page shows how Australia’s national policies represent knowledge in five ways: as local, as information, as indigenous and traditional, science, and data.

Locals as experts

Local knowledge was very much emphasised in the first policies for DRR in Australia (Table 8, Row 1). The stress on self-reliance and urging of communities to be “prepared to take responsibility for the risks they live with” (p. 10) is juxtaposed with the ideal features of a “resilient community” (p. 10) in which residents were expected to understand how to engage their knowledge of hazards to work and support responders in times of emergency. Local knowledge, in this sense, is deemed *intrinsic* in communities. The authors of the 2011 Strategy (COA, 2011) went as far as calling residents *experts*, such that “local communities are engaged and have knowledge and expertise of local risk, how a disaster resulting from that risk would affect the local community, and how potential treatments can be harnessed, to mitigate the risks” (p. 10).

The social networks in communities were also set apart as a resource for risk and emergency management, as expressed in the following excerpt from the 2011 Strategy (COA, 2011):

People work together with local leaders using their knowledge and resources to

prepare for and deal with disasters. They use personal and community strengths, and existing community networks and structures; a resilient community is enabled by strong social networks that offer support to individuals and families in a time of crisis. (p. 5)

The 2011 Strategy also pointed to the complementarity of knowledge vis-à-vis resilience, with 'local knowledge' to inform disaster management and emergency operations. The excerpt below shows this point:

People work in partnership with emergency services, their local authorities and other relevant organisations before, during and after emergencies. These relationships ensure community resilience activities are *informed by local knowledge* [emphasis added], can be undertaken safely, and complement the work of emergency service agencies. (p. 5)

The emphasis on local capacities was also echoed in the 2015 Strategy (COA, 2015) in urging decision-makers to “seek to understand and respect the knowledge and experience of those affected, and actively involve them in decision-making processes whenever possible” (p. 9).

Information as extrinsic knowledge

Knowledge is *extrinsic* when referred to as *information* (Table 8, Row 2) that must be provided to the community, as indicated in the excerpt from the 2011 Strategy (COA, 2011), below:

Increasingly, people are accessing information to make more informed judgements. Empowering individuals and communities to be more disaster resilient involves more than just providing them with information. It requires the availability and accessibility of transparent, accurate and trusted sources of information in various forms, and the provision of tools to help communities to understand and act on the material provided. (p. 10)

Information as 'extrinsic knowledge' includes warnings, compiled information

from previous events, innovation, and best practices identified. The 2011 Strategy (COA, 2011, p. 8) also emphasised, akin to the Hyogo Framework, a set of priorities for the whole country in reference to knowledge-building and dissemination. The Priority Outcomes were as follows:

- Current information is available on websites and in other forms, about disaster risk and mitigation including relevant local knowledge tailored where appropriate to different target audiences.
- Strong networks across sectors and regions share information and build skills and understanding at all levels.
- Communities are supported through appropriately targeted training and awareness activities, including those that highlight the role of volunteers to enhance local capacity to mitigate and cope with disasters.
- Vulnerable individuals have equitable access to appropriate information, training and opportunities
- Compatibility of information sharing technologies is promoted.

Indigenous knowledge for climate change adaptation

Australia's articulated stance for the recognition of the rights of Indigenous peoples was initially through a vote in opposition of the UN DRIP (See Chapter 1, p. 7) along with Canada, New Zealand, and the United States of America (United Nations, 2007a, 2021b). This decision was reversed in 2009, with Australia adopting the UN DRIP as the framework in an active recognition and protection of Aboriginal and Torres Strait Islander Australians' rights, cultures, and knowledges (Reconciliation Australia, 2017).

The accession to the UN DRIP stipulations could be located in the texts of DRR policies in Australia. For instance, the 2015 Strategy (COA, 2015) provided a platform for *Indigenous and traditional knowledge* (Table 8, Row 3) representation, emphasising their usefulness in the changing climate. The 2015 Strategy was the only document that

included an acknowledgment to “traditional owners of the country throughout Australia” (p. 2), further stating that “as this Strategy shares knowledge, teaching, learning and research practices, we also pay respect to the knowledge and traditions of this country’s traditional owners and custodians” (p. 2). In addition, said policy document stated that “Indigenous, local and traditional knowledge systems, including Indigenous peoples’ views of community and environment, are an important resource for adapting to climate change” (p. 9). The authors of the 2015 Strategy considered the management of wetlands, “drawing on Indigenous and traditional knowledge systems and practices” such as “traditional burning practices, rehabilitation and management of high-value ecological communities and management of threatened species” (p. 53).

Science as Australia’s contribution to the world

Knowledge as *science* (Table 8, Row 4) was referred to in the 2015 Strategy (COA, 2015) concerning Australia’s contribution to climate change science and adaptation knowledge nationally and internationally, including through scientific endeavours in Antarctica and the Pacific, as well as its participation in the International Panel on Climate Change (IPCC). Knowledge as science is indicated as ice-core research and related activities that are considered relevant to Australia and the wider Southern Hemisphere and Asia- Pacific regions, specifically on climate variability and change.

Knowledge, data, and integration

In a nod towards the Sendai Framework’s pronouncements, the 2018 Framework (COA, 2018) mimicked the former’s emphasis on understanding disaster risk as a priority. Specifically, this section of the framework (COA, 2018, p. 9) is almost the Sendai framework’s carbon copy (Table 8, Row 5).

PRIORITY 1: Understand disaster risk

- Improve public awareness of, and engagement on, disaster risks and impacts
- Identify and address data, information and resource gaps
- Address technical barriers to data and information sharing and availability
- Integrate plausible future scenarios into planning
- Develop cohesive disaster risk information access and communication capabilities to deliver actionable disaster risk data and information
- Support long-term and solution-driven research, innovation and knowledge practices, and disaster risk education
- Improve disclosure of disaster risk to all stakeholders

From a stance on emphasising local knowledge, the 2018 Framework has now focused its attention towards “a wealth of disaster risk data, information and knowledge [that] already exists” (p. 12) as well as “existing knowledge and technological capabilities” (p. 13). The same policy document endorsed for regard of knowledge as *data* (Table 8) to be “better analysed and integrated with future scenarios, to improve the availability of useful disaster risk information” (p. 13). These are new features of federal policies that previously afforded due emphasis to local, traditional, indigenous, and place-based knowledges. In the same way, the 2018 Framework called for the *integration* of knowledge practices to the general agenda of building “a greater variety of knowledge practices” (p. 13). In this regard, Indigenous knowledge practices are to “be better integrated in research and knowledge application” as “diverse ways of understanding and reducing disaster risk are needed to address disaster risk in all of its components” (p. 13).

Again, reminiscent of the Sendai Framework, Australia’s 2018 Framework (COA, 2018) called for all efforts to be adjusted to a national/global goal, so that “current and future policy, legislative, regulatory, cultural, knowledge, behavioural and financial settings should be adjusted to enable and support decision-makers to actively reduce risk within their area of responsibility” (p. 15).

On ‘education’

The policy materials provided sparse and vague references to the country’s direction in engaging its education system for DRR. Across the documents, there were general pronouncements about ‘educating’ citizens about risks, with the hope for the people “to act on their knowledge” (COA, 2011, p. 10). The 2009 Statement (COAG, 2009) maintained for “having clear and effective education systems so people understand what options are available and what the best course of action is in responding to a hazard as it approaches” (p. iv). Further, the 2011 Strategy (COA, 2011) early on encouraged for risk reduction knowledge to be included in education and training programs, including “enterprise training programs, professional education packages, schools and institutions of higher education” (p. 7).

Educational activities for culturally and linguistically diverse (CALD) communities as target groups were also mentioned, and the engagement of not-for-profit organisations for community engagement and education. The 2011 Strategy (COA, 2011) also claimed that “natural hazard management principles are included in tertiary and vocational training and education curricula for relevant professional and building industry sectors” (p. 12) but without explicit examples. There were also references to education and information for behaviour change with the aim towards building climate change resilience skills at tertiary education and professional development levels, lifelong education, and training in the 2015 Plan. In the same document, education is expanded from an Australia-focused activity to aid extended to Pacific Island countries and communities, including educating and raising awareness in Fiji, the Solomon Islands, Tonga, and Vanuatu. Finally, the 2018 Framework espoused for disaster risk education as “direct and indirect impacts of disasters on all sectors requires formal and informal education and community-driven engagement” (COA, 2018, p. 13).

Overall, the authors of policy documents issued general pronouncements on what education for DRR should look like at the federal, state, and local levels of governance. However, none of the policy documents provided specific steps and mandates to instruct

actors and institutions in states and territories on how these visions were to be implemented. Despite federal recognition of DRR education as a key priority in action, there is currently no formal education strategy in Australia (Gough & Towers, 2019), even as education is framed as an “urgent need at national, state, and territory levels” (n.p.). While the Australian curriculum already has provisions for DRR in subjects such as health and physical education, humanities, arts, social sciences, and science, the coverage in these subjects was not overtly aligned to the tenets of the DRR framework. In addition, schools in Australia are required to have in place emergency plans specific to the hazards in their locations, thus rendering the system structurally ready to accommodate DRR (Gough & Towers, 2019). Gough and Towers (2019) put forward the adoption of international practices for DRR to help develop the education strategy of Australia, including a child-centred approach, the Comprehensive School Safety Framework (2017), and the Worldwide Initiative for Safe Schools (2014).

Within Australia, several institutions and organisations conduct education-focused advocacies and activities, including research, professional development seminars for teachers, museum tours, teaching materials, and school visits. These groups and institutions are part of the Disaster Resilient Australia New Zealand School Education Network (DRANZSEN), consisting of representatives from education and emergency services, NGOs, universities, local government, and community groups. A member of the DRANZSEN, the Australian Institute of Disaster Resilience (AIDR), regularly schedules training for teachers in DRR within states. In these events, teachers come together and discuss initiatives for engaging their students in learning about place-specific hazards. There was no scheduled training when I was undertaking fieldwork in Western Australia, but I did participate in the event in Sydney, New South Wales, Australia. In this event, several teachers shared how they taught students about historical data and preparation practices in dealing with hazards specific to their areas, including bushfires and flooding. In a personal communication with Kathy of AIDR, she shared that the same format is used in their engagement with teachers in all states, including Western Australia and Port

Hedland.

In Western Australia, the Department of Fire and Emergency Services (DFES), through its Community Engagement School Aged Education Strategy (DFES, 2015), aligns its activities to DRR. The DFES Strategy, according to program coordinator Marion, is part of the DRANSZEN and patterned after the Comprehensive School Safety Framework. In gist, the purpose of DFES' Education Strategy is:

To reduce school-aged children's risk to fire and natural hazards by increasing their knowledge and skills in the longer term, building community resilience through generational change. It brings all DFES School Aged Education activities, including its incursions, excursions and online resources together under the one strategy. The DFES School Aged Education Strategy aims to build student and teacher understanding of risk, preparation and planning for natural disasters.

DFES SAE has collaborated with the education sector to develop this strategy and will continue to do so in order to respond to their curriculum needs. (p. 3)

Activities initiated through the Education Strategy were delivered through curriculum-linked school programs and used within the school environment. As Marion said:

We [DFES] have a strategic plan. That strategic plan aligns with the National Strategy for Disaster Resilience. So, what we are doing here in terms of school education is to focus on teacher training. *It is not a national mandate, but we recognise that the National Strategy was written for a reason* [emphasis added].

It makes sense. We want to make sure that we are aligning what we do to them.

(Marion, Youth Strategy Research and Development Coordinator, DFES)

The Education Strategy, as part of the DFES' Strategic Plan (2016-2028) confirms the state's commitment to building a resilient Western Australia through encouraging community knowledge building to "understand the concept of responsibility and become active participants in risk reduction and mitigation" (Department of Fire and Emergency Services [DFES], 2016, p. 15). Thus, following the child-centred approach to education, the core message of the Education Strategy is for "school-aged children and their families

to be better able to identify fire and natural hazard risks and understand how to stay safe in the face of natural hazards and disasters” (p. 3).

However, even as the DFES focuses on teacher training and curriculum linking, the Education Strategy was yet to reach Port Hedland and the Pilbara region during the time of my research. The Pilbara region was not considered an Area of Community Engagement Focus (ACEF); thus, there was no training for teachers in the district from the DFES. In addition, most of the Education Strategy’s focus had been on bushfire education and lacking in cyclone coverage, as this view from Marion shows:

What we don’t have is a cyclone resource that is suitable for remote Aboriginal communities. In terms of making sure that the language is different or showing the diversity within our brochures? I don’t think we’ve done that. We did have a home fire safety resource that was better targeted, written for Aboriginal communities. In terms of storms, we have this one storm brochure. In terms of our preparedness messaging, it is pretty similar. They do not necessarily target geographical and cultural diversity. It is lacking. I think we had a community engagement officer up in that region that will be better able to do that. (Marion, Youth Strategy Research and Development Coordinator, DFES)

The bushfire education program of the DFES includes information on cultural practices, trees, and vegetation endemic to place, animals and bio-diversity. This is a path that the DFES Education group aims to replicate for hydrometeorological hazards affecting the region in the future. In Port Hedland, the State Emergency Services (SES), as part of the DFES, conducts schoolchildren-specific programs familiarising students with the hazards of cyclones, including school visits and participation in town festivals. Figure 20 (p. 171), for example, shows the SES’ Mascot Stormy interacts with children during the Welcome to Port Hedland Community Expo in 2018.

Overall, Australia’s approach to disaster governance, including its stance on knowledge and education, follows the soft law regime akin to the United Nations’ global policies for DRR (See Chapter 6). While the federal policies afford space for place-based

knowledges in DRR in the earlier policies, this was to dissipate in latter plans as the country aligned its discourse more to the global rhetoric. Nonetheless, there is a good foundation for place-based knowledges and cognisance of their value and utility centring on a regard for local residents as experts and as delineated by the acknowledgment of Aboriginal knowledge akin to the bio-ecological and technological dimensions discussed in Chapter 5. At the state level, there is an emphasis on risk and loss prevention on the whole. Still, there is also an indication of a more place-specific perspective, with actors on the ground stressing the value of local capacities.

Figure 20

Stormy, the State Emergency Services (SES) Mascot



Philippines

The Philippines' policies for DRR were initially in response to climate change rather than for disaster risk reduction. With mounting global attention to climate change, Republic Act 9729 or the Climate Change Act (2009 Climate Change Act, henceforth) (Government the Philippines (GOP), 2009) was made a law in 2009. Although the law was not about hazards and disasters, it was through said policy instrument that the country first stipulated its affirmation of the country's alignment to the global goals of building resilience to climate-related disasters as per the Hyogo Framework. The 2009 Climate Change Act was reinforced a year later by the enactment of Republic Act 10121 or the Philippine Disaster Risk Reduction and Management Act (2010 DRRM Act, henceforth) (GOP, 2010). The coupling of climate change and disaster risk reduction would manifest more significantly in policy documents such as the 2011 National Climate Change Adaptation Plan (2011 Climate Change Plan, henceforth) (Climate Change Commission (CCC), 2011) and the 2011 Disaster Risk Reduction and Management Plan (2011 DRRM Plan, henceforth) (National Disaster Risk Reduction Management Council (NDRRMC), 2011).

I expanded the text-based discussion of the policy documents described above with interviews, listed in Table 9 on the next page, with key agencies and organisations officers in the Philippines' and Aparri's DRR and DRR education sectors. The participants to the research were from the national and regional offices of the Office of the Civil Defense (OCD), the key government agency for disaster management, along with the DRRM division at the Department of Education (DepEd), both at the national and provincial level. I also sought the perspective of non-government organisations that work with the DepEd on DRR, such as UNICEF, Save the Children, and the Center for Disaster Preparedness.

Table 9*Interview participants from the Philippines*

Name	Designation and affiliation	Level
Anna	Department of Education	National
Julian	Department of Education	National
Arthur	Department of Education	National
Allan	Department of Education	National
Jun	Department of Education	Provincial
Mark	Department of Education	Provincial
Leslie	Department of Education	Provincial
Naomi	Save the Children	National
Ethel	Save the Children	National
Gillian	UNICEF	National
Darlene	DRR-Net and Center for Disaster Preparedness	National
Erlinda	Office of Civil Defense	National
Ricky	Office of Civil Defense	National
Benito	Office of Civil Defense	National
Jose	Office of Civil Defense	Regional
Jake	Office of Civil Defense	Regional
Conrad	Local Government of Aparri	Local
Maricel	Local Government of Aparri	Local

Aligning to global policies

The 2010 DRRM Act (GOP, 2010) overtly stated that through the law, the Philippine government is to “adhere to and adopt the universal norms, principles and standards of humanitarian assistance and the global effort on risk reduction as concrete expression of the country’s commitment to overcome human sufferings due to recurring disasters” (p. 2). In addition, the Act also espoused an all-levels, all-agencies coordination, and synergy, including the configuration of management plans, technical approaches, and ‘soft’ technologies, including knowledge transfer and education. These

were to be mainstreamed vertically and horizontally within and across society as spelled out in the 2011 DRRM Plan (NDRRMC, 2011). Climate change as a related phenomenon was invoked repeatedly to round the argument for action against the threats presented by hazards, as elaborated on in the 2009 Climate Change Act (GOP, 2009).

The advent of DRR in the Philippines' domestic policies was advanced by several members of the civil society sector. In my interview with Darlene of the organisation Center for Disaster Preparedness (CDP) and DRR-Net, she explained that several individuals representing different organisations, including the CDP, collaborated to lobby, advise on content, and monitor the processes for the passing of the DRR bill into law. Darlene's statement was corroborated by Benito of the Office of Civil Defense. In addition to the efforts of the DRR advocates, Benito also suggested that the destruction brought about by a typhoon during the congressional deliberations has hastened the legislation process. Benito added:

Typhoon Ondoy triggered the fast-tracking of legislation of the bill to be later known as RA 10121. There were consultations left and right, and the CSO partners were especially active in the policymaking space. After Ondoy, [then President] Gloria Macapagal-Arroyo urgently signed the bill into law. There was a shift in perspective from being responsive to proactive, of coming up with a formula of what must be done before a tragedy happens. Thus, the factor of risk took centre-stage. (Benito, Office of Civil Defense)

A vital feature of the 2010 DRRM Act is the devolution of DRR governance to local governments and the mandate for the strengthening of local capacities to recognise place-specific risk patterns across the country. This approach was to be encapsulated in the Community-Based Disaster Risk Reduction and Management (CBDRRM), a process of DRR in which DRR workers are encouraged to actively engage at-risk communities in the identification, analysis, treatment, monitoring, and evaluation of disaster risks with the end goal of reducing their vulnerabilities and enhance their capacities (GOP, 2010).

The coupling of climate change and disaster risk reduction was most manifest in succeeding policy instruments such as the 2011 Climate Change Plan (CCC, 2011) and the 2011 DRRM Plan (NDRRMC, 2011). It is noted that the two documents were of the same timeframe, to run from 2011-2028, straddling the programmatic length of the Hyogo (2005- 2015) and Sendai (2015-2030) Frameworks' timeframes. The 2011 DRRM Plan also expressed the authors' orientation to the targets set by the then Millennium Development Goals and "its commitment to build resilient communities as expressed by its adoption of the Hyogo Framework for Action (HFA) in 2005" (p. 10), describing in detail what the Hyogo Framework is about and confirming the commitment of the Philippines as a signatory. The 2011 DRRM Plan also indicated how it would use the HFA Monitoring Tool to gauge its progress in accordance with the tenets of the global framework so that the National DRRM Council stated that it:

will use this [the tool] as a working format to undertake national multi stakeholder consultation processes to review progress and challenges in implementation of risk reduction and recovery actions. The template will help the national coordinating authority to discuss and record inputs from various partners in a systematic manner. (p. 39)

The 2010 DRRM Act, however, not naming any of the international documents, stated that the law "adhere[s] to and adopt[s] the universal norms" (GOP, 2010) as well as to "*incorporate internationally accepted principles* [emphasis added] of disaster risk management in the creation and implementation of national, regional and local sustainable development and poverty reduction strategies, policies, plans and budgets" (p. 2).

The laws and policies in the Philippines specified steps on how to govern climate change and DRR in the country's regions and provinces. For instance, the 2010 DRRM Act (GOP, 2010) authorised and specified the roles of national government agencies down to their sub-agencies in the regions, provinces, and local governments. In addition, the law's reach extended to the *barangay* level, explicitly stating the prescribed activities as

well as how the current framework of local governance has to be reorganised to accommodate DRR, thus:

Local Disaster Risk Reduction and Management Office (LDRRMO). – (a) There shall be established an LDRRMO in every province, city and municipality, and a Barangay Disaster Risk Reduction and Management Committee (BDRRMC) in every barangay which shall be responsible for setting the direction, development, implementation and coordination of disaster risk management programs within their territorial jurisdiction. (p. 22)

Considered as the country's road map for DRR, the 2011 DRRM Plan (NDRRMC, 2011) outlined the activities for strengthening the capacity of the national government and local government units in mainstreaming DRR and climate change. The plan highlighted the need for vertical integration of DRRM policies, structures, coordination mechanisms, and programs with continuing budget appropriation on DRR from national to local levels. The plan has three timelines: the short term, medium-term, and long term. Among the outcomes identified by the 2011 DRRM Plan (NDRRMC, 2011), some of which that relate to this section on subjacent governance, included:

- Mainstreaming and integration of DRRM and CCA into national, sectoral, regional and local development policies, plans, etc
- Training and simulation exercises
- Integration of DRRM and CCA in school curricula, textbooks, manuals
- Development of local DRRM plans
- Inventory of resources of local DRRM councils and offices
- Establishment of DRRM operations center

Table 10*Knowledge Categories, Philippines*

Categories	Brief description	Policy documents
Science	‘global knowledge’ to be localised; ‘strategic knowledge’ to be cross-checked with local circumstances; to be advanced, disseminated, made accessible; the basis for policy decisions	National Climate Change Action Plan (2011)
Local, indigenous	Autonomous adaptation practices and technologies; “signs and signals”; undocumented, unrecognised as adaptation measures	National Climate Change Action Plan (2011)
Data	Information on climate change for capacity development	National Climate Change Action Plan (2011)

On ‘knowledge’

The representation of knowledge in the Philippines policy documentation leans strongly towards construction metaphors (See Chapter 6), as knowledge is closely linked to the idea of capacity-building. Knowledge and capacities were lumped together for ‘disaster preparedness’ and seen as “developed by governments, professional response and recovery organisations, communities, and individuals to effectively anticipate respond to, and recover from, the impacts of likely, imminent or current hazard events or conditions” (GOP, 2010, p. 6). This was also related to early warning systems. The document authors advocated for a people-centred early warning system that should be informed by knowledge of the risks, including communication and local capabilities to respond to warnings. Through the 2011 Action Plan (CCC, 2011), knowledge was delineated into categories: as science, as local and indigenous, and as data. Table 10, above, shows the summary of these categories.

Science as ‘global knowledge’

In contrast to Australia’s tangential emphasis on science as the basis for its DRR and climate change domestic governance, the Philippines employed the opposite, with science at the helm (Table 10, Row 1). For instance, the 2011 Action Plan (CCC, 2011, p. 4) identified the lack of scientific information to inform action and site-sensitive adaptation as a weak point in climate governance. The same document also underscored that knowledge of climate change should be “science-based” first and foremost, with actions informed by “scientific contributions and best practices” and to be cross-checked “taking into considerations local circumstances.”

The 2011 Action Plan then rallied for the “advancement in scientific knowledge” (p. 8) both about risks and adaptation technologies, banking on “site-specific knowledge” (p. 9) “gendered and accessible knowledge products” (p. 10), as the illustrative excerpts below show:

[1] Develop and disseminate gendered and accessible knowledge products on climate change risks and impacts on the sector based on science. (p. 10)

[2] Develop gendered knowledge products and materials, and their dissemination using media, outreach and other means to target audiences by 2013. (p. 14)

In addition, identifying science as “strategic knowledge,” the 2011 Action Plan stated that in acknowledgment of the complexity of climate change, “it is important to have enough knowledge about it. Good policy decisions should rely heavily on the basic science as to the causes and impacts of climate change” (CCC, 2011, p. 33). Through using a construction metaphor, scientific knowledge, it is posited, must be “enhanced,” “increased,” “developed,” and “built,” including in developing “knowledge products on climate-smart best practices” (CCC, 2011, p. 96). In addition, by deploying the resource mobilisation metaphor, knowledge-as-products should also be transferred and organised to reach its intended beneficiaries. The authors of the 2011 Action Plan also associated science to “global knowledge” that has to be localised, as this excerpt indicates:

There is a lot of scientific information about climate change in the global level. Furthermore, some of the information needed to better understand the climate system entails cost such as purchasing the equipment and even accessing important researches. Climate change impacts vary from one place to another and so researches on the local impacts are important. Identifying financial sources that could be tapped to acquire and access data is needed and how this information could be used to come up with localized researches on the science and impacts of climate change. (p. 33)

Place-based knowledges as ‘signs and signals’

The Philippines was one of the 143 countries that adopted the UN DRIP with the delegation expressing the country’s commitment to safeguarding the rights of Indigenous cultural communities (United Nations, 2007a). Prior to the 2007 UN meeting, the Philippines had already legislated a decade prior the Indigenous Peoples’ Rights Act of 1997 (Republic Act No. 8371) (Congress of the Philippines, 1997). Section 34 of said law confirmed the state’s recognition of indigenous “sciences, technologies and cultural manifestations, including human and other genetic resources...traditional medicines and health practices... indigenous knowledge systems and practices, knowledge of the properties of fauna and flora, oral traditions, literature, designs, and visual and performing arts” (n.p), and recognises the right of Indigenous peoples to control, develop, and protect these resources.

The decree for the explicit recognition indigenous epistemologies, however, was contradicted by DRR policy proponents’ manifest ambivalence about the existence of indigenous and traditional knowledges in areas affected by disasters in the Philippines. For instance, the authors of the policy documents considered the possible existence of place-based knowledges, as this excerpt from the 2011 Action Plan (CCC, 2011) illustrates: “*there may exist* [emphasis added], however, autonomous adaptation by farmers and indigenous technologies based on local knowledge of “signs and signals” [emphasis in the

original] of climate risks that remain undocumented or are not recognized as adaptation measures” (p. 8) (Table 10, Row 2). Consistent with the rehabilitation metaphor from the previous chapter, the 2011 Action Plan maintained that local knowledge of “signs and signals” (p. 8) of climate risks must be documented and recognised.

Knowledge as data

The 2011 Action Plan stressed a need for data management and systematisation, stating that “the Philippines has yet to come up with a data management system that would centralise at least the major information on climate change” (p. 33). Emphasising the centrality of knowledge and capacity development in achieving the goals of the 2011 Action Plan, the authors stipulated the need “to invest in fundamental capacities to manage and deliver climate change related services and invest in communities to create innovative state- citizen partnerships towards effective adaptation and mitigation” (p. 34). Local capacities were highlighted such that:

Building communities’ capacities for climate adaptation also builds their ability to cope with the impacts of climate change. Where these capacities have been destroyed due to economic failure and natural disasters, the focus of capacity development is on retaining existing capacity assets and motivating a return of capacity. The basic principle during times of crises is to ‘building back better’ capacities so that communities are able to recover faster from the crises. (p. 34)

On ‘education’

The 2010 DRRM Act (GOP, 2010) stipulated a national approach to DRR education. Hazards and disaster-focused content and activities were to be integrated into the school curricula and Sangguniang Kabataan [Youth Council] programs, in addition to mandatory training for public sector employees. The excerpt below from the DRRM Act Section 14 (GOP, 2010) illustrates the multi-agency approach to disaster education in a national attempt to mainstream DRR to all levels and all channels of government service

delivery:

Integration of Disaster Risk Reduction Education into the School Curricula and Sangguniang Kabataan (SK) Program and Mandatory Training for the Public Sector Employees. – The DepED, the CHED, the Technical Education and Skills Development Authority (TESDA), in coordination with the OCD, the National Youth Commission (NYC), the DOST, the DENR, the DILG-BFP, the DOH, the DSWD and other relevant agencies, shall integrate disaster risk reduction and management education in the school curricula of secondary and tertiary level of education, including the National Service Training Program (NSTP), whether private or public, including formal and nonformal, technical vocational, indigenous learning, and out- of-school youth courses and programs. (p. 26).

As mandated by law, the national curriculum was updated to reflect the integration of DRR. The subjects Science and Social Studies would be the carrier subjects and the topic integrated to all K-12 subjects. In addition, a new course in senior high school was created as per the law. Called the Disaster Readiness and Risk Reduction course, the subject domain “focuses on the application of scientific knowledge and the solution of practical problems in a physical environment. It is designed to bridge the gap between theoretical science and daily living” (Department of Education, 2016, p. 1).

There is a cross-agency collaboration between government and non-government institutions in the Philippines for DRR education. The laws and plans were to be executed and supported by the education cluster working group, headed by the DepEd in consortium with several NGOs and in coordination with the Office of the Civil Defense’s curriculum development unit. A new section called the DRRM unit was formed in 2011 after the DRRM Act’s enactment within the DepEd. When asked about the factors that led to the formation of the DRRM unit, Julian of DepEd said:

Based on the laws and the international legal basis. The Climate Change Act and the DRRM Act vis-à-vis the Sendai Framework for DRR, the Paris Agreement, SDG number 4 and number 13. Those are the international and local policy basis for

DRR, DRRM. The office was created in 2011 through DepEd Order No. 50. The office was elevated in October 2015 together with our director. Our office is mandated to institutionalise a culture of safety at all levels, systematise protection of education investment, and ensure the continued delivery of quality education services. It also serves as the focal and coordinative unit for DRR-related activities in DepEd. (Julian, DRRM officer, Department of Education).

With the leadership of DepEd, local and international NGOs as part of the civil society sector were to contribute to the implementation of national policies and as informed by the philosophies of their institutions. From the interviews, I delineate the involvement of the civil society sector in DRR education as *upstreaming*, *downstreaming*, and *sidestreaming*.

Gillian of UNICEF Philippines used the terms ‘upstreaming’ and ‘downstreaming’ to refer to the movement of ideas and initiatives between the Philippine government and communities, with NGOs facilitating this exchange process. *Upstreaming* refers to how organisations gather information from their communities of involvement, put together a portfolio, and present these data to the national government as a basis for policy development. For instance, UNICEF Philippines uses its pilot programs to ‘upstream.’ In illustrating this process, Gillian made an example of UNICEF’s advocacy for a youth representative to sit in DRRM councils, as follows:

What UNICEF does is to conduct pilot programs. After each program, we put together a document that compiles the lessons we learned through the program. Then we scale it up through the government. After piloting, we develop a policy or resolution that supports, for example, a child-centred DRR. A good example here is a 2015 joint memorandum circular between UNICEF, the NDRRMC, and the National Youth Commission that formalized the need for a youth representative in DRRM councils at the *barangay*, municipal, provincial levels of governance. Said policy emanated from our pilot projects, our experiences on the ground, where we were able to identify good practices. We then use these to influence or advocate the

national government to enact laws or develop policies. (Gillian, DRRM Officer, UNICEF Philippines)

In addition, Gillian used *downstreaming* to illustrate the activities of NGOs to support government programs in the communities. Downstreaming is akin to Naomi's term of "mirroring the national" in Save the Children's programs to reinforce the DepEd's projects in schools. Through Naomi's co-authorship of the DRR education booklets, Save the Children provided the content and direction of how disaster-focused learning will be practised in schools. Naomi further explained:

Save the Children has global leadership as well as co-leadership status in the Philippines' Education Cluster. We have a foot in the door of DepEd. We have been supporting DepEd in policy, not just through direct implementation of the pillars [of the Comprehensive School Safety Framework] but also in helping DepEd develop policies regarding the three pillars. We were consulted with the framework that DepEd came up with, including the protocols and materials. We are also helping schools link up with the local development plans so that schools' DRRM plans are aligned or support the development plans of barangays and municipalities. Because the schools are located within the communities, so they must work with the local government units. We think that this set-up would be more strategic in reaching more children, including those not in school. So, that's how we reach everybody in the community. (Naomi, DRRM Officer, Save the Children)

When I discussed downstreaming and upstreaming to Ethel, another DRRM Officer from Save the Children, she suggested that in reality, NGOs use the *sandwich approach* by engaging on all fronts, and simultaneously so, in their work with governments and communities. Ethel added:

In my experience, it is a good thing if you have NGOs or CSOs in the local government to help local government workers interpret the highly technical text of national policies. We help them localise these policies. That's how we help the

national become mirrored in the local. We take into consideration the different local contexts. (Ethel, DRRM Officer, Save the Children Philippines)

Further, organisations and government agencies facilitate the exchange of 'best' practices and knowledge. Consistent with the idea of upstreaming and downstreaming, I designate the term *sidestreaming* to refer to how practices travel sideways between institutions on the same scale (e.g., government to government, NGO to NGO). For example, the Office of Civil Defence's head of curriculum development unit 184p ag184184s to various countries to learn about their 'best' practices for DRR. In addition, Save the Children organised a knowledge exchange trip for their Pacific Island offices to visit the Philippines.

For example, Miriam of Vanuatu's Ministry of Education and Training (next section) took part in this trip. What is stressed in these cross-organisational collaborations in education is the emphasis on readiness and risk reduction: on what to do before, during, and after a disaster. As Naomi stated:

The key messages on DRR are essentially what to do before, during, and after an emergency. That kind of messaging is not yet evident in the Philippines' curriculum. In the curriculum, at this point are "What are typhoons, what are earthquakes." DRR is now part of the K-12 curriculum, although it is not yet comprehensively integrated. (Naomi, DRR officer, Save the Children Philippines)

Overall, the Philippines' response to the global call for resilience building was to strengthen the features of national policies by enacting laws. Through the policies and their corresponding implementation plans, the government institutionalised DRR through a vertical structural configuration, with new offices and administrators at each level of governance for DRR and even within institutions such as schools. Reminiscent of the exigencies of global policies, of encouraging international organisations to focus their energies on assisting 'developing' and exposed countries, the rhetoric of affect is also evident in how NGOs are engaged in the affairs of the state. Knowledge for DRR in the Philippines is predominantly of the techno-scientific kind. The rhetoric is to 'catch-up'

with 'global' knowledge while at the same time considering that there may be "signs and signals" that must be considered. While the focus on communities were strongly endorsed by the policy texts, there was no explicit indication on how the involvement of place-based knowledges dimensions (Chapter 5) should proceed in the aim of strengthening local capacities. Climate change and DRR were contextualised external concepts, such that localising the global means adapting the global features of policies and practices with science as the knowledge upheld. This is also the 'knowledge' rhetoric that undergirds the project of disaster learning as stated in the new school curriculum.

Vanuatu

The first policy instruments that came from Vanuatu were national action plans such as the Disaster Risk Reduction and Disaster Management National Action Plan (2006 Action Plan, henceforth) (Government of the Republic of Vanuatu (GORV), 2007) and later the Climate Change and Disaster Risk Reduction Policy (2016 Policy, henceforth) (GORV, 2015b). New laws were subsequently enacted, including the 2016 Meteorology, Geological Hazards and Climate Change Act (2016 Hazards Act, henceforth) (GORV, 2015a) and the 2019 Disaster Risk Management Act (2019 DRM Act, henceforth) (GORV, 2019).

I analysed the policy documents mentioned above and supplemented the discussion with my fieldwork observation and the perspectives of representatives from institutions involved in DRR and disaster education. These institutions were the National Disaster Management Office (NDMO), the Vanuatu Meteorology and Geohazards Department (VMGD), the Ministry of Education and Training (MOET), and the Vanuatu Kaljoral Senta (VKS). In addition, representatives from non-government organisations and groups were also interviewed, including the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), Worldvision, Save the Children, Oxfam, Care International, Wan Smolbag Theatre, the Malvatumauri, and the Vanuatu Climate Action Network (VCAN). While the NGOs all identified as having a national focus, many have projects in Efate

where I conducted the fieldwork. Table 11 below is a list of interviewees from Vanuatu.

Table 11

Interview Participants from Vanuatu

Name	Designation and affiliation	Level
Miriam	Ministry of Education and Training	National
John	Ministry of Education and Training	National
Melissa	Ministry of Education and Training	National
Leisau	Save the Children	National
Sandy	Save the Children	National
Sharon	Save the Children	National
Richard Shing	Vanuatu Kaljoral Senta	National
Mark	Malvatumauri	National
Pres. Chief Seni Mao Tirsupe	Malvatumauri	National
Bernadette	Meteorology and Geohazards Department	National
Timothy	Meteorology and Geohazards Department	National
Benjamin	Meteorology and Geohazards Department	National
Melanie	Consultant	National
Moses	Oxfam	National
Grace	Oxfam, Vanuatu Humanitarian Team, Vanuatu Climate Action Network	National
Juliet	Wan Smolbag	National
Julian	Care International	National
Abraham	Care International	National
Sheryl	National Disaster Management Office	National
Chris	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)	National
Gideon	Worldvision	National

Aligning to global policies

There is a strong alignment of national policies to the Hyogo and Sendai Frameworks and deliberate national programming to be in step with global discourses and policymaking exercises in Vanuatu. Vanuatu was one of the first countries to harmonise its national strategic planning with the international frameworks for disaster management. Upon the ratification of the Hyogo Framework in 2004, the country proximately put together its 2006 Action Plan (GORV, 2007) to cover the years between 2006-2016, and mirroring the time- bound, decade-long approach of the United Nations to development planning. Upon the Action Plan's conclusion, the 2016 Policy (GORV, 2015b) was released according to the Sendai Framework's program features.

In the preface of the 2006 Action Plan (GORV, 2007), the Prime Minister of Vanuatu stated that through the document, Vanuatu was to set an example for other countries to follow, as the excerpt below illustrates:

I am proud to note that Vanuatu is the first country to systematically operationalize the global Hyogo Framework [for] Building the Resilience of Nations and Communities to Disasters and the Disaster Risk Reduction and Disaster Management Regional Framework for Action, 2005-2015. Our National Action Plan on Disaster Risk Reduction & Disaster Management 2006-2016, reflecting the core principles reflected in these frameworks becomes an example for others. (p. 4)

In addition, both the 2006 Action Plan and the 2016 Policy confirmed Vanuatu's coalition with the regional programmes of the Secretariat of the Pacific Community (SPC) and the Secretariat of the Pacific Regional Environment Programme, including the latter's Strategy for Climate and Disaster Resilient Development in the Pacific (SRDP). It is stated in 2016 Policy (GORV, 2015b) that:

The Vanuatu Climate Change and Disaster Risk Reduction Policy is aligned with these goals through its themes of climate change adaptation and disaster risk reduction, low carbon development, and response and recovery. The strategies

under this policy have been developed in light of the regional direction provided in the SRDP. This policy is also aligned with the Melanesian Spearhead Group Declaration on Environment and Climate Change 2012. (pp. 3-4)

The authors of the 2016 Policy also stated that national terminologies relating to climate change and related concepts would adopt global definitions. Specifically, the policy text delineated that “to avoid confusion surrounding the terminology for climate change and disaster risk reduction, definitions used in this policy are in line with those that have been internationally and regionally agreed upon” (p. 2).

In Port Vila, Vanuatu, where I conducted most of my fieldwork, the country headquarters of international and local organisations were a few radiuses from one another. Most of these organisations ran programs on climate change and disaster risk reduction. To a great extent, activities and advocacies pushed to the fore by the civil society sector are integrated into the fabric of Vanuatu’s governance. For instance, the process of writing up the 2006 Action Plan (GORV, 2007) was supported by different organisations, including the Pacific Disaster Risk Management Partnership Network with partners from the World Bank, the Pacific Islands Secretariat, the Pacific Regional Environmental Programme, the United Nations Development Programme, the International Strategy for Disaster Reduction, and the Pacific Islands Applied Geoscience Commission. As acknowledged in the 2006 Action Plan, the government-civil society sector engagement is an enduring set of relations in Vanuatu, as this excerpt shows (GORV, 2007):

We realise that in this effort to build a safe, secure and resilient Vanuatu, our national resources are limited and thus we need the support of our friends and support from the whole international community. We also need long-term commitment and support from our regional organisations and development partners. (p. 3)

International organisations also work collaboratively with government agencies, from outright governance to influencing the policymaking environment. For instance, the

German organisation GIZ was instrumental in creating the system and office that set the country's approach to disaster management. This excerpt from my interview with Christopher of GiZ illustrates a structure that assimilates the input of external parties:

We [GIZ] sit at the Ministry of Climate Change. We do a lot of governance, institutional support. So, we set up, for example, the National Advisory Board. In fact, we set up the Ministry of Climate Change. The National Advisory Board came out first in 2012. We set that up; the structures, the processes. And then the Ministry, we set it up in 2014. Before, climate change sat under the Ministry of Infrastructure. We pulled it out and established a separate ministry. So, whenever something happens, a major event or activity, GiZ is always there to support. And that's what I'm doing this weekend. (Chris, program director, GIZ)

On 'knowledge'

Of the three case studies, Vanuatu presents a unique case in which the label 'knowledge' was most used to refer to 'traditional' knowledge.' Through the 2006 Action Plan, Vanuatu affirmed the value of traditional knowledge in documented resilience practices in the islands to recurrent hazards such as cyclones and earthquakes. The authors of the Action Plan also disapproved of the erosion of traditional knowledge and champion for their preservation (GORV, 2007). Table 12 on the next page indicates the knowledge dimensions from the DRR and climate change policies of Vanuatu.

Emphasis on traditional knowledge

Vanuatu was one of ten UN member states in the Pacific, all with indigenous majorities, that were absent in the voting and endorsement of the UN DRIP in 2007 (United Nations, 2007a). While there had been efforts from Pacific civil society organisations to lobby national governments for the adoption and application of UN DRIP (Pacific Islands Association of NGOs, n.d.), there had been no immediate indication for Vanuatu to create instruments in alignment to the global policy.

Table 12*Knowledge Categories, Vanuatu*

Categories	Brief description	Policy documents
Traditional	Knowledge and methods of past histories, coping systems e.g., observation of weather indicators on temperature and rainfall variability, cyclones, geological hazards To be responded to and respected; to be documented, built on, its value to be retained, enhanced To be integrated with DRR technical knowledge and science.	Disaster Risk Reduction and Disaster Management National Action Plan (2006-2016) Disaster Risk Management Act of 2019 Meteorology, Geological Hazards and Climate Change Act of 2016
Science/scientific and technical information	To be combined with traditional knowledge Temporal and geographic information	Disaster Risk Reduction and Disaster Management National Action Plan (2006-2016) Disaster Risk Management Act of 2019 Meteorology, Geological Hazards and Climate Change Act of 2016

Nonetheless, the country's DRR policies showed strong indication for the deliberate involvement of indigenous and traditional knowledge in the management of hazards and disasters. The 2019 DRRM Act reiterated the need for a stronger emphasis for indigenous and traditional knowledge systems to be responded to and respected and for practices and approaches to be sensitive towards (GORV, 2019) (Table 12, Row 1). The law upholds foremost the features and value of traditional knowledge, to be retained and enhanced, even as it becomes combined with scientific information, as the excerpts below from the 2006 Plan (GORV, 2007) indicate:

[1] *Encouraging the relevance and value of traditional knowledge* [emphasis added] and its integration with scientific information in the design of risk

reduction and risk management strategies and activities at all levels. (p. 15)

- [2] Empowering communities to address their risks through the development of capacity and knowledge (traditional and scientific) and through the provision of support for local involvement in developing and implementing risk reduction and disaster management strategies. (p. 15)

The prominence of traditional knowledge in Vanuatu's policies and laws attest to the enduring socio-cultural and political emphasis of government leaders past and present to preserve the country's traditional heritage, languages, and *kastom*. At the centre of Port Vila, the Vanuatu Kaljoral Senta (VKS) building is a prominent structure that exhibits the significance of the institution to the social constitution of Vanuatu. In a conversation with Richard Shing, the director of VKS, he confirmed that the institution is tasked "to protect, preserve and promote Vanuatu's rich and diverse cultural heritage." The VKS's activities intersect and are complemented by the activities of agencies and organisations to integrate *kastom* and traditional knowledge in their programs. For instance, the Vanuatu Meteorology and Geohazards Department (VMGD), as guided by the Meteorology, Geological Hazards and Climate Change Act of 2016 (GORV, 2015a), aspires:

- [1] to promote the effective use of *meteorological information* [emphasis added] and arrange for programs of public awareness and education. (p. 16)
- [2] to promote the *understanding and recognition of traditional practices and knowledge* [emphasis added] related to weather and climate through the observation of weather indicators occurring in nature and by other means. (p. 17)

In practice, the VMGD worked with the cultural workers of the VKS and Australia's Bureau of Meteorology to establish a unit within the department for documenting and engaging traditional knowledge in weather forecasting and practices of resilience. The process of integration, as Bernadette from VMGD explained, was brought about by the active use of traditional knowledge in the islands of Vanuatu:

[Science-based] forecasting is not always embraced or received well by the communities. At times, the forecasts do not even reach the communities. Because of that, we started to look into ways for how we can get to the last mile, to the last person in the community. One of the avenues that we sought out was through traditional knowledge. We realised that many times, when we go out with science, talk to people about what's likely to happen in terms of rainfall for the next three months, they would come up with their traditional knowledge and challenge the science. They always challenge the science. So, the department decided to take a different approach. Instead of challenging traditional knowledge, why not we go and partner with the communities and find out what's available. What are the indicators that they already have? (Bernadette, VMGD officer)

The traditional weather forecasting project of the VMGD served two purposes: to communicate with communities and to preserve traditional knowledge, as Bernadette added:

Another thing that we also noticed is that a lot of this traditional knowledge is slowly dying out. A lot of people are moving away from their communities, their villages, and moving into urban centres. In their movement, they're slowly losing traditional practices, and with their traditional knowledge as well. So, not only are we trying to communicate with the communities through traditional knowledge, but we're also creating a database that facilitates the preservation of traditional knowledge. When we collect the knowledge, we also collect the indigenous languages, the specific terms that they use in the village. (Bernadette, VMGD officer)

Vanuatu's latest policy instrument, the 2016 Policy (GORV, 2015b, p. 14), built on and further reiterated the emphasis on traditional knowledge, as the excerpt below shows:

People in Vanuatu have long-held traditional practices to deal with temperature and rainfall variability, cyclones and geological hazards. These have started to be systematically documented and incorporated into planning processes, and further

work is urgently required. Stakeholders at provincial and community levels place high importance on respecting, recording and sharing traditional knowledge, including traditional early warning and coping mechanisms.

Build on and share existing traditional knowledge and expand its use by:

- collecting, recording and incorporating traditional knowledge into planning, while ensuring appropriate cultural protocols are respected;
- making traditional knowledge accessible to decision-makers, while considering intellectual property rights, through databases and training;
- including traditional knowledge in formal and informal school curricula; and
- building on existing traditional knowledge strategies already captured on the NAB portal and by the Vanuatu Cultural Centre.

Scientific and technical knowledge

The emphasis on science and technical knowledge in Vanuatu centres on acknowledging their currency and inherent usefulness, but almost always about the need for deliberate integration with traditional knowledge, as discussed above (Table 12, Row 2). Technical knowledge such as geospatial data and meteorological information must be context- informed, as shown by the excerpts from the 2006 Action Plan (GORV, 2007), below:

- [1] For DRR&DM, a combination of traditional and scientific knowledge-based strategies should be given priority. Traditional knowledge about disaster reduction and coping systems in times of disaster need to be documented and built on, through community-based disaster risk management programmes and awareness raising. Such traditional knowledge and methods needs to be integrated with the disaster risk management methods based on more technical knowledge based on scientific, economic and social science understanding. (p. 9)

[2] For effective DRR&DM, the availability, communication and understanding of context-specific robust information about hazards and vulnerabilities by communities at risk is critical. Vanuatu regularly monitors and communicates some hazards, such as meteorological hazards, and such temporal and geographic information are located with different departments. Vanuatu also has a wealth of traditional knowledge about disaster risk reduction and coping mechanisms in times of disasters, which needs to be combined with technical knowledge, and appropriately managed to support communities at risk in their DRR&DM efforts. (p. 10)

On ‘education’

The 2016 Meteorology Act (2016) (GORV, 2015a) emphasised the need for building awareness and education as well as “to support the development of appropriate educational curriculum to cover topics associated with geological hazards, climate change” (GORV, 2015a, p. 21). More concretely, the 2016 Policy (2016) (GORV, 2015b) highlighted the need for awareness and education “to be carried out at all levels of society with appropriate contextual adjustments in content, to meet the specific requirements of target groups” (p. 24). In addition, the authors of the policy urged “government, donors and international development bodies” (p. 35) to invest in projects that address climate change and disaster risks, including in education. This call to action delineated the development of “advocacy and educational programmes around the value of ecosystem-based adaptation” (p. 20). Most importantly, the policy indicated the incorporation of “lessons learned into school curricula and informal education programmes” (p. 15) and “incorporating an integrated curriculum approach to formal and non-formal education programmes” (p. 18).

The policy also reiterated that low education levels cause vulnerability, so that aid and “standard relief packages” (p. 23) should include education, along with food, shelter, health, and water as key areas of focus. There was not much reference of education in the

2019 DRM Act (GORV, 2019), except in “support of a whole-of-society approach to disaster risk management through education awareness, capacity building and training of elected officials...” (p. 7).

In line with these global and national commitments, the education system of Vanuatu was fitted to include DRR in the formal education curriculum. Similar to the Philippines, disaster education in Vanuatu developed as a joint project of the Ministry of Education and Training (MOET) with several aid agencies and international NGOs. In 2011, at a time “when climate change was the big buzzword” (Melissa, curriculum coordinator), the post of national Education in Emergency (EiE) officer was created with Miriam as the appointee. As the EiE officer, Miriam was to inform and help schools interpret the Ministry’s approach to DRRM and coordinate activities for relief and reconstruction. The position was funded first by Save the Children and then by UNICEF thereafter. As the funder of the initiative, Save the Children in Vanuatu also influences the country’s approach to disaster education to be oriented towards the organisation’s endorsed Comprehensive School Safety Framework. As Leisau said:

Having Miriam in the Ministry of Education is really to strengthen their [the Ministry’s] ability. It is a large first step in implementing the Comprehensive School Safety Framework and all of the other projects across the different pillars [of the Framework]. It, of course, depends on what the needs and priorities are. (Leisau, program officer, Save the Children)

For the curriculum component of DRR education, the GiZ, along with Australia’s Department of Foreign Affairs and Trade (DFAT, formerly AusAid), the UNESCO, the Secretariat for Pacific Community, and the Curriculum Unit of the Ministry of Education collaborated to create the content of a revised curriculum, produce materials, and train teachers in Vanuatu. The curriculum was under review on my first meeting with the Ministry of Education’s curriculum coordinators and was finished and ready for implementation during my second visit. The 2015 curriculum review included integrating climate change and DRR in the basic education program as a cross-cutting concept in all

subjects. The coverage was to be expansive from Year 1 to 13 and specifically highlighted in Science, Social Science, Agriculture, and Civics. The Ministry, along with its partners, trained zone curriculum advisers and secondary school teachers from the northern to the southern provinces to disseminate these changes.

The focus of disaster education in Vanuatu, according to John, is to teach students “what to do before, during, and after” a disaster. With climate change as part of the equation, Melissa also added that students are taught about “mitigation and adaptation to climate change.” However, much more emphasis is afforded to adaptation considering the projected adverse effects of global warming on the Pacific islands. Along with the domain-specific content, the emphasis on traditional knowledge was also highlighted, as indicated in an excerpt from the interview with Melissa, below:

We have what we call traditional knowledge. There are some indicators in the syllabus where we ask people in the community, leaders, elders to come into the classroom and talk or explain what they do in the traditional ways. We have to pass on traditional knowledge to the kids. It is also captured in the curriculum. We have, for instance, the preservation of food. We have different techniques in the northern province on food preservation in times of disaster. In the southern province, we have what we call the banana hole. They dig a hole, put the banana leaves in there, and store the excess bananas harvested. They cover it up, so they know they have a reserve in there in times of disaster. We make sure that the traditional knowledges are also taught in the classroom. Of course, we will not write all the traditional knowledge from the northern to the southern islands. So, we let the teachers be more creative, to be able to identify key persons in the community, bring the person in the classroom to explain all the traditional knowledge to the kids. (Melissa, curriculum coordinator, Ministry of Education and Training)

The Ministry also consults and works with other agencies to comment on resources developed. These agencies include the Meteorology Department, the Ministry of Climate

Change, the GiZ, and the Education Cluster Working Group members of Vanuatu's National Advisory Board for DRR and climate change. Like the Philippines, the education cluster is composed of the Ministry of Education and international NGOs such as Save the Children, Worldvision, Care International, and the Red Cross. Together with the Ministry, the group conducts DRR activities, develops posters, conducts training in schools, and assists schools in coming up with School Safety Plans. The role of the UN and international organisations was most manifest in Vanuatu. As Miriam and John stated:

Miriam: We're working more with UNICEF. UNICEF is funding many DRR activities and capacity building of our education officers for the national and provincial level, and we do have some activities with UNDP. They had a project for us to implement or to develop a tsunami plan for five schools.

John: UNESCO also for the development of module six of Conflict and Disaster Risk Reduction.

Of the three countries as case studies, Vanuatu was most anchored and in-step with global policies' programmatic features and timescales. The country's action plans and policies were further bolstered by its legislation, thus lending authority and transforming the soft law regime of global policies into robust domestic policies. Like the Philippines' case, DRR, through the national policies, was institutionally integrated into the vertical structure of governance. At the same time, Vanuatu also links back to its traditional heritage. The strong emphasis of the state and society to value and practice traditional knowledge boosts a deliberate act to stipulate this message in national policies and operationalise it to programs and projects of government, including in education.

Locating coloniality

The rhetoric of governance as coloniality is manifest in the way that the three countries aligned their policies in one way or another to the UN, as the ZPE, encourages. However, it was in the Philippines and Vanuatu where the rhetoric of global policies was translated into programmatic instruments of governance. While Raju (2018) stated that

the regulatory process of the Hyogo Framework was considered weak or non-existent, the preceding discussions showed that the soft laws of global policies would gain more robust features as they were adopted by actors and institutions in the domestic policymaking spaces of the Philippines and Vanuatu. The persuasive features of policies are further bolstered by the involvement of international non-government organisations in influencing the policymaking landscape and spaces of implementation in the national and local contexts. The non-binding and ambiguous targets of the framework (Gaillard and Mercer, 2012; Wanner, 2021) were strengthened by creating a governance skeleton that designates a DRR office and officers at every level of government. The rhetorical positioning of ‘developing’ countries as the recipients of aid, and to where the affect dimensions of concern and care are directed, thus was realised in the context of the Philippines and Vanuatu. In contrast, the soft laws of global policies further weakened in the case of Australia.

There were disconnections with the countries’ (non)commitment with the UN DRIP as the foremost global framework for protecting indigenous rights and knowledges. Despite the Philippines’ strong policy alignment with the stipulations of the UN DRIP, the country’s DRR policies elevated ‘science’ as a global knowledge and relegated local epistemologies to the category of ‘signs and signals.’ Australia, the reluctant endorser of the global policy, initially looked at its local knowledge as its strength for resilience but later subsumed all knowledge types as data. Finally, Vanuatu as the non-adopter of the UN DRIP insists on equal regard for ‘modern’ or European science and its traditional knowledge system. Coloniality is thus strongest in manifestation in the Philippines, with its overt regard of ‘science’ as superior knowledge and in its failure to relate its rhetoric of indigenous and traditional knowledge recognition and protection, as stipulated in its legislative instruments for DRR and Indigenous peoples’ rights.

The endorsement of a culture of resilience translated to a techno-managerial perspective of managing hazards and disasters with the DRR framework as the reference for the framing of policies, the focus on resilience, the programmatic alignment of

strategies, in adopting the same vocabulary, as well as a network of relations within countries. As the targets of intervention, the policies of the Philippines and Vanuatu, along with the actors involved, showed that by way of education, the culture of resilience paradigm would be implemented more directly in the schools, as opposed to the ‘advocating’ policy discourse and rhetoric of Australia’s strategies and plans.

Cross-case analysis and conclusion

Consonant with the vertical case study analysis, I showed in this chapter how global policies cascaded to domestic spaces of policymaking in the way Australia, the Philippines, and Vanuatu coordinated their approaches to the discourse, rhetoric, and programmatic directions of the Hyogo and Sendai Frameworks. All three national governments instigated policy reforms as prompted by the Hyogo Framework and updated these same policy materials upon the ratification of the Sendai Framework.

A horizontal case study analysis demonstrate that the influence of global rhetoric is modulated by national governments’ social, cultural, and political priorities. The national governments exercised different degrees of observance of the tenets of the international policies. Of the three, Vanuatu appeared to be most upfront and outright in its plans and frameworks to be patterned after global norms. The country, for instance, is in step with the 10- and 15-year programmatic scheduling of the United Nations. While Australia was initially introspective of its policy directions, its latest policy instrument is manifestly patterned after the Sendai Framework, signalling its growing commitment to comply and be in step with global norms. The Philippines followed the legislative route early by creating laws that specifically stated the roles, rules, and directions to be taken by government bodies and their sub-agencies at domestic levels of governance. The influence of global rhetoric also reflects on how ‘knowledge’ is regarded. We recall from the rhetorical policy analysis in Chapter 6 and how knowledge is compartmentalised as ‘technoscience,’ ‘non-science,’ and ‘data’ with the corresponding metaphors derived from engaging the texts. In a similar fashion, the Philippine policy texts mirrored these

knowledge categories with great emphasis that 'science' as 'global knowledge' should inform the policy directions and activities of the government.

Conversely, the government of Vanuatu insisted on local, traditional, and indigenous knowledge as the basis for its approach to DRR governance. While science and non-traditional knowledge are acknowledged, these are viewed as extrinsic knowledge and are meant to support only what already exists within Vanuatu. Similarly, Australia's earlier policy materials also emphasised the centrality of local knowledge, calling local people experts, and acknowledging the wealth of traditional and indigenous knowledge that could be useful for DRR management. This appears de-emphasised, as later policies became more overtly aligned to global policies and focused on technoscientific knowledge.

In all three places, knowledge-as-data is an emerging category, referring to knowledge that is yet to be known, an aggregate of information pooled and subjected to analysis, or data management. For these themes, pronouncements, and mandates to become manifest in education is dependent on many factors. For instance, despite its aim for national implementation, the federal policies of Australia were to serve as a 'guide' only to sub-jacent levels of governance. The authors also issued a caveat that the policies are not prescriptive or exhaustive. The interviews showed that state governments command authority at regional and local levels of governance. Consequently, there are neither definite policy pronouncements as to how federal Australia aims to pursue education for DRR nor how or what type or dimension of knowledge the government would emphasise in their education system. The Philippines' laws and framework, in contrast, stated very specifically how education for DRR should be mainstreamed and who will be in charge.

Similarly, Vanuatu provided direction for curricular integration and highlighted the importance of cross-institutional collaboration for DRR education. The role of civil society actors is of significant interest here. In both the Philippines and Vanuatu, local and international NGOs were directly involved in creating policies and in the governance of DRR. In the next chapter, I will show how these policy modulations at the national level

became manifest in the primary and secondary schools in cyclone towns. By reverting the focus to the cyclone towns, I link the vertical analyses of global (Chapter 6) and national policies (this chapter) to the dimensions of place-based knowledges (Chapter 5) and interrogate how epistemic inclusion and integration were practiced in knowledge-building as expressed in school-based education.

I LOVE CYCLONES

Cyclones, for some people are dreaded. But for me I love them. The start of a cyclone it rains. You can all so see when it is coming by the sea. It turns rough. The sky turns pink. The rain pours while we put up our shutters beating down hard.

Inside however Mum is filling up every sink or bath, because the water turns off when a cyclone is on. She cooks the tea because electricity is turned off. Mum before the cyclone has bought lots of food. Dad has taken down the gas stove ready for tea. Suddenly there's a click the air conditioner turns off. Rooms are dark from the shutters blocking the light. We eat tea in the candlelight. We also go early to bed because there is nothing to do.

The rain beats down. The wind bashes against the house. We then fall asleep while the rain beat down. In the morning the cyclone has passed. We drive around town to see to damage. The cool breeze blows and there is a feeling of dampness. But after a cyclone it becomes very hot again, about 40°, that's why I love cyclones.

Susan Watts Cooke Point
(Children of the Pilbara, 1981)

CHAPTER 8

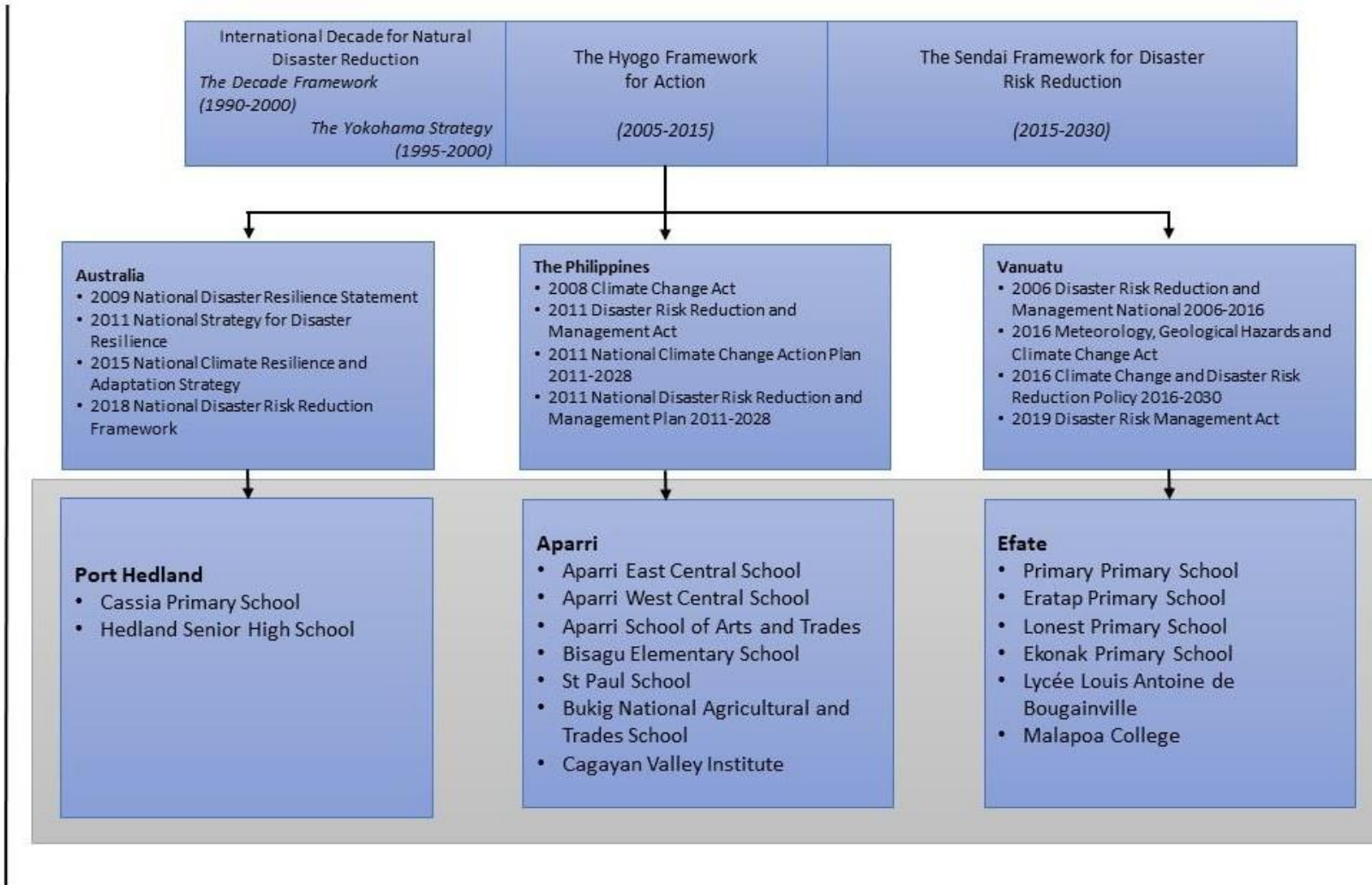
Disaster education in practice

In this chapter, I revert the analytical lens to the cyclone towns, specifically to schools within the towns, to understand the interplay of policies and practices as well as rhetoric and action for disaster education. The data for this chapter were from interviews with teachers, education department personnel with duties relating to disaster and education, NGO workers, and local government officials from the multiple sites.

The previous Chapters 6 and 7 denoted communities as the focus for resilience-building programmes. I referred to these communities as ‘cyclone towns’ in Chapter 5, as the study endeavoured to understand the different dimensions of place-specific knowledges about cyclones and related hydrometeorological hazards. In the following sections, three cases are presented to illustrate how DRR as a framework resonated and dissipated in the schools in the cyclone towns. The analytical emphasis for Chapter 8 follows vertical- horizontal dimensions to comparative inquiry (See Chapter 4, Methodology). In Figure 21 on the next page, the shaded portion of the diagram (bottom blocks) denotes the schools in the cyclone towns where I interviewed teachers. First, through the vertical view, I traced the movement of policies from the global to national to local levels of policymaking. Second, through the horizontal view I compared how education practitioners and local actors in cyclone towns related to these policy pronouncements. Considering how national policies contained actors’ interpretations and appropriations of global DRR policies, I examined this vertical and layered attenuation more fully in the context of education in the cyclone towns. Relatedly, the research endeavoured to find out whether Vanuatu’s urgency, both in aligning to the international policies and in arguing the case for traditional knowledges to become active ingredients to DRR governance, became manifest at the school-level of implementation in Efate. I was also keen to know whether Australia’s ‘advocating’ governance influenced Port Hedland schools’ practices. I was equally interested to understand how the Philippines’ legislative approach affected DRR programmes in Aparri schools.

Figure 21

Vertical-horizontal Analysis of DRR Practices in Schools



Aparri's DRRM projects

In July 2018, what was to be the Philippines' DRR month, I joined a Water Search and Rescue (WASAR) Training seminar in Aparri town. Thirty-six senior high school students, all billeted in a beachside resort-hotel, were to participate in the WASAR training, to run for three days. During the day, the students were out at sea or by the seashore, learning about basic lifesaving techniques, including first aid, swimming lessons, emergency simulations, and operating rescue water vessels. The training was facilitated by the Philippine Coast Guard cadets and officers. After dinner, the students attended lectures from the Municipal Disaster Management Office (MDMO) and Bureau of Fire Protection (BFP).

While the 13th of October was designated as the global day of observance of DRR (United Nations, 2021a), the Philippines opted to make July its National Disaster Consciousness Month because "July is a typhoon month," according to Rogelio, a curriculum coordinator with the Cagayan province's Department of Education division. Rogelio added that "We are often visited by calamities come July. That's when a lot of typhoons pass by. So, in DepEd, July signals to us that we have to remind and ready our students about possible disasters."

When asked about DRR programs in Aparri, Harold, the local DRRM officer, explained:

I direct, supervise, and lead the various activities and programs as stated in the Disaster Risk Reduction and Management Act of 2010 and the assignments given to us by the mayor as the local chief executive and chair of DRR. DRRM programs in Aparri were initiated by the Honorable Ismael Tumaru, our immediate past mayor, in 2010. The basis for the initiative was the law. The decision of the local government was based on what is instructed by the national government. (Harold, Local DRRM Officer, Aparri)

The local government of Aparri had also been working with the World Food Programme (WFP). As shared by Harold, the idea for WASAR was inspired by the projects

of the WFP in Cagayan Province. The WFP had been assisting several coastal towns in the province, including Aparri, in preparing their DRRM strategies, evacuation plans, and early warning systems. Harold further added:

The World Food Programme team floated the idea to support activities and programmes for disaster preparedness, response and climate change mitigation. One of those activities that struck our good mayor was the capacitating of rescue personnel. The mayor then decided to create a local rescue group with representatives from the local government agencies and from the *barangays*. The group was called Salaknib Dagiti Tattao Rescue 42. *Salaknib dagiti tattao* means shield of the people, protectors of the people. The number 42 refers to the forty-two barangays of Aparri. They were trained in basic life support, first aide, swimming lessons, and water search and rescue. We have been training batches of local rescuers since 2011. (Harold, Local DRRM Officer, Aparri)

The WASAR training I observed was called the *Salaknib Dagiti Tattao Junior Rescue 42*, an offshoot project of the local government's emphasis for training citizens as rescue workers. With the students and trainers in the WASAR training seminar were teachers and nurses from the six participating schools. I later learned that they were the assigned School DRRM Officers, and they were to become my first group of interviewees for the study. Table 13 (next page) lists the teacher participants in the study, along with local and provincial DRRM officers and education personnel.

Table 13*Aparri study participants*

Name	Level
Zenaida	Elementary
Edwin	Elementary
Glenario	Elementary
Glaiza	Elementary
Marlita	Elementary
Mylene	Elementary
Gina	Elementary
Thelma	Elementary
Darwin	High School
Melinda	High School
Jessica	High School
Shally	High School
Jose	High School
Roberto	High School
Arturo	High School
Melvin	High School
Arlyn	High School
Ryan	High School
Olivia	High School
Luke	High School
Hector	Division Office
Rogelio	Division Office
Ronald	Division Office
Harold	Aparri DRRM Office

The emergence of DRR education

DRR education in Aparri was adopted enthusiastically on two fronts: the administrative cum coordinative and the curricular. On one end, the national policy's overt stipulation for a DRRM Unit to be established at all levels of government was the

reason for the formation of the DRRM Unit at the Department of Education's (DepEd) Central Office (See Chapter 7, page 176). A similar unit was created at the provincial unit of DepEd in Cagayan province. At the provincial office of the DepEd, Hector was the lead DRRM Coordinator. The position held by Hector was then mirrored at the school level by school DRRM officers (SDRRMOs). The SDRRMOs liaised with Hector and their counterparts in the local government, including Harold, the municipal DRRM officer, and the *barangay* DRRM councils. The SDRRMOs were the point persons in the WASAR seminar earlier described. On the other end, the curricular approach to DRR also followed the national mandate for a new course on DRRM in high school and the integration of DRR in every domain area. The DepEd Cagayan and its affiliates further enhanced the program by creating a Cagayan-centric module of DRR education. These two dimensions of DRR education often overlap. For example, some of the SDRRMOs were tapped to be the authors of the DRR module.

The schools' DRRM officers

The local DRR messaging was reinforced by roles designated officially to DRRM officers. From the provincial council down to the village councils, official roles were assigned, such as the provincial, local, and *barangay* DRRM officers (DRRMO). In the *barangays*, DRR materials were posted on bulletin boards and in areas for communal gatherings. Figure 22 (next page) are photographs I took of DRR materials displayed in Bisagu *barangay's* community hall.

The WASAR training earlier described was one of the MDMO's key projects. As lifesaving became the focal message for DRR in the town, lifejackets, reflectors, and medicine kits were provided to schools. There were also inter-school contests such as drills or evacuation simulation activities, poster drawing, slogan-making, and jingle compositions, all on the theme of DRR. For example, Figure 23 (page 210) is a photograph of a school displaying their students' achievement in various contests for the 2017 National Disaster Resilience Month.

Figure 22

DRRM Materials in Bisagu Barangay

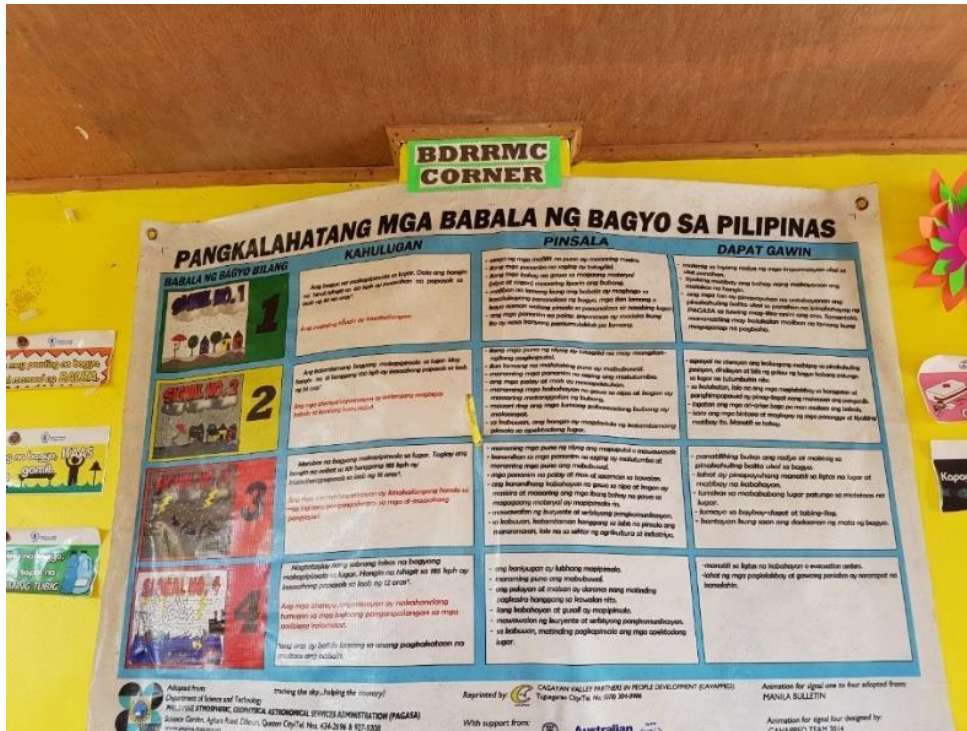


Figure 23

A DRR Contest Results Billboard in an Aparri School



Perhaps the most outright manifestation of the DRR framework in operation in Aparri's education system was the designation of teachers and school nurses as schools' DRRM officers (SDRRMO). With the post created early in 2016, the SDRRMOs interviewed for this study claimed to be the pioneers in their schools and were the first to engage with the local government and the DepEd's directions for DRR observance. Each school approached the task differently. One school created a group of three teachers, each for a specific type of hazard. Thus, in Zenaida's school, she was designated as the typhoon coordinator. Edwin was assigned for fire and Glenario, earthquakes. Others did so per subject area, while some schools appointed one person to oversee all DRR-related activities.

The SDRRMOs were also the focal point-persons for any DRR-related initiatives that the curriculum may not cover. The evacuation of residents was a key theme that emerged time and again during the interviews. For instance, the officers highlighted that their primary roles were to ensure security and to prevent the defacing of school facilities and materials. The officers formed teacher and student committees to check on facilities before and after a cyclone, especially when the school was used for evacuation purposes. Three of the high school teachers interviewed, for instance, reported having spent days in school during Typhoon Lawin to attend to the needs of evacuees. The teachers had to ensure that the school facilities and grounds were undamaged and clean after the last evacuee left. As Melvin narrated:

Because the school served as the evacuation centre, we had to stay here. We were sleepless, helping people coming from Sanja and Bisagu. There is an evacuation centre for those seeking shelter in Caaggamman, but it was not enough to accommodate all evacuees. So, despite the typhoon, we were roaming around, monitoring the arrival and settling of people. (Melvin, school DRRM Officer, Aparri)

Evacuation also figured as requisite for the appointment of SDRRMOs such that several teachers claimed to have been assigned the role because of their proximity to the schools. For example, Zenaida and Roberto, who lived close to their reporting schools, were entrusted with keys to their campuses and school buildings with the instruction from their principals to assist community members should the need to accommodate them arises. At one point when the community was threatened, Zenaida said that she took the initiative to call on her neighbours and offer the school grounds as a place of refuge. As Zenaida explained:

Ay, in our place, I would coax my neighbours. "Let's go to East Central [School]] now! Let's go to Central; we will be safer there than in our houses. Go, let's go! I have the keys. Let's use the back door! (Zenaida, school DRRM Officer, Aparri)

In this scenario, one can see that the SDRRMO extends the role of the teacher as a

rescue and social worker. As Zenaida added:

No matter how strong the typhoon is, we are here to help people. When they come here, we have to give them the keys and help them inside. Then after that, we have to provide them with food because some do not have food. We provide them with medicine. (Zenaida, school DRRM Officer, Aparri)

To this statement, Glenario further explained that:

It's similar to when you invite your neighbour to take shelter in your house. You share what you have with them—noodles, rice, whatever you have. You will use the same stove, cook meals together. It's a time to help, to share. (Glenario, school DRRM officer, Aparri)

While the teachers had assumed the role of a social worker even before their DRR assignments in previous evacuation incidents, their designation only affirmed and formalised the practice of opening education facilities to the community. As Glenario stated above, this practice expresses how families also open their houses to neighbors in distress during extreme weather events. Whereas families open their doors, this time, the school is extended to the community. The school, then, is considered an extension of the home.

Overall, the SDRRMOs as administrators and coordinators are the faces of school based DRR in Aparri. They assist in evacuation, work as rescue and social workers, secure education infrastructure and materials, and coordinate with local government and external parties.

Curricular interventions

With the DRR framework's implementation in Aparri, the DepEd issued a directive of 'conscious integration' in the different subjects and teaching levels. Apart from Sciences and Social Studies, DRR is now included in English, Mathematics, Social Studies, and other subjects. Ronald and Rogelio, curriculum coordinators at the division office of DepEd, explained the curricular integration basis and practices in their jurisdiction, which

include Aparri schools:

RA 10121 already mandates the incorporation of DRRM in the curriculum for K-12.

There is also a separate subject on DRRM. In addition, some LGUs customise their own guidebook for DRRM from grades 1-7. Some are already preparing for their senior high school modules. (Ronald, curriculum coordinator, Aparri)

Before the mandate for integration and before the creation of the module, DRR was already sort of integrated into the Science curriculum, and also in [Music, Arts, Physical Education, and Health] MAPEH. But now, the directive is to integrate into all learning areas. (Rogelio, curriculum coordinator, Aparri)

Integration came in the form of interspersing discussion on disasters with the usual domain content. For instance, several reading comprehension selections in textbooks were on disasters in the English and Filipino subjects. Apart from integration, the DRR framework also stipulated a standalone subject on DRR at the senior high school level. In relation, several orientation activities were conducted to help teachers align their pedagogical approaches to DRR. For instance, a 're-tooling' activity was mounted by a consortium of provincial government agencies, including the Department of Education, the Office of Civil Defense, and the Department of Science and Technology. In the said seminar, the teachers were taught about the science of disasters and climate change adaptation. In describing the retooling activity, Arlyn and Arturo said:

More on the science. Also, on what to do, preventive measures. (Arlyn, high school teacher, Aparri)

Some Science and Math teachers took part in the seminar on integration. Science, because it is through the Science subjects where integration and building of competency are emphasised. And Math for the tracking of typhoons. We use coordinates system, coordinate planes, yes. Through the coordinates, one can track the path of typhoons. (Arturo, high school teacher, Aparri)

Funded and supported by the WFP and USAID, the local organisation Cagayan Valley Partners in People Development (CAVAPPED) convened subject-matter experts

from among the schoolteachers and personnel who participated in the re-tooling activity.

As Ronald explained:

We have produced modules on DRR in partnership with the WFP, USAid, and the CAVAPPED. That DRR module was to be used for DRR education in the different schools of Cagayan. We pilot-tested the modules to schools in the coastal towns and schools. (Ronald, curriculum coordinator, Aparri)

Four teachers from those interviewed were handpicked as authors of the modules. Arlyn and Arturo were assigned earthquake and tectonic plate activities. Darwin and Shally worked together in writing tropical cyclones and hydrometeorological hazards modules for the Grade 7. According to the teachers, the modules emphasise the science dimensions and modes of integration of topics on hazards and disasters. In regard to meteorological hazards, for example, the content of the seminar revolved around the science of the inter-tropical convergence zone (ITCZ), the El Nino and La Nina Southern Oscillation (ENSO) phenomenon, and global warming. When asked about the localisation of content, Shally shared this anecdote:

When I did the module for Grade 8, there was a need to include pictures. I researched for pictures that were related to typhoons. So, I got some pictures from Australia. And then, she [the CAVAPPED head] was able to recognise it. “ This is not in the Philippines!” she exclaimed. So, everything had to be related to the Philippines, not other countries. (Shally, high school teacher, Aparri)

Stalled implementation for Efate’s DRR education programs

There was a wedding in Epau, a village in Efate, on the day I was to interview the teachers at a primary school. Thirty minutes before the agreed interview schedule, two students looked for me with a message: the principal had to cancel classes. He and the other teachers will also be unavailable for the interview, as everyone in school is expected to be at the wedding.

Seeing that I was taken aback by the message, Luke, the area secretary, and his

wife Vanessa explained that celebrations such as weddings are special occasions in the village that everyone takes part in. Vanessa added that every person in the village is part of a very big family, so the teachers as part of that family have to join in the celebrations. Luke then segued to explain how the community functions in the same way in times of calamities.

Similar to Aparri, the local government in Efate also follows the national mandate for the vertical governance structure of DRR. The area secretaries in villages, including Luke, lead and oversee the activities and programmes of Climate and Disaster Committees (CDCs). As the CDCs report to the area secretaries, the latter then report to Kalo, the appointed DRR officer of Shefa Province to which Efate is under. According to Kalo:

My role is to liaise with the area secretaries and the [National Disaster Management Office] NDMO. In the villages, the CDCs are the ones in charge for DRR. Every village has a CDC. I coordinate with them especially when there is a disaster. (Kalo, DRR Office, Efate)

While there is a coherent vertical alignment of roles and responsibilities between Kalo, the area managers, and the CDCs, there was no indication from the interviews that there is horizontal collaboration with schools. More explicitly, this exchange I had with Kalo illustrates this point:

Interviewer (I): Do you have programs with schools?

Kalo (K): Programs with schools? At the moment, no. None. I: So, schools are not involved?

K: We use school buildings for evacuation but only because we don't have enough place yet to accommodate evacuees.

On the ground and in the villages specifically, the activities of the CDC have an indirect influence on schools. Much like the wedding, everyone is enjoined in hazards management, this time with the CDC as the lead group in disaster responses and reconstruction. The activities of the CDCs and area managers were visible in the villages of Eratap and Epau in the form of cues and reminders about risky areas. For instance, one of

the building walls of a primary school in Epau had a map of the whole village with indicators of sites that are considered prone to hazards. Figure 24 (p. 217) shows Philemon (from Chapter 5) in the village community hut in Eratap, with the DRR posters on *saeklon* (cyclones) and *flad* (flood); photo 2 is community announcement board in Epau. Table 14 below lists the participants from Efate.

Table 14

Vanuatu study participants

Name	Level
Kara	Primary
Sylvia	Primary
Venus	Primary
Janet	Primary
Melinda	Primary
Priscilla	Primary
Zachary	Primary
Stephane	Primary
Amos	Primary
Andrew	Primary
Simon	Primary
Esther	Primary
Jonas	Secondary
Linda	Secondary
Aileen	Secondary
Eric	Secondary
Anna	Secondary
Albert	Secondary
Rupert	Secondary
Sophie	Secondary
Kalo	DRR Officer
Jeremy	School coordinator

Figure 24

DRR posters in community notice boards in Eratap (top) and Epau (bottom)



DRR: a concept yet to be known

While DRR messaging in the communities was consistent with the model I saw in Aparri, there were scant indications that the concept and framework 218ap ag218218s as far as the school level in Efate. When I asked the teachers about DRR education, I was often met with blank stares and head shaking. “What is it?” asked Kara, a teacher in one of the primary schools in Port Vila. “I’ve never heard of it,” she confirmed when I explained to her about the programme.

The unfamiliarity of Kara and the primary school teachers I interviewed about DRR education may be attributed to their lack of direct training. Recalling from the conversations I had with Chris (GiZ), Melissa, Miriam, and John (MoET) as discussed in Chapter 7 (page 190), the trainings were for secondary school teachers and zone curriculum advisers. Among the eight secondary school teachers who participated in the interviews, three confirmed to have taken part in or heard of a training. Eric, a deputy high school principal, confirmed that:

I remember they sent somebody for training last year. They tried to create some materials to integrate lessons on disaster, but these eventually did not materialise in the school program. Since then, there’s nothing. Well, there’s none this year. Maybe next year? (Eric, deputy principal, Efate)

In addition, high school teachers Albert and Jonas described the training that they took part in to be about the integration of DRR in school programs:

I was given the materials to inform the school about certain risk management. On how to go about certain disasters. Like cyclone warnings, what to do, preparations, and in the aftermath of that what to do as well. It was for school. (Albert, secondary school teacher, Efate)

Albert and I went to this training. It is about how to help students respond whenever there is a natural hazard, particularly tropical cyclones because we are used to tropical cyclones. At least children can have the knowledge to prepare prior, during, and after the tropical cyclones. (Jonas, secondary school teacher,

Efate)

Jonas also vaguely remembered about a one-day seminar on disaster knowledge.

Among the materials mentioned by the MoEt was Klaod Nasara, an animated video material relating to the hydrometeorological phenomenon of the El Niño Southern Oscillation (ENSO). When I asked Jonas whether he was given any material for teaching, including the Klaod Nasara CD, he said:

Yes, they gave me one CD for Klaod Nasara about El Niño and La Niña. We have one. I used it once or twice. It was helpful because the material was in Bislama, so it was easy to follow. It is somewhere on one of our shelves somewhere. I do not know where it is now. (Jonas, secondary school teacher, Efate)

Among the primary school teachers, no one confirmed having taken part in the trainings or materials provided for the teaching of hazards, disasters, or climate change. Venus, a Grade 1 teacher, shared:

I have seen something like that. I have found it inside a stock box in my previous school. There was something like that, but I do not know what it is about because I have not been through the training for that. But I know it is related to hazards. Earthquakes? Cyclones? There was not any information that comes to the school like that. (Venus, primary school teacher, Efate)

Similarly, Stephane, a teacher for year levels 3 and 4 indicated that he might have heard about DRR education but was unsure what the program was. As we were interviewing at his office, which doubles as a stockroom, he fished out a poster he initially believed to be from the MOET and on DRR. It was from CARE International, an NGO, and it is for another project.

The School Disaster Plan

Another project that the MoET was pushing was the creation of School Disaster Plans. In discussions with Henry, the coordinator of school improvement programs for Shefa Province, he confirmed that training was conducted about “the risk of natural

disasters, for all schools to have disaster plans which cater for emergency actions,” mainly on tsunami and cyclone. The MoET provided booklets with instructions on how schools should devise their plans. Jeremy further explained:

We also visited schools and talked to them about tsunami, cyclones, earthquakes. We focused on these three because they are the most prevalent disasters in Vanuatu. We have given the principals the power to develop the plan in their schools. They decide on what time they are going to carry out the program.
(Jeremy, coordinator for school improvement programs, Efate)

When asked about the implementation of the project, Jeremy said that there were minimal points of contact after the training, so that schools may or may not have created or implemented the plans, as exemplified by this excerpt from the interview.

To be honest, the monitoring of the implementation of the DRR is only based on reports, reports presented by the principals. The principals present reports quarterly, four times a year. In the reports, we should see something on DRR.
(Jeremy, coordinator for school improvement programs, Efate)

In relation to Jeremy’s comment, two teachers from the two secondary schools confirmed that they know about the School Disaster Plan. Oliver, a secondary school teacher said:

Recently, the Ministry asked the Principal to present a disaster action plan. They also asked for this last year. Basically, we do not have one yet. We are working on it. Maybe before the end of the year we will have one already. The Principal has talked to the teachers, and some of the teachers here [in the interview] are part of this. We are coming up with objectives and what to do. (Rupert, secondary school teacher, Efate)

Jeremy credited the lack of seriousness in implementing programs to the seasonality of cyclones, as his comment below illustrates:

This is something about the culture of Vanuatu. Like, we go through training, and it is very interesting. But the point is, we have to keep the flame burning. As we go,

say 2 or 3 years, when nothing happens like a cyclone or earthquake, then that's when things start to fade away. But it does not mean that we will forget this—for example, a cyclone. Every child knows what a red alert, blue alert, a yellow alert is. They are used to that (Jeremy, coordinator for school improvement programs, Efate)

Cyclones-related teaching, nonetheless

All the Efate teachers were unaware on a directive of curricular integration of disaster risk reduction. The secondary school teachers of different subjects said they taught about disasters, and the phenomenon of cyclones, but only sporadically so. Secondary school teacher Albert said the syllabus for geography had always had tropical cyclones, volcanoes, and earthquakes in its content coverage. Aileen, for Science, said earthquakes were also discussed. Linda, an English teacher, explained that there was a sporadic engagement with the topic in her subject area, as illustrated by her statement below:

It is not actually in the English syllabus for us to teach about disaster risk reduction or whatnot. But students come across texts on the essays that they need to write, and sometimes some of those topics will associate with anything related to disaster. They research information to support their essay writing. (Linda, secondary school teacher, Efate)

Jonas, a Maths teacher, said his discussion of cyclones in calculus was limited to wind speed and velocity. However, there were also instances wherein students become involved in extracurricular activities related to climate hazards. Rupert, a secondary school teacher, gave an example, below:

I used to invite people to come and talk to the students. Otherwise, we take them out to the Meteo [Meteorology Department]. Like last year we took them to the Convention Centre. There was something about disaster there, and those people they talk to the students for awareness or something like that. (Rupert, secondary

school teacher)

In addition, Eric shared an NGO-initiated activity wherein his students took part in:

One of the NGOs here organised debates. Some of the students participated in the debate, and a lot of the topics that were chosen, quite a number of them, focused more on these issues of climate change and disasters. (Eric, secondary school teacher, Efate)

Central to the program of the MoET with their partners is for the curriculum to reflect the integration of DRR into all subjects. Confirming the teachers' unfamiliarity with this project, among their suggestions for a stronger focus on disasters and hazards through formal learning was to make the program more explicit in the curriculum, syllabus, and training for teachers—initiatives that were already underway, based on the interviews with stakeholders at the national level. "It would be nice to have it in the curriculum, the syllabus," Stephane said, further adding that the need to provide emphasis on cyclones was becoming much more urgent as "they happen every year, and they are becoming stronger."

Port Hedland: disaster culture in the mining town

On the second week of my first visit to Port Hedland, there was a flurry of activities and a sense of urgency in the atmosphere as the town entered the phase of a Cyclone Watch (See Figure 25, next page). A storm cell was sighted off the coast of the Pilbara region and it was expected to make landfall in three days, directly hitting Port Hedland. Everywhere, the town was in a state of heightened alertness. Sandbags were positioned in my temporary accommodation. I was told of a possibility for spending the night at the JD Hardie Centre, the town's main evacuation site. At the Department of Communities office, where I was then, the employees were discussing the cyclone's location. The cyclone also figured in mundane conversations in coffee shops and grocery stores.

Figure 25

Cyclone 'Watch' Status in Port Hedland



“This is new to me,” I spoke out. “This town’s monitoring of the cyclone isn’t like anything I’ve never seen or experienced before. Everybody seems to be on a high alert”, I added. “It is the mining mentality,” Julia supplied. Julia works with the Department of Communities, and she is in charge of evacuation procedures. At one point, she took me with her to inspect the facilities and stocks at the JD Hardie Centre.

“Mining mentality,” in the words of Julia, referred to the heightened awareness and a high level of preparedness in the town as a result of protracted and sustained practices and procedures in securing the assets of the industrial town against threats, including frequent cyclones. The town’s topography is dotted with machinery, infrastructure, and transport vehicles that service the mining companies and their support industries. The mining mentality had a ‘spillover effect’ on the town, with procedures, processes, and structures to ensure the safety and security of residents. Figure 26 on the

next page shows a flood indicator (1) and cyclone forecast poster (2).

It can be recalled from Chapter 7 that, compared to the Philippines and Vanuatu, Australia, had weaker national DRR policies on how school-based education and local governance should be practiced and implemented. None of the teachers who took part in the interviews, or the town council employees with whom I did a short internship with, said that they knew or had heard of DRR or DRR education. Nevertheless, my interviews with teachers from Port Hedland yielded insights about routine procedures and practices pertaining to preparations for hazards and emergencies, specifically for cyclones. Table 15 below is a list of interview participants from Port Hedland.

Table 15

Port Hedland Study Participants

Name	Level
Martine	Primary
Alex	Primary
Casey	Primary
Mary	Primary
Trinity	High School
Trevor	High School
Lisa	High School

Figure 26

Flooding (top) and Cyclone Forecast (bottom) Notices in Port Hedland



CYCLONE SMART Cyclone Season: November to April.
There are four stages of alerts - blue, yellow, red and all clear.
Listen carefully and do what the alerts say to help keep safe.

A CYCLONE IS FORECAST - GET READY
When a BLUE ALERT has been issued, you need to start preparing

- Make sure you have a copy of your community Cyclone Plan.
- Tidy and remove loose building material and rubbish around your home.
- Make sure you have a battery operated radio, torch and extra batteries.
- Keep listening to your portable radio and watching TV for cyclone updates.
- Have enough food for your family, water and your medicine box and first aid kits.
- Know the strongest part of your house.
- Start thinking about when to send people on dialysis, pregnant women, elderly and other sick people to a larger town.
- Identify a team of people in the community to assess any damage to the community after the cyclone.

A CYCLONE IS COMING - ACT NOW
When a YELLOW ALERT has been issued, you need to take action

- Tie down large items around your house and community.
- Fuel your vehicle.
- Make sure your pets are safe.
- Get your family together to sit out the cyclone.
- Make sure you have cash to last you a few days.
- Keep listening to your portable radio and watching TV for cyclone updates.

A CYCLONE IS ABOUT TO STRIKE - SHELTER NOW
When a RED ALERT has been issued, you need to take shelter immediately

- Stay inside in the strongest part of your home during the cyclone.
- Keep a battery operated torch and a portable radio if your power is out.
- Keep listening to your portable radio and watching TV for cyclone updates.

AUTHORITIES GIVE THE ALL CLEAR - BE CAREFUL
After the official ALL CLEAR notice, take care to avoid dangers caused by damage.

- Stay inside your home until you get advice from DFES or Police that it is clear to go outside.
- Wear proper shoes and safety gear.
- Check on your family and neighbours.
- Report damage, injuries and dangerous situations to the Police or DFES.

EMERGENCY KIT & NUMBERS - SEE OVER

Icons: TORCH, LISTEN TO RADIO, TAKE FOOD, PREPARE FIRST AID, CHARGE PHONES, STRENGTHEN SAFETY, TIE DOWN, LOOSE OBJECTS, SAFETY, GET CASH, SHELTER, LISTEN TO RADIO, TORCH, TAKE FOOD, PREPARE FIRST AID, CHARGE PHONES, STRENGTHEN SAFETY.

The teachers' orientation

As discussed in Chapter 5, there is a high level of transience in Port Hedland as people come and go for job posting. On my first visit in town, I lodged at a temporary accommodation where four newly arrived teachers were also staying. The interviews with the teachers yielded insights as to how the town, and the schools, have set procedures to orient the newcomers and long-time residents alike about cyclones in Port Hedland.

For instance, pamphlets on cyclones were given to Trevor and Lisa by the managers in their temporary accommodation the moment they met with the manager. When they transferred to the houses assigned to them, they were again given the same pamphlets, a briefing on the alert levels, and reminders on what was expected of them should a cyclone hit the town. As Trevor stated, "In our government housing, they do give a booklet when you move in. They do explain it to you". Further, Lisa added:

When I stayed in the transient house – the lady there, the manager– informed us that cyclone might happen. When we transferred here (the government housing), the administrator of the village also warned about cyclones. We were given booklets again. They were notifying us every single time (Lisa, secondary school teacher, Port Hedland).

The same message would be reiterated in their workplaces on multiple occasions. In the schools, the teachers were required to participate in a series of seminars on occupational health and safety. In these seminars, they were oriented on procedures on what to do in the event of an emergency. Special emphasis was afforded to cyclones, as the phenomena that the town is most exposed to. In said seminars, the teachers were also familiarised about alert levels, their corresponding color codes, and expected behavioral responses from the community and the government the moment a warning is issued. Lisa recalled the workshops as follows:

The briefing happened just a few weeks before the term breaks. The Administration Office convened it. All teachers were present. The new teachers, including us, were specifically required to take the seminar. They gave us

information booklets, and we had a Q&A. We had two to three meetings just for that. We were taught to prepare all the stuff we needed, such as first aid kits, food, emergency materials (Lisa, secondary school teacher, Port Hedland).

In these orientations, Martine as a deputy principal and who has been in the teaching service in Port Hedland for the last 15 years, shared that it is routine work to provide teachers with an information handbook containing cyclone information at the start of the year. In the risk of a cyclone, the principal would conduct a staff briefing to go through the different alert levels of the 'blue, yellow, and red, for everyone. Apart from reminding the teachers on the alert levels, the school authorities would also brief the teachers about what they should do before a possible lockdown. As Martine shared:

Particularly for the new staff, we make sure that they are prepared. We give them tips as well, such as “make sure you fill up your car with petrol.” The other big tip we give them is to go to ATM and get some cash because if the power goes down, you won't get money. So, again, we go through staff briefing on what we do at the school and then what to do at home. (Martine, deputy school principal, Port Hedland)

The teachers were also informed of set procedures that the school implements in an approaching emergency event and the stages in which the school closes for operation. From these orientations, Trevor recalled that:

If there is a cyclone approaching, we will go to the school gym area, which is the hall. We would wait for the parents to come to fetch the students. But if the students have gone and there's a cyclone approaching, staff would be informed by our head of learning area, all through the deputies, that the school will be closed the next day. And if it had happened at nighttime, we will be informed early in the morning through the head of a learning area. They would let us know what to do. (Trevor, secondary school teacher, Port Hedland)

There were also plans for the evacuation and safety of teachers. As Lisa shared, part of the orientation was the pairing up of teachers. “If a teacher is a single person or a

person that is living alone, then they will be paired up with a couple or a family,” Lisa added. Apart from the seminar, Lisa and Trevor also discussed a special event wherein teachers were convened to refresh their knowledge about cyclones.

There were weather updates about the possibility of a cyclone hitting the town. Right beforehand, we were prepared for it. The school prepared us for it. Since we’re new here, new to the environment, so we had to know. But even those who have been here for many years were still required to attend to refresh their knowledge. (Lisa, secondary school teacher, Port Hedland)

Generally, because in the 4th and 1st term, which is between October and March, April. That’s the cyclone season. So, normally, we have to meet just after the start of those terms. We are briefed again. They will give us the plan again in case we misplaced it and remind us of the procedures, and also updates on the plan.

(Trevor, secondary school teacher, Port Hedland).

The toolkit

The teachers also talked about a ‘toolkit,’ which, according to Martine, is a set of directions from the Department of Education, from the head of the emergency management in critical planning. As Martine explained:

Yes, at the state level. So, that plan is disseminated to the schools. We go through the plan each year. With a plan like this, we orient teachers about the area for evacuation, the area for a bomb threat, and the area for cyclones sheltering.

(Martine, deputy school principal, Port Hedland)

Trevor had heard of the toolkit but was not very familiar with its content. Alex, on the other hand, shared that it is “A state-wide process. It is not an individualised process for our school”. The toolkit, as Martine shared, is indeed a state-mandated plan that is disseminated to schools. Following the toolkit, the teachers were then instructed as to the directives in an emergency. As Mary shared:

We get a text message, or we used to get a phone call to say, “We’ve gone into

Yellow Alert.” We don’t come in once we’re on Yellow, and we’re not allowed on school grounds. We do not go back until we get a phone call or text message to say, “come back.” (Mary, primary school teacher, Port Hedland)

Regimented procedures

In Martine’s words, the procedures and behavioural expectations in place are “all very, very regimented,” “routine,” “structured,” and “a complex sequence” that is also “very simple to follow.” “The sequence works,” she added, and the hard work only comes in making everyone in step with knowing “what you’ve got to do and where you’ve got to be.”

With students at the centre of these safety practices, the procedures have been practiced for a long time, and the processes have become ingrained in the whole community. The parents, for instance, were enjoined as part of the regimented procedures. Martine shared that families were also sent cyclone updates at the start of every school year. She further explained:

The school has a very maintained procedure when it comes to cyclones. As we return to school at the start of the term, we consistently put out cyclone updates to families. What happens in the yellow, what happens in the red. What happens around the school? When does it become clear to come back on? That information is put out a few times a year to parents. When children are enrolled at the school, parents get all the cyclone information, and we go through that with them as well. (Martine, deputy school principal, Port Hedland)

Vertically, the schools also receive regular updates from the Regional Office of the Department of Education. These updates are disseminated by the Principal, who then informs their deputy’s staff. Again, Martine mentioned that “it’s pretty routine and pretty straightforward.”

Alex also highlighted that the processes in place are already well-entrenched so that all it takes is media broadcast for the parents to know what to do. She added that, “I

think it's well-known that the process is broadcasted on radio and TV, that once we go on our work and we close, the parents come and collect them." Along with the media broadcasts, the parents also receive text messages.

If we go on yellow in the morning, the parents get a text message that says, "Come and pick your kids up as soon as possible." After 12, or after lunchtime, we have to stay with the kids until the end of the day. But if the alert is issued before lunchtime and all the kids have been picked up, then we have to go. The parents get an SMS or a text message. And all the radio stations broadcast it as well. (Mary, primary school teacher, Port Hedland)

Trinity had seen this first-hand how the procedures work during a flooding incident. She described the event as follows:

For instance, on one particular day that was raining hard, and it was flooding, all the students and staff went to the gym, and soon after, the parents arrived with their cars to fetch the students. The staff was not allowed to leave. As far as I understand, the deputies informed the head of the learning areas, and the head of the learning areas informed us. The school contacted the parents to inform them of their children. (Trinity, secondary school teacher, Port Hedland)

Lisa, on her part, lauded the regimented, recurring, and regularly updated approach to the school systems' emergency response. As a new teacher, she mused that "there's a system in school wherein with just one click, all of us teachers are notified. We're on the same boat, the same page with regards to preparation".

In the curriculum

None of the Port Hedland teachers confirmed any knowledge about the DRR framework and the global and national policies' stipulations on DRR education. However, even before the advent of DRR, topics related to hydrometeorological, tectonic, and seismic events were already part of what is referred to as carrier subjects for hazards and disasters. Typically, these are the domains of the Sciences and Social Studies. In Port

Hedland, hazards and disasters are integrated into the secondary level curriculum for Humanities and Social Sciences (HASS) stream. HASS covers History, Geography, Civics, Citizenship, Politics, Law, and Business Economics. Trevor and Trinity, both HASS teachers, confirmed that cyclones are taught in Geography under the topic ‘Natural Disasters.’

Trevor, for his part, stated that there should be more focus on practical examples and to show what has happened in the past. In Port Hedland, where the last destructive cyclone occurred almost a decade ago, the students, specifically those new to the area, may not have experienced the adverse conditions in a cyclone. Lisa and Martine shared Trevor’s sentiment. When asked how the process of integration should look like, the teachers had several suggestions. Martine mulled over the possibility of integration in History, Health, and Literacy. As Martine shared:

It can be discussed in any way. It could go through History. It could be in Maths. You know, looking at charts, graphs, and things. It could be in Literacy. It could be a writing assignment about a cyclone, writing about what happens in a cyclone, and preparing for a cyclone, particularly with little children. That would come through a health curriculum where you can teach about self-management. You can teach it through anything, really. It is just how you apply it to that particular subject area. (Martine, deputy school principal, Port Hedland)

Thus, integration appeared to be a key feature envisioned by the teachers in Port Hedland. Lisa, the English teacher, indicated that cyclones should be part of assessments and not just instruction. She said, “In English, the first thing that comes to my mind is to make it part of the assessment, like an essay, a persuasive essay. I could ask my students to write a persuasive essay on how to prevent cyclone damage from happening.”

Is there a need to teach about cyclones? Cross-cutting viewpoints

The teachers from the three locations had ambivalent perspectives on the need for more content and engagement with cyclones in their teaching. On the one hand, some were of the opinion that sustained teaching would familiarise and prepare students about cyclones. Disaster education, the teachers stated, should also reach the communities. Apart from curriculum integration, the teachers then stated that there should be more place-specific lessons, including pictures, videos, and testimonies from the local residents. On the other hand, the teachers also believed that there was no dearth of information about the phenomena of cyclones in the towns.

“What to do before, during and after”

The DRR policies ceased to be referenced at the school level of policy implementation. In the interviews, the teachers mentioned neither the Sendai and Hyogo Frameworks (Chapter 6) nor any national or federal policies (Chapter 7) as the impetus for school-based disaster management practices and teaching decisions. Beyond the curriculum, the teachers touched on cyclones, especially when an impending event was on the way. Regardless of location, the teachers reiterated that they stressed “what to do before, during, and after” a cyclone in their teaching whenever a forecast is issued by their governments’ weather bureau.

The Port Hedland teachers claimed that they included ad hoc teachings about cyclones, especially when one was poised to hit the town. A big part of the discussions was on the behavioral expectations from the students in response to the hazard, of what to do before, during, and after. As Trevor said:

To make sure that students become more familiar with cyclones. What we basically teach them is what happens in the event of a cyclone, what they should do, what damage it can cause, and how to seek help. Those are the top three things we remind the students about. (Trevor, secondary school teacher, Port Hedland)

In primary school, Martine, the deputy principal, affirmed that they tried to infuse

the classes with information about cyclones in the context of young learners' abilities to respond to the phenomenon. As Martine explained:

We do it orally with them. There's not much in writing. We talk about following mommy and daddy's instructions, making sure that we put our toys away, keeping our toys inside the house, making sure that we stay inside and don't come outside unless mommy and daddy tell you. So, we go through that, and we might have a look at a picture of what a cyclone could look like. (Martine, deputy school principal)

The Efate teachers reiterated the need to stay inside, listen to forecasts, and help their parents secure their houses. "There is none to do but wait and keep yourself and those in your family safe as well," said Stephane. In the aftermath of a cyclone, the teachers also maintained that they usually remind the students to be careful of tree branches and debris, as well as "not to eat the fallen fruits as it might make them sick" (Sylvia, primary school teacher, Efate).

A similar set of reminders were issued by the teachers of Aparri: to 'stay at home,' 'listen to your parents', and 'do not swim in the sea or river.' According to the elementary school teachers, there were no specific instructions from the curriculum and textbooks to localise the teaching of hazards and disasters, nor were there uniform ways endorsed to engage the topic. One way that the teachers engage their students was to let them report their experiences of typhoons. Some teachers also conducted a search and rescue operations simulation on what to do before, during, and after a typhoon.

Schooling the cyclone towns

The Port Hedland teachers credited the regimented and routine systems and practices by the school and the local authorities for promoting a high level of school-community, teachers-parents alignment of priorities and behavioral response to forecasts and warnings. Nonetheless, some teachers thought students who have not experienced a strong cyclone would have no idea how damaging it could get. This was mainly a concern

for Tritnity, as many children and their parents were immigrants and may not have experienced cyclones in Port Hedland. As “Cyclone George happened ten years ago. For those in Year 8, they would have been three years old,” said Trinity. He added:

This is an industrial mining area. Many of the students in this area haven’t been here since they were little babies. They don’t know about those things [cyclone]. For a student, a young child, it’s not really something that they are going to ask their parents or other adults about. Most of it they hear at school. So, it’s quite big news to them. Other students know about it, but I found that the majority didn’t know about that in my classes. (Trevor, secondary school teacher, Efate)

For the Aparri teachers, an important component to school-based learning was for children to influence their parents’ mindsets. The teachers in Aparri and Efate admitted that there was an indifference in the towns of cyclones and hazards so that DRR education may be used to rouse the communities time and again. For instance, the SDRRMO teachers commented that the residents of Aparri, including themselves, only prepare when a typhoon was on its way.

Melvin: We only prepare when the typhoon is on its way (laughs).

Shally: As the saying goes, “We just cross the bridge when we get there.”

DRRM education could also bolster the local government’s initiatives to equip communities with precautionary information and material support. The teachers shared that there had been a disconnect between the government’s programmes and the response of the constituents. During the interview with the SDRRMO officers of Aparri, two teachers stated that several students in the WASAR seminar used their families’ ‘e-bag’ as luggage: the emergency bag, or e-bag, was provided by the local town government to households. The e- bags contain a first aid kit, canned goods, biscuits, rice, and other items. They were only to be used and opened when there was an emergency, as when they needed to evacuate or seek shelter. In exasperation, Shally expressed her disappointment:

Nagdadambel gamin ti tattao ti Aparri [Because the people of Aparri are stupid].

The moment they get the e-bag, they open it immediately. The kids play with the

first aid kit. They take out all the contents and use the bag to store clothes and for travel. (Shally, school DRRM officer, Aparri)

Melvin then tempered the discussion, offering his opinion that more impoverished families ended up consuming the food items provided and used the bag for purposes other than what is intended for it. He added that those who had less had poverty as a more significant and more immediate problem than surviving a typhoon. To this, Olivia added that “It is imperative to discuss preparedness. One could see that only those who are better off can afford to practice preparedness”.

The Efate teachers also suggested that should DRR education be implemented in Efate, the programme should not be solely about school-based learning. The messages relayed to students in the classrooms should also reach the communities and families. As Jonas and Linda said:

We should follow the formal education part. We should learn the same information through the curriculum, from primary school to secondary school. There we can learn about biography, geography, physics, chemistry. We must also issue booklets or handouts to the chiefs, display them in the *nakamal*, and tell them about basic things and procedures about cyclones that everybody should be aware of. (Jonas, secondary school teacher, Efate)

More of practical things, not theory to teach the kids. Must be hands-on. We’ve got to involve the community as well. They will be well-versed with cyclone preparations. We are slowly drifting away from that. Training should be provided not only to the teachers and the Ministry. The main stakeholders are the communities in the rural areas. (Linda, secondary school teacher, Efate)

“No need to amplify panic”

In contrast with the notion of teaching the community about cyclones, the teachers also maintained that the residents of the cyclone towns, including the children and their parents, “already know what to do”. In Port Hedland, the teachers reiterated that there

was no shortage of information from the government and other sources so that “there is no need to amplify panic,” according to Mary. In addition, Mary believed that many of the children who had grown up in the area probably had experienced more cyclones than the new teachers in town. They also had family members who had been through cyclones and were as knowledgeable as the rest of the community. Further, several symbols in town suggested the hazards that are common to the town. As Martine said:

Kids are very well aware of them because, up here, families tend to go off camping a lot. There’s lots of fishing; there’s lots of camping; there are lots of ‘we’re gonna drive in the desert.’ And kids are very aware of road conditions because around the town, like heading up the major roads, there’s a big signboard telling you if the roads are open or not open. What kind of vehicle they are open to. So, kids are very well aware of the road conditions. We also always make sure staff are aware that roads have been closed and things like that. So, yeah, it’s just a thing within the community. It’s local knowledge, and kids grow up learning that local knowledge within their families. (Martine, deputy school principal, Port Hedland)

While there is coverage within the HASS curriculum, there was also informal, non-curricular learning considering the students’ curiosity about cyclones and storms. As Martine shared:

You are having those conversations all the time with children up here about where they’ve been and what they’ve done. “Oh! I’ve been riding here, and I saw a rainbow! A lot of that local talk within your classroom. Kids are talking with kids. Because families go away together at weekends when they come back, the kids talk about what the weather was like, what the road conditions were like, it’s amazing. It’s a different language with kids up here compared to kids in the city. (Martine, deputy school principal, Port Hedland)

In Aparri, the teachers also agreed that the local knowledge of children having been born and bred in the town, are robust and reinforced by what they learn from home. Alita shared that after a cyclone, “my students talk about their experiences non-stop. I

don't even have to ask them about it". In addition, the teachers acknowledged the context-specific understanding of land of the fishermen and farmers who, also, are families to the children.

Similarly, the Efate teachers shared the same perspectives on local knowledge of their counterparts in Port Hedland and Aparri. The teachers, almost dismissively, said that families in the town and villages of Efate, and Vanuatu in general, have been through multiple cyclones that 'they already know' what to do. While they were not against any additional coverage on cyclones and related phenomena, the teachers were also of the opinion that there is enough understanding of how to live with their recurrence. More specifically, the teachers referred to the traditional knowledge of Vanuatu, including their knowledge of food preparation, building cyclone-resilient houses, and gardening methods (See Chapter 5) as an asset of the people.

Teachers and cyclones: place-based epistemological [dis]engagements

The discussions above demonstrate that the policy pronouncements of DRR did not translate evenly to the three locations. Nonetheless, the approach for disaster learning across contexts appeared to have focused on behaviour-centric intervention, with or without the overt influence of DRR. Content-wise, the teaching was determined by the domain silo of science and, to a lesser degree, in the humanities and social sciences. In this section, I used the pillars of critical pedagogy of place (Chapter 3, page 42) as an analytical aperture to examine the teachers' epistemological involvement of place-based knowledges and their dimensions.

What happened here? Exposure and experience

The teachers' experience of cyclones and their familiarity with the place figure as influencing their understanding of context-specific dimensions to knowledge. There are marked differences in the teachers' understanding and engagement of place-based knowledges of cyclones depending on their length of stay in the cyclone towns. The

teachers could be categorized into four groups, based on their familiarity with cyclones. The first group are the newly arrived ones and have had no experience of cyclones. For instance, most of the teachers I interviewed from Port Hedland were new in town. I got to know Trinity, one of the teacher-interviewees, on my first trip to Port Hedland. We stayed in adjacent quarters in temporary lodging, as she was waiting for a government house for her accommodation. Trevor and Trinity, originally from South Africa, are Perth residents. Like Casey, Trevor, and Lisa, Trinity was teaching in rural Port Hedland in their first year of teaching.

The second group included those who had a substantial time spent in town (e.g., two years or more) and have had an experience of cyclones while in town. Mary had been teaching in Port Hedland for four years, and Alex, ten. Of the eight teacher interviewees, Martine was the most senior and has been a town resident for 15 years. The third group refers to those not from the towns but who had experienced cyclones elsewhere or had been in a similar environment. Lisa in Port Hedland was an immigrant from the Philippines and had had experiences of cyclones. Most of the Efate teachers were from the other provinces and islands of Vanuatu. Nonetheless, all the teacher-participants had experienced cyclones in the context of their places of origin and while they were teaching in the Efate. Finally, the fourth group refers to the teachers who were born and bred in the cyclone towns—most of the teachers in Aparri fell under this group.

The first group of newly arrived teachers, the Port Hedland teachers specifically, often had tentative answers to questions about cyclones, giving responses as “I am not too sure” or “I don’t know for sure.” For over a year, Trevor, who had been in Port Hedland, could not refer to any cyclones experience. When prompted, he said that:

No, I haven’t experienced a cyclone. There was a cyclone farther away, and we did get a bit of rain once, but the cyclone itself hitting the town, no, not yet. But there are a lot of heatwaves. It is scorching here, extremely humid. (Trevor, secondary school teacher, Port Hedland)

In reference to Cyclone George, a cyclone that was often described by the residents

of the town (See Chapter 5) Casey said:

I am not sure which cyclone that was a few years ago. It could have been as much as ten years ago. Some people actually did die here because of that cyclone, I was told by those who were here then. I'm not so sure. (Casey, primary school teacher, Port Hedland)

Similarly, Mary remembered the town going into Yellow Alert about two years ago. As she recalled, "It was the weekend before school was supposed to start. Apart from that, I haven't been through any—just lots of rain and lots of wind. But, nothing." The teachers who had been in Port Hedland longer had been through a couple of big and small cyclones, of which Cyclone George was the strongest. As Alex and Martine shared:

I've been in a few. They're not exactly fun. A lot of clean-up goes on after, especially the big ones; they aren't too fun at all. The small ones aren't too bad. George wasn't enjoyable. The trees and stuff could get broken, there's debris flying around, and the water can be cut off; power may not come back for some time. It's okay while the cyclone's here because it's quite cool, but the days after were not enjoyable and had no air conditioning. (Alex, primary school teacher, Port Hedland)

Yes, a couple of small ones. I couldn't tell their names. But of course, Cyclone George was the big one. (Martine, deputy school principal, Port Hedland)

While the Port Hedland teachers had minimal recollection of cyclones, the Efate teachers uniformly regarded Cyclone Pam in 2015 as a phenomenon that affected all of Vanuatu, so that those not in Efate then (e.g., Pentecost, Espiritu Santo, Ambae, Malekula, and Torba) were able to share to that they had experienced the same force of the cyclone.

Venus, originally from Malekula but had been assigned as a primary school teacher in Efate's Eratap village, shared a similar experience with Cyclone Pam with the rest of Vanuatu. In addition, her observations about cyclones were similar to those shared by the

residents of Efate (Chapter 5). For instance, she remembered a drought that preceded Cyclone Pam. Venus explained how the community in her village in Malekula prepares for a cyclone was similar to the practices in Eratap. At the onset of the cyclone season, the people covered up their thatch houses with coconut trunks of banana stems. Those with iron roofing use blocks or boxes of cement to hold the roof down. Venus added that:

They would have to put shutters on the windows or check the roof of the houses and put away things that the wind can blow. But before that, before the cyclone, they have to prepare by cutting down branches of trees. They have to clear up the place and look for tools, like a hammer, that they might need. So, if it comes to the time when the cyclone is on, then it will be easy for them to find the tool and the things to use. (Venus, primary school teacher, Efate)

At Yellow alert, the people harvested what could be salvaged from their gardens and cut down banana leaves. She further explained that “The reason is that when the wind blows, if the leaves are on, then it will be easy for them, for the crops to fall down.” For manioc, “They cut the branches short so that when the wind blows, the stump will be strong enough to stand against the wind. That’s what they usually do. Gardens. Just to preserve their food during the cyclone.”

The Vanuatu teachers said that it was their traditional knowledge that made them resilient. The teachers were well-versed about food preparation practices as well as local house engineering to protect people from cyclones, as the excerpts from the interview below shows:

We do have a lot of traditional knowledge regarding predicting a tropical cyclone— food security, on how to preserve food. And, of course, shelters. Most of the shelters are built to withstand tropical cyclones. (Jonas, secondary school teacher, Efate)

Linda, an English teacher, said the lifestyle and culture of Vanuatu allowed them to survive cyclones. She said, “Even if we don’t get aid from overseas, we still survive. We still have our coconut; we still have fruit trees, the cassava, the taro. We will still survive.”

To this statement, Sophie added:

In the islands, they don't need money to build a house. Everything is grown in the garden. They cut the thatch and trees to build a house. So that's why when a cyclone strikes, they do not worry because they know they can get the things to rebuild their houses and their lives. (Sophie, primary school teacher, Efate)

The teachers also related their knowledge of bio-indicators, as the excerpts below show:

In our own traditional way, we know when a cyclone is approaching. Nature or the environment can actually tell us that a cyclone is about to happen. (Janet, primary school teacher, Efate)

One thing that gives us the signs that a cyclone is coming is the abundance of the fruits. Especially the mangoes and naos. The other one is the birds. When they lay their nests down on the ground instead of on top, we say a cyclone is definitely coming. (Jonas, secondary school teacher)

Similarly, the Aparri teachers, as long-time residents of the town, shared their experiences with cyclones, including the changes they have witnessed with the geography and demography of the place.

What is happening here now? Pedagogical reluctance

There was a minimal trace of epistemic integration and inclusion in the classrooms in the cyclone towns. Despite their understanding of the different dimensions to place-based knowledges, the teachers said that they did not include these as they were not stipulated in the curriculum. When asked whether they have involved community members, the fisherfolks and farmers, in their teaching, the teachers collectively said "No." Vania said she did. The prompt, according to her, were radio programs that encouraged teachers to teach about cyclones, including traditional knowledge. Stephane added:

The problem is that we do not have cultural teachings in schools. The students do not become familiar with their traditional knowledge because this is not taught in

schools. It is provided in the education policy or statement, such as the National Curriculum Statement, but the schools do not incorporate it. In reality, it is not taking place in the schools. (Stephane, primary school teacher, Efate)

There was also a high level of contradiction in the teachers' perspectives. The teachers acknowledged the wealth of knowledge in the communities, albeit that their perspectives of place-based knowledges differed. They concurred that the community did know some things that the teachers did not know. Melvin said they were the experts, however:

Melvin: It is just but right to ask them but then...but then, would the people believe? Would the children believe them? That is the problem.

Interviewer: But, why not?

M: Eh, of course, this generation would choose science, technology, those sorts of things. [That knowledge] is for older people.

For instance, while they believed that disaster education was needed for children to teach their parents about what they had learned in the classrooms, the teachers also maintained that learning begins at home and that the students 'already know what to do'.

No. I think at home they experience these too, so it's not something that we teach in class because parents teach these to their children. So we've never been taught these in schools, but our parents teach us these things at home. (Linda, secondary school teacher, Efate)

In addition, while they reiterated that there should be focused learning for 'what to do before, during, and after,' they also maintained that there was no need to teach more about the obvious and create panic.

In Vanuatu, where the teachers were most in touch with traditional and indigenous knowledge, significant relations of (dis)connections were indicated by locational and temporal distance. For instance, while the teachers confirmed that they valued their traditional knowledge, they also demarcated it as practiced only in the villages, the islands (not Efate), and the rural areas. Thus, they simultaneously referred to traditional

knowledge as *our* and *their* knowledge, as illustrated from the excerpts below from the interviews:

There are two different perceptions of cyclones being an asset to the lives of the community. Those in town, like us because we are living here. We need to purchase materials for housing and shelters. So, the perception is it is much more of a concern to them when a cyclone strikes. But in the islands, not really. Only when there is a death. Otherwise, if the houses fall, they can rebuild very quickly because they have access to the resources. (Eric, secondary school teacher, Efate)

In relation to food, from the island where I came from in Pentecost, they just have to find ways. Sometimes they have to plant crops that can withstand cyclones—for example, wild yam. When a cyclone comes, it is still ok for them to consume. (Linda, secondary school teacher, Efate)

In this exchange between secondary school teachers about housing structures, the teachers described the engineering techniques in building a *nakamal* in Ambae, an island off the coast of Efate:

Linda: In Ambae, we don't have specific houses for cyclones. But when people construct the *nakamal*, they've to ensure that it is not high, it is low, the roof is just about an inch from the soil. So, it is built very low. So, when there are signs that a cyclone is coming, everybody goes to the *nakamal*.

Eric: We can see these structures in the islands, not here.

Sophie: Because here we live in modern ones.

In addition, the temporal distance was indicated by differentiating knowledge as passed on by their forefathers as opposed to contemporary knowledge of cyclones. Again, the us-them, their-our distinctions were emphasised. The excerpts below show this point:

There are two scenarios here. Most of the traditional knowledge was most obvious in the rural context. In the urban context, it is slowly fading away. Some of the young people today don't know much about traditional knowledge. Those are two different scenarios. (Albert, secondary school teacher, Efate)

From the younger generation, it should start at home. Most of the homes in town were not teaching their children about traditional knowledge unless they go home to the home islands or villages. They have there their grandparents, uncles, and aunties talking about signs to predict a cyclone arriving, using traditional knowledge. (Sophie, secondary school teacher, Efate)

Synthesis and conclusion

Almost fifteen years after the Hyogo Framework first laid down the foundations for what was to become DRR education, there had been varying responses and degrees of policy alignment. In this chapter, I looked at how schools and teachers engaged with cyclones as a phenomenon, both practically and pedagogically. The interviews and observation data showed that DRR as a framework 244ap ag244244s to schools differently. The Aparri schools warmed up to the idea as a ‘rescue’ mode owing to the local government’s emphasis of DRR framework that highlighted the town’s vulnerability to drowning hazards. There was uneven implementation of DRR in Efate with some teachers claiming to have undergone the processes of teacher training and others that have not. DRR did not reach the shores of Port Hedland. Nonetheless, there is a system in place that repeatedly orients teachers to the hazards of the place.

Across the three locations, the repetitious reminder of ‘what to do before, during, and after’ a cyclone is observed by the teachers. While the teachers acknowledge the significance and usefulness of place-based knowledges (i.e., local, indigenous, traditional), they are hesitant to fully engage their dimensions in their teaching because they are not part of the curriculum. In addition, the teachers also are distanced from place-based knowledges because of unfamiliarity (e.g., Port Hedland), a regard that they are outdated (e.g., Aparri), practiced by their ancestors and by people ‘in the islands’ (e.g., Efate). Overall, teachers’ perspectives of place-based knowledges rarely emphasised or referred to current practices and perspectives in the cyclone towns.

CHAPTER 9

Precarious places, precarious knowledges revisited

I synthesise the key insights from this doctoral dissertation in this final chapter. In the sections that follow, I illustrate how the layered features of a comparative case study (Bartlett & Vavrus, 2017a) provided a processual and fluid engagement with the research process as I progressively engaged, expanded, and delimited analysis of 'knowledge' and DRR education, within the frames of cognitive justice discussed in Chapters 3 and 4. The comparative case study approach afforded a layered, yet manageably structured, flow to an otherwise complex project considering the nature and significant volume of data gathered. I also revisit the literature discussed in Chapter 2 to affirm, challenge, and add insights to the identified themes, based on the analysis of the data and as presented in Chapters 5-8. Finally, I offer possible implications of the research insights, reflections on the research design and recommendations for action and future research in the areas of cognitive justice, comparative education, and the developing field of DRR education.

Contributions to the fields of DRR and education

DRR research has established itself as a field, separate and yet entangled with climate change. The interest in and engagement with the features of the field will only strengthen in years to come. For instance, the Australian government has recently released its National Action Plan for DRR (Department of Home Affairs, 2020) to complement its 2018 DRR Framework. The Philippines is also set to establish its stand-alone Department of Disaster Resilience, a new agency that will no longer be under the Office of Civil Defense (Senate of the Philippines, 2019). In addition, Vanuatu's laws for DRR had been recently updated (GORV, 2019). These developments reflect the countries' even stronger emphasis on DRR- centric governance.

Midway through the programmatic timespan of the Sendai Framework, critical analyses such as the ones presented in this study provide a reflexive and evaluative outlook towards DRR and the practices, whether deliberate or inadvertent, to hierarchise

and museumise knowledges. The same argument also translates to DRR education, in itself an emerging field. This research contributes to DRR education by illustrating the uneven structures and processes that relegate non-science knowledge systems to the sidelines, and how these features manifest as pedagogy and content in the classrooms. The research also adds insight to decolonial thinking, especially in the engagement of the theoretical tool of cognitive justice, in unpacking policy texts to reveal the subtler features of coloniality and their manifestations in diverse locations.

Reflections on the research design

The processual and layered comparative approach to the research afforded a flexible yet rigorous engagement with multiple materials, locations, and perspectives. From my initial interest in *what* DRR education is as an emergent domain in formal, school-based learning, the research consequently shifted towards a iterative and process-oriented investigation of the histories, events, and epistemology/ies that undergird policies and inform practices in DRR education, to focus on claims and processes of epistemic inclusion and integration of place-based knowledges.

With a multi-layered approach to the research, I faced some challenges with data management and, subsequently, in the analysis of said data. First, I grappled with the characteristic unevenness of data because of dissimilar conditions with the collection process, such as geography, access, and regulatory procedures in distinctive contexts. For example, without approval, I could not interview education personnel from Western Australia to confirm the partnerships between education institutions with other agencies within and outside the state. While I did adhere to the data collection protocols, certain regulations were not met within the time of my stay in Port Hedland. Other conditions included the prohibition of asking follow-up questions from the approved interview schedule as well as using any school material, even if these were provided by teachers, for research purposes. Within Port Hedland, fewer schools were keen to allow their teachers to take part in interviews. In contrast, the facility with which I moved about in Vanuatu

was enabled by the ease of access and geography of the area, and possibly the differing (post-/colonial) bureaucratic and governance situation and structures, so that I was able to talk to as many stakeholders, which may have overshadowed the lesser number of interviews I conducted in the Philippines and, more so, in Australia.

The biography of DRR policies

Bringing together the different facets of a multi-axial project such as this study in a cohesive synthesis is the substance of comparative analysis (Bartlett & Vavrus, 2017b). In this section, I use as signposts the rhetorical exigencies of global policies and follow how the tropes employed for discursive alignment influenced the policymaking outputs and practices at subjacent levels of governance including in disaster education. As illustrated in Chapter 6, these rhetorical exigencies would hold together the global rationale for a sustained policymaking exercise. The exigencies are as follows:

1. Hazards and disasters as socioeconomic disruptions
2. Hazards and disasters as ‘developing’ country problems
3. Hazards and disasters as deficit issue
4. Hazards and disasters need international intervention

Following the features of ‘soft law’ regime (Chapter 2), the authors of global DRR policies aimed to align the policies’ target audiences not through robust regulatory power but by persuasion, using rhetorical devices that emphasise the authority of the UN in conjunction with appeals to the emotions of stakeholders (Chapter 6). As Wanner (2021) maintained, compliance with soft laws is delineated through ambiguous rules and non-binding commitments. Indeed, the stipulations of the policies leave ample room for differentiated adoption and contextualization, which were observed in the national DRR policies and projects of Australia, the Philippines, and Vanuatu.

As illustrated in Chapters 7 and 8, the global policies had been open to replication, weakening, or strengthening as their interpretation took place at the intersection of

domestic governance structures and priorities. For example, the national governments of Australia, the Philippines, and Vanuatu responded to the global call to create national policies and programs in congruence to the tenets of the Hyogo and Sendai Frameworks. The agenda for resilience-building was taken up by governments in all three contexts, as well as the emphasis on climate change as a driver for a warranted focus on DRR. In education, the message would crystallise with saving lives, securing properties, being out of harm's way, or "what to do before, during, and after" an encounter with a possibly disaster-inducing event.

Even though these soft laws were put forward as 'global' policies, particular emphasis directed to 'developing' countries also portrayed Vanuatu and the Philippines, as epicentres of intervention. The soft laws of global policies were to be reinforced and strengthened by legislations and in-step programmatic response from the national governments of both countries. While Vanuatu closely followed the promulgations and time-bound orientation of the global policies, the Philippines' government boosted their governing power by legislating national laws that specified the roles and responsibilities of agencies to the smallest unit of government. The national policies of both countries set in place systems of vertical and horizontal integration of DRR in their approach to governance. Indeed, even when the Sendai and Hyogo Frameworks were no longer recognised in the communities and schools, the label of 'DRR' has retained its visibility and resonance, with official designations such as *barangay* DRRM officer and school DRRM officer in the Philippines, as well as the designation of area managers as overseers of the community disaster committees (CDCs) in the villages of Vanuatu. Australia, for its part, further 'softened' the soft law as the policies drafted at the federal level of government were written following an advocating, rather than executive, discourse (See Chapter 7, pp. 156-171). As the governance of hazards and disasters was delegated to state and territory governments, neither the Sendai nor the Hyogo Frameworks, or DRR as policy instruments and concepts, were evident at state, community, and school levels.

It is clear from the data that a vital rhetorical device employed in the text of global

policies is the mobilisation of resources in accordance with exigency three (a deficit issue) and two ('developing' country problems), and in connection with exigency four (a need for international intervention). The study has highlighted the role of international organisations, as they become involved in domestic governance and as the key figures in building the 'culture' of DRR that the texts of global policies endorsed. The international organisations' engagement was most evident in lobbying for laws and assisting national and local governments in the Philippines and Vanuatu. In education, where their programs were not nationwide in coverage, their multiple modes of engagement and presence at all levels of governance from policymaking to implementation render NGOs' influence palpable, weaving in the doctrines of the international to the local. In other words, Doreen Massey's (2005) depiction of the 'unlocated international' is seen to be supported by this study. While the 'regional,' 'national,' and 'local' locations could be spatially identified, the international is dispersed and interspersed in all geographies and peoples. It is everywhere; therefore, it is nowhere (Massey, 2005).

The delimitations of epistemic inclusion

Several researchers and DRR practitioners credited global policies for DRR to have instituted a significant deviation from a predominantly technoscientific approach to disaster management and stimulated legislative and programmatic actions for deliberate inclusion of indigenous, local, and traditional knowledge to the general framework of DRR. The Hyogo Framework's stipulation of incorporating "relevant traditional and indigenous knowledge and culture heritage" (United Nations, 2005, p. 9) is considered the de-facto reference and signifier for studies concerning epistemic inclusion. Said clause in the Hyogo Framework, and as extended in the Sendai Framework, are indicated to have influenced national and local policies to take notice and act on incorporating place-specific knowledges to their approach to disaster management (Chapter 2).

This study illustrates, however, that inclusion comes with pre-set delimitations of what place-based knowledges is. Through an analysis centring on the use of metaphors for

knowledge types and dimensions, I showed in Chapter 6 that contextual perspectives as ‘non-science’ were afforded a horticultural notion of needing to be rehabilitated and revived. Metaphors for revival and rehabilitation accentuated the view of knowledges as static by highlighting their ‘traditional’ features and at the same time neglecting to acknowledge the contemporary use and significances of knowledge, as discussed in Chapter 5. In addition, with text that emphasises the context-limited relevance and minimal transferability of place-based knowledges, the proponents of global policies also imply a view of a parochial system of understanding.

In addition, the inclusion rhetoric for place-based knowledges comes with conditions— apply or consult *as* appropriate and *if* relevant (Chapter 6). The pre-set dispositions of the authors of the global policies overtly put forward the message that including additional perspectives only becomes possible when these fit the epistemology, framework, and philosophy of existing systems. With the amalgamation of all knowledge dimensions as data in later iterations of global policies, inclusion becomes an analogy for an approach of sifting for features of applicability and fit. The reference for knowledge dimensions as data would resonate in the more recent policy materials produced in Australia, the Philippines, and Vanuatu.

Overall, inclusion, as illustrated, is suspicious and reluctant and should be engaged at an arm’s length. Place-based knowledges and their dimensions are to be involved as necessary and excised when needed. It is a selective act, reminiscent of the zero-point (Chapter 3). Those who champion inclusion on the grounds of lumping all features, perspectives, and epistemologies as data present an image of a level-playing field embodied in neutral and objective provisions. However, as shown in Chapters 6, 7, and 8, the rhetoric of inclusion, for the most part, excludes.

The technicalities of integration

As the rhetoric of inclusion has exclusionary clauses, these are extended further by the technicalities of what ‘integration’ is made out to be. In this section, I posit that

integration is defined by a concentric layer of parametric evaluation based on:

1. whether place-based knowledges support or are congruent with science,
2. whether a knowledge dimension fits the cultural features or techno-managerial aspirations of DRR,
3. whether place-based knowledges and their dimensions align to the policy and programmatic priorities of national governments, and
4. whether they fit institutional prerequisites, e.g., stipulated in the curriculum.

The first layer for integrating knowledges and their dimensions is whether they support 'science,' as invoked in DRR discourses. In global policies and national policies, the stipulation that place-based knowledges must reinforce science attests to the proponents' goal for a cohesive and understandable approach, and at the same time excising, in the process, the features of place-based knowledges that do not fit a science-centric narrative.

The second layer for integration is for place-based knowledges to fit the DRR framework. As a programmatic endeavour, DRR condensed its central message of resilience as indicated by loss and risk reduction. As seen in Chapter 7, this message resonated in various quarters and was distilled as 'what to do before, during, and after a disaster in schools, discussed in Chapter 8. What this condition denotes is the privileging of risk- focused dimensions of place-based knowledges.

Third, place-based knowledges must be included in conjunction with the programmatic priorities of governments and institutions. Vanuatu provides an illustration of how a society and government's emphasis on traditional knowledge spilled over to the programmatic messaging of affiliated organisations. However, the example set by Vanuatu is exceptional, such that the same urgency was not documented in the two other case studies.

Lastly, the conditions of inclusion for place-based knowledges as illustrated in the rhetoric of global policies is whether they are congruent with institutional expectations.

This condition applies to the engagement of DRR actors – as civil society workers, DRRM officers, schoolteachers—and whether or not their job descriptions, curriculum, and subject-domain content, endorse the learning of place-based knowledges, and in what capacity, if so.

Overall, place-based knowledges are viewed by policymakers and stakeholders as an accessory to the global design. As I illustrated in Chapter 5, there are multiple dimensions to place-based knowledges that are denied space in both the restricted view of ‘science’ and DRR framework and as further determined by governance and institutional predilections and priorities.

Epistemic inclusion and integration: mere rhetoric?

I revisit in this section the notion that international policies created a watershed moment for inclusion and integration and have been credited to have created the impetus for policies and practices to follow through (e.g., Gaillard & Mercer, 2013; Hiwasaki, 2017; Le Dé, 2017; Reyes et al., 2019; Singh, 2018). From Chapter 2, several studies point out that there had been minimal progress towards epistemic inclusion and integration (Šakić Trogrlić et al., 2021; Shiwaku & Fernandez, 2011; Vaughtner, 2016) despite significant strides towards the institutionalisation of DRR in every country’s policymaking environment.

This study confirms the observation of marginal and delimited evidence for place-based knowledges integration and inclusion. The research contests, however, the premise of a strong endorsement from the text of the Hyogo Framework, based on the discussions on inclusion and integration above, and more elaborately in Chapter 6. In addition, I affirm de la Poterie and Baudoin’s (2015) observation that the discourse on inclusion and integration was initiated in and was strongest with the Hyogo Framework’s predecessor, the Yokohama Strategy. Although the Yokohama Strategy started a paternalistic messaging that delineated what non-science knowledges are or should be regarded as, it was through said policy document that an extensive discussion was presented on

inclusion, as compared to the Hyogo Framework's lone mention of local knowledge. In addition, in consonance with the findings of Raju and da Costa (2018) and (Osorio Piñeros, 2020) this study confirms that whatever strides gained in the Yokohama Strategy for inclusion was canceled out by the backtracking evident in the Hyogo and Sendai Frameworks discourse.

Had it been a case of lip service, as observed by Šakić Trogrlić et al. (2021), and indicative of the wide gap between the rhetoric of policies versus practices on the ground? Through this study, I diverge with these authors' interpretation, and to the predominant view of putting at odds reality against rhetoric, or of dismissing rhetoric as half-truths, i.e., *mere* rhetoric, to argue that reality and rhetoric do mirror each other. The research highlights two perspectives on this point: "rhetoric is reality" and "reality as rhetoric."

If the global policies are considered the benchmarks for inclusion and integration projects, the rhetoric of the texts overtly laid out the conditions for engagement as discussed above. "Rhetoric is reality" emphasises the dismissive, negligent, and tangential regard of the authors of global policies towards place-based knowledges, as indicated in the texts of the policies. If reality was made to mirror this rhetoric, the 'lip-service' (Šakić Trogrlić et al., 2021) response of stakeholders outside of the policymaking chambers of the Hyogo and Sendai Frameworks is consistent with the stipulations of the global texts of relegating place-based knowledges dimensions to the category of an accessory to the status quo. Despite their overall message of provisional inclusion, I maintain that several readers of the policies may have afforded excessive optimism to the global policies' minimal textual stipulations of place-based knowledges representation in DRR. I argue that when the base of initiatives for intervention is anchored to the policy directives of international policies, then it is *because the rhetoric* of those directives encouraged marginal involvement, and therefore influenced, to some degree, what is to be practiced. The policies may have shifted their focus momentarily, but they did not relinquish their hold, and inordinate emphasis, on high technoscience so that focus had to revert to that original stance in the Sendai Framework, with an even more neutral, distanced, zero-point

positioning of regarding every dimension of knowledge as ‘data’. In the act of museumisation, this entails curation of what is ‘appropriate’ for inclusion. The rhetoric of DRR policies as soft laws –non-sanctioning, encouraging participation, norms-endorsing—achieved what it aimed to accomplish: to influence, to persuade, to convince its various audiences to align their strategies and actions to the global policies’ evolving tenets and undergirding philosophies.

Relatedly, this study presents the examination of rhetoric as a technique to understand the persuasive features of discourses, and how non-coercive tropes are deployed to the target audiences of policies. While rhetoric is often regarded as an embellishment of discourse, this study showed that the rhetoric of soft law regime of global DRR policies mirrored, rather than exaggerated, aspects of reality. As discussed above and in Chapter 6, the study showed how the authors of global policy documents presented a picture that shows reluctance and suspicion, employing layers of evaluation to set the parameters or fenced-off what place-based knowledges is and for DRR. Therefore, the minimal engagement with place-based knowledges in practice, in DRR education, for example, is congruent to the textual and rhetorical emphasis of policies. The policy analysis then showed that policies limited the space and features of inclusion, thus, not necessarily endorsing for full engagement of place-based knowledges.

In addition, “reality as rhetoric” shifts the attention beyond this study’s data to the longstanding processes of conditional knowledge integration. “Reality as rhetoric” refers to the systemic subjugation and usurpation of non-science knowledge systems through the project of integration in the service of the scientist or the manager (Agrawal, 2002; Nadasdy, 1999). In addition, “reality as rhetoric” is conjoined to the processes of hierarchisation and museumisation (Visvanathan, 2001). As in a hierarchy, place-based knowledges are assigned to the lower rungs of the epistemic ladder. The process of simultaneous inclusion and marginalisation, discussed in Chapter 6, illustrates what Visvanathan (2001) calls a “temporary circle” wherein the pragmatic properties of place-based knowledges are abstracted out of the whole, as the excerpt below shows:

Sometimes the hierarchy becomes a temporary circle and local knowledge is seen as an 'ethno-science', an act of 'make do' or what Levi Strauss calls bricolage. The pragmatic possibilities are acknowledged but the theoretical possibilities are truncated. The bricoleur still belongs to a lesser cognitive world. (p. 4)

In addition, museification proceeds with the same process of abstraction and the relegation of place-based knowledges as "signs and signals" (Chapter 7), "the knowledge of our forefathers" (Chapter 8), *kadaanan* or primitive views (Chapter 8), "knowledges in the islands" (Chapter 8), without regard for the ontological underpinnings (Visvanathan, 2001; Connell, 1999) and contemporary pragmatics of place-based knowledges (Chapters 2, 5).

"Reality as rhetoric" is also indicative of the persistence of coloniality and the systemic denigration of epistemologies outside of the rational views of science and technicist approaches to development. Chapter 8 shows how, even as the DRR framework did not prominently figure in Australia's local government policies and education programmes, the same message of viewing cyclones and related phenomena along the lines of regimented procedures encapsulated in "what to do before, during, and after" a cyclone indicates an all-encompassing regard of cyclones within the discourse of risk aversion. Indeed, even as the DRR framework is yet to reach Port Hedland, the town may well be how the 'culture of resilience' is envisioned to be.

Thus, on the one hand, "rhetoric is reality" refers to current practices that epitomise the textual stipulations of global DRR policies on the conditions for epistemic inclusion and integration. On the other hand, "reality as rhetoric" extends the analytical observation to enduring processes that precede the edicts of the Decade Framework, the Yokohama Strategy, the Hyogo Framework, and the Sendai Framework. I, therefore, posit that the rhetoric of policies at the global and local levels and the practices that they endorse connect the dots in the continuum of processes, relations, and systems that perpetuate epistemic subordination and usurpation.

As a result, through the rhetoric of inclusion, the formidable and enduring tyranny

of technocracy and science have been perpetuated. DRR rhetoric may, in some contexts, have also stunted or shunted the chance for a holistic engagement of place-based knowledges, as the framework set boundaries and encouraged a tunnel-vision through the promotion of a singular ‘culture,’ invalidating in the process the ‘cultures’ of disaster (Bankoff, 2004) in places such as the cyclone towns (Chapter 5). In an attempt to enclose everyone in the monoculture of DRR, the rhetoric casts a shadow on the multiplicity of cultures, epistemologies, and knowledge dimensions of peoples and places in relation to phenomena commonly regarded as ‘hazards’.

This narrowed-down version of place-based knowledges engagement is the backdrop against which DRR education became an emerging domain in education and research. DRR education is the ultimate expression of the tensions and accommodations in policies and practices, and where knowledge-, capacity-, and culture-building becomes pedagogical engagements. In this research, I showed that while global policies as soft laws lost their referential recall at the school level, they still wield influence by emphasising loss and risk reduction in teachers’ perspectives and teaching focus.

What could happen here? The prospects for DRR education

In this section, I revisit the third pillar of critical pedagogy of place (See Chapter 3, Figure 1, page 45) and its corresponding question of ‘what *should* happen here’ to ask first ‘What *could* happen here’. While the first question directs the imagination to the ethical and ideal future for DRR education, the latter question opens the discussions for possibilities as delimited, or as enabled, by policies and practices which instruct the features of what knowledge for disaster learning is or should be.

DRR education as an expression of coloniality

As the previous discussions indicate, programmes for DRR including in education could become the catalyst, the enabler, or the very expression of coloniality. Chapters 6, 7, and 8 showed that the rhetoric of epistemic inclusion and integration fell short in

promoting cognitive justice. This is not to say that the tenets of the DRR framework overtly emphasised the marginalisation of place-based perspectives. The discussion in Chapter 7 showed that with (e.g., Aparri) or without (e.g., Efate, Port Hedland) active implementation of DRR- endorsed systems and philosophies, the teachers *did not teach* about place-based knowledges and they also held perspectives that relegated context-specific epistemologies to the margins. Museumisation (Visvanathan, 2001) was evident in the form of temporal, cultural, and geographical distancing i.e., as knowledge of the *past, their* knowledge, or *island* knowledge.

With deliberate alignment to the DRR framework as shown in Aparri (Chapter 7), however, the emphasis on science-centric trainings, evacuations, and drills only emphasises two things: first, that DRR education is still contained within the silo of carrier subjects, specifically science. Second, the prominence of technicist and managerial approach to risk management will become part of regular school culture. What is edited out in this process of technoscientific education are perspectives that situate cyclones as part and parcel of land, culture, people, and livelihoods (Chapter 5). As place-based perspectives are relegated to common sense (e.g., ‘they already know about it’, Chapter 8), they are dismissed and hierarchised in favour of science as global knowledge (Chapter 7). Coloniality, in this sense, is evident in how uncritical DRR and DRR education has been received and implemented by both policymakers and practitioners.

DRR education as a catalyst for cognitive justice

I refer to Chapter 7 and the refusal of some of Vanuatu’s citizens to replace their knowledge of reading the land with meteorological forecasts (See pp. 192-193). These acts of resistance open the possibilities for multiple epistemologies to co-exist, enhance, and enrich the understanding of cyclones and their changing characteristics. With the exacerbation of global warming as the adverse effect of human-induced climate change, DRR education will only gain more traction and relevance as places become more exposed to precarious conditions.

Returning to the question of ‘what should happen here’, DRR education, even as it is entangled with the rhetoric of coloniality, could be the very vehicle for the critical examination of technocratic approaches, and an avenue to question the universalising features of the DRR design. Indeed, in their pursuit of the DRR project, global actors (Chapter 6) have put forward the building of a culture of resilience as a global agenda. In many ways, the singular framing for culture is reminiscent of Shiva’s (1993) concept of monoculture—the privileging of Western-style scientific knowledge and the blanket acceptance of its claims of improving global conditions for the good of all.

‘What could happen here’ demands for knowledge to be de-museumised, involved and engaged as living, current, and relevant, and underpinned with their own theoretical orientations (Connell, 2007). As the focus of global and national policies have now directed to communities and individuals (Chapters 6 and 7), there is also a strong emphasis for the localisation of DRR messages. For cognitive justice, localisation should not proceed through translating the global to the local (as exemplified by Philippine policies in Chapter 7), but to make the knowledges in the cyclone towns occupy more space in the discourse and practices. As put forward by Visvanathan (1999), Santos (2013), and Greenwood (2013)—the indigenous elder, the farmer, the miner, the fisherfolk, the office worker, the scientist, the weather forecaster, the layman, the old and the young alike, should be part of conversations in a ‘carnival of knowledge’ (Visvanathan, 1999, p. 3).

Recommendations for future research

DRR, as a dynamic and important field in these current times, is rife with opportunities for evaluation, critiquing, and enriching the discourses and practices that characterise its development and influence in varying contexts. As the literature shows in Chapter 2, there is no dearth of research on the domain area integration of DRR in education. What has been lacking are critical analyses of frameworks, policies, pedagogies, and agendas for DRR learning. Thus, I recommend sustained research

engagement through a critical lens, whether this be through a decolonial, postcolonial, feminist, or critical race theory. To the view afforded by CCS, I recommend more focused investigations of the policymaking and programmatic relations of international organisations, including global NGOs and the UN. For example, DRR education, as interpreted, adapted, and translated by international organisations, takes the form of a particular organisation's philosophy, a child-centred focus, for instance, and in accordance with the provisions of the Comprehensive School Safety Framework. Future studies could also delve deep through a deliberate Indigenist approach for each axis of the CCS, such as in critiquing DRR knowledge dimensions vis-à-vis each country's stipulated alignment to the tenets of the UN DRIP (United Nations, 2007b) as well as the Convention on Biological Diversity (United Nations, 1992).

I also recommend comparisons in these categories: between aid-receiving and aid-giving countries, the communities' views of knowledge, as well as the possibilities and complications in pedagogical engagement with place-based hazards and disasters. Future research could also examine the curriculum of DRR, as well as pursue action research on how place-based learning of hazards and disasters are practiced, thus expanding the analysis to look even more closely at ground level implementation. In addition, succeeding studies in this area may explore further the dimension of power and discourse in policies through methods such as policy archaeology and critical discourse analysis.

In this research endeavour, I questioned the perception that global policies for DRR encouraged strong emphasis and active engagement of place-based knowledges. I showed, through a critical analysis, that the rhetoric of global policies only reinforced an entrenched technoscientific positioning, albeit a message that is concealed with the persuasive features of soft law. In these current times, when climate change is increasingly becoming a reality rather than just a threat to many places and peoples, a critical examination of endorsed frameworks, designs, and practices is easily neglected. I posit in this thesis that, as places are rendered precarious, so are the immanent knowledges of the land, in our rush to arrive at a global solution.

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Appendix A (1): Participant Consent Form_Filipino version



School of Education and Social Work
Faculty of Arts and Social Sciences

ABN 15 211 513 464

PUNONG MANANALIKSIK: Dr Alexandra McCormick
Lektyurer

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Mga nanganganib na kaalaman sa mga lugar na mapanganib: Isang pag-aaral na maghahambing ng edukasyon patungkol sa Disaster Risk Reduction (DRR) sa Australia, Pilipinas, at Vanuatu

PORMAS NG PAHINTULOT

Ako, si [ISAAD ANG PANGALAN], ay sumasang-ayon na maging kabahagi ng kasalukuyang pananaliksik.

Sa aking pagsang-ayon, kaakibat nito ay:

- ✓ Ang aking pagkaunawa ng mga layunin ng pag-aaral na ito, ang saklaw ng aking partisipasyon, pati na ang mga panganib o kapakinabangan na maaaring aking kasangkutan.
- ✓ Aking nabasa ang mga nakasaad sa dokumentong Impormasyon Para sa Mga Kalahok sa Pananaliksik at napag-usapan 297ap ag ng masinsinan kasama ng mga mananasaliksik ang saklaw ng aking paglahok 297ap ag-aaral kung ito ay aking mamarapatin.
- ✓ Nasagot ng mga mananaliksik ng maayos ang aking mga katanungan tungkol 297ap ag-aaral at ako ay nasiyahan sa mga sagot nila.

- ✓ Naiintindihan kong kusang-loob ang aking pagsali sa pananaliksik na ito at hindi ko kailangang sumali kung mamarapatin ko. Hindi makakaapekto ang aking desisyon upang lumahok 298ap ag- aaral sa aking relasyon sa mga mananaliksik at iba pang mga taga-University of Sydney ngayon at sa hinaharap.
- ✓ Nauunawan ko na maaari kong bawiin ang aking pahintulot na lumahok 298ap ag-aaral na ito anumang oras.
- ✓ Nauunawaan ko na maaari kong ipatigil ang panayam sa anumang oras kung hindi ko na naisin pang magpatuloy. At maliban na lamang kung aking inilahad ang aking pahintulot, lahat ng datos na nakalap ay buburahin at lahat ng impormasyon na aking ibinigay ay hindi gagamitin 298ap ag-aaral. Naiintindihan ko din na maaari kong tanggihang sagutin ang mga katanungang hindi ko 298ap ag298 sagutin.
- ✓ Nauunawaan ko na ang aking mga personal na detalye na makokolekta sa haba ng pag-aaral na ito ay segurong iimbakin at gagamitin lamang para sa layunin na aking sinang-ayunan. Naiintindihan ko na maaari lamang ibahagi sa iba ang mga impormasyong aking ibinahagi sa mananaliksik kung ito ay may kaukulang pahintulot galing sa akin, maliban na lamang kung ang mga datos na ito ay kakailanganin sang-ayon sa pagpapatupad ng batas.
- ✓ Nauunawaan ko na ang resulta ng pananaliksik na ito ay maaaring iulat, subalit sa mga ulat na ito ay hindi nakalahad ang aking pangalan o anumang detalye na magtuturo sa akin, maliban na lamang kung ibinigay ko ang aking pahintulot sa pamamagitan ng pagpili ng “Oo” sa mga pinapipiliang kahon sa ibaba:

Oo, nais kong makilala bilang kalahok.

Hindi, ayaw kong makilala bilang kalahok. Maaaring itago 298ap a ang aking pagkakakilanlan.

Ibinibigay ko ang akin pahintulot sa:

- Pag-rekord sa panayam OO HINDI
- Pagkuha ng larawan OO HINDI
- Muling makapanayam para sa mga panghinaharap 299ap ag-aaral OO HINDI
- Permanenteng pag-imbak sa mga materyales ng pag-aaral OO HINDI
- Gusto kong masuri ang mga transkrip ng interbyu OO HINDI
- Gusto kong makatanggap ng ulat tungkol sa pangkalahatang resulta ng pag-aral OO HINDI

Kung sumagot ka ng **OO**, pakisulat ang iyong nais na paraan ng pakikipag-ugnay at ang iyong kinaroroonan:

Postal: _____

Email: _____

.....

Lagda

.....

ISULAT ang buong pangalan

.....

Petsa

Appendix A (2): Participant Consent Form_ English version



School of Education and Social Work
Faculty of Arts and Social Sciences

ABN 15 211 513 464

CHIEF INVESTIGATOR: Dr Alexandra McCormick
Lecturer

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Precarious places, precarious knowledges: A comparative study of Disaster Risk Reduction (DRR) education in Australia, the Philippines, and Vanuatu

PARTICIPANT CONSENT FORM

I, [PRINT NAME], agree to take part in this research study.

In giving my consent I acknowledge that:

- ✓ I understand the purpose of the study, what I will be asked to do, and any risks/benefits involved.
- ✓ I have read the Participant Information Statement and have been able to discuss my involvement in the study with the researchers if I wished to do so.
- ✓ The researchers have answered any questions that I had about the study and I am happy with the answers.
- ✓ I understand that being in this study is completely voluntary and I do not have to take part. My decision whether to be in the study will not affect my relationship with the researchers or anyone else at the University of Sydney now or in the future.
- ✓ I understand that I can withdraw from the study at any time.

- ✓ I understand that I may stop the interview at any time if I do not wish to continue, and that unless I indicate otherwise any recordings will then be erased and the information provided will not be included in the study. I also understand that I may refuse to answer any questions I don't wish to answer.
- ✓ I understand that personal information about me that is collected over the course of this project will be stored securely and will only be used for purposes that I have agreed to. I understand that information about me will only be told to others with my permission, except as required by law.
- ✓ I understand that the results of this study may be published, but these publications will not contain my name or any identifiable information about me unless I consent to being identified using the "Yes" checkbox below.

Yes, I am happy to be identified.

No, I don't want to be identified. Please keep my identity anonymous.

I consent to:

- | | | |
|---|------------------------------|-----------------------------|
| • Audio-recording | YES <input type="checkbox"/> | NO <input type="checkbox"/> |
| • Photographs | YES <input type="checkbox"/> | NO <input type="checkbox"/> |
| • Being contacted about future studies | YES <input type="checkbox"/> | NO <input type="checkbox"/> |
| • Permanent archiving of study materials | YES <input type="checkbox"/> | NO <input type="checkbox"/> |
| • I would like to review my interview transcripts | YES <input type="checkbox"/> | NO <input type="checkbox"/> |
| • I would like to receive feedback about the overall results of this study | YES <input type="checkbox"/> | NO <input type="checkbox"/> |

If you answered **YES**, please indicate your preferred form of feedback and address:

Postal: _____

Email: _____

.....
Signature

.....
PRINT name

.....
Date

Appendix A (3): Participant Consent Form_Bislama version



School of Education and Social Work
Faculty of Arts and Social Sciences

ABN 15 211 513 464

CHIEF iNVESTiGATOR: Dr Alexandra McCormick
Lecturer

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Ol dangerous ples, ol dangerous savy: One stud`y we i comperem Disaster Risk Reduction (DRR) long Austrelia, Filipin mo Vanuatu.

AGRiMEN FORM BLONG PATiSEPENT

Mi, [PRINTIM NEM], agri blong tek
pat long risej stadi ya .

Taem mi givim agrimen blong mi, i minim se:

- ✓ Mi andastanem ol bigfala tingting bihaen long stadi ya, wanem we bae i askem mi blo mekem mo eni risk/benefit blong hem.
- ✓ Mi ridim finis infomesen Stetment blong Patisipent mo mi save diskasem olsem wanem bae mi tek pat long stadi ya wetem ol riseja sapos mi wantem.
- ✓ Ol riseja oli ansarem ol kwesten we mi bin gat abaot stadi ya mo mi hapi wetem ansa blo olgeta.
- ✓ Mi andastanem se i nogat wan man i fosem mi blong tekem pat long stadi ya mo sapos mi no wantem mi save pulaot. Sapos mi jus blong no tekem pat long stadi ya bae i no afektem rilesensip blong mi wetem ol riseja ya o eniwan we i kam from Yunivesiti blong Sidni naoia o long fiutja.

- ✓ Mi andastan se mi save pulaot long stadi ya eni taem nomo.
- ✓ Mi andastan se mi save stopem intaviu eni taem sapos mi nomo wantem givim wan ansa mo eni rikoding we oli mekem bae oli rabemaot anles mi talem se oli save kipim, mo eni infomesen we mi givim bae oli no putum i go insaed long stadi ya. Mi andastan tu se mi save jusum blong no givim wan ansa long eni kwesten sapos mi no wantem.
- ✓ Mi andastan se eni praevet infomesen abaot mi wan we oli kolektem long projek ya bae oli storem sef i stap mo bae oli yusum nomo long ol saed we mi agri long hem. Mi andastan se eni infomesen abaot mi wan bae oli save serem wetem ol nara man nomo sapos mi givim raet long olgeta eksepep nomo sapos loa nao i talem.
- ✓ Mi andastan se ol risal blong stadi ya oli save pablisim, be insaed long ol pablikesen ya bae oli no mas putum nem blong mi o eni infomesen we bae oli luksave se oli tokabaot mi anles mi agri long hem olsem we mi soem long ol “Yes” jekboks long daon ya.

Yes, Mi hapi blong oli raetem nem blong mi.

No, Mi no wantem oli talemaot nem blong mi. Plis no raetem nem blong mi.

Mi agri blong oli:

- | | | |
|--|------------------------------|-----------------------------|
| • Rikodem vois blong mi | YES <input type="checkbox"/> | NO <input type="checkbox"/> |
| • Tekem Foto blong mi | YES <input type="checkbox"/> | NO <input type="checkbox"/> |
| • Oli kontaktem mi abaot eni nara stadi long fiutja | YES <input type="checkbox"/> | NO <input type="checkbox"/> |
| • Oli storem gud ol materiol blong stadi ya | YES <input type="checkbox"/> | NO <input type="checkbox"/> |
| • Mi wantem ridim ol toktok blong mi long intaviu | YES <input type="checkbox"/> | NO <input type="checkbox"/> |
| • Mi wantem risivim ol fidbak abaot ol risal blong stadi ya | YES <input type="checkbox"/> | NO <input type="checkbox"/> |

Sapos yu bin ansarem **YES**, plis raetem long daon olsem wanem yu wantem risivim fidbak mo putum adres blong yu:

Post: _____

Emeil: _____

.....
Signija

.....
PRINTIM nem

.....
Deit

Appendix B (1): Participant Information Statement_English version



School of Education and Social Work Faculty
of Arts and Social Sciences

ABN 15 211 513 464

CHIEF INVESTIGATOR: Dr Alexandra McCormick
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Precarious places, precarious knowledges: A comparative study of Disaster Risk Reduction (DRR) education in Australia, the Philippines, and Vanuatu

PARTICIPANT INFORMATION STATEMENT (Participant Observation)

(1) What is this study about?

You are invited to take part in a research study about Disaster Risk Reduction (DRR) education. The purpose of this study is to understand policies and practices about hazards and disasters learning in cyclone-exposed communities. This information will help to guide future policies on DRR education at the local, national, and international levels.

You have been invited to participate in this study because you have been a resident of Port Hedland/Aparri/Efate for the last 10 years. This Participant Information Statement tells you about the research study. Knowing what is involved will help you decide if you want to take part in the study. Please read this sheet carefully and ask questions about anything that you don't understand or want to know more about.

Participation in this research study is voluntary.

By giving consent to take part in this study you are telling us that you:

- ✓ Understand what you have read.
- ✓ Agree to take part in the research study as outlined below.
- ✓ Agree to the use of your personal information as described.

You will be given a copy of this Participant Information Statement to keep.

(2) Who is running the study?

Liberty Pascua is conducting this study as the basis for the degree of Doctor of Philosophy (PhD) in Education at The University of Sydney. This will take place under the supervision of Dr Alexandra McCormick and Associate Professor Ruth Phillips, School of Education and Social Work, Faculty of Arts and Social Sciences.

(3) What will the study involve for me?

- The researcher will stay in your community for 30-45 days. She will be participating in your regular activities, observing and taking notes of events, conversations, and persons she will be interacting with. She will be recording all these information in a notebook.
- The researcher may in the process request to interview you. The interview will be audio-taped. A transcript (written record) will be made of the interview. Should you wish to read the transcript, the researcher will give you a copy upon transcription of your recorded interview.
- Interviews will be held at a time and location that is convenient for you. Possible interview locations include your home, your office, at a local library, a community centre, or another place where the privacy and safety of you and the researcher can be assured.
- During the interview, the researcher will ask questions about cyclone hazards and disasters that affect/have affected your community. The conversation will focus on your experiences of cyclones, how you and your family live with recurrent cyclone events, and how you pass on your understanding of cyclones to younger members of your community.
- The researcher may request copies of relevant documents (e.g., photographs, letters, journals) from you to assist in her analysis. You may decline such request without the need to justify your decision.
- The researcher may request to take photographs of your house and/or your place of work and their surroundings, materials that you use at home or at work, and other artefacts she deems essential for her research. You may decline such request without the need to justify your decision.

(4) How much of my time will the study take?

The researcher will try not to impede your normal routine. The interview may last from 1-2 hours. She will take part in normal community life and may be engaging your time for a few hours per week over a period of one month.

(5) Do I have to be in the study? Can I withdraw from the study once I've started?

Being in this study is completely voluntary and you do not have to take part. Your decision whether to participate will not affect your current or future relationship with the researchers or anyone else at the University of Sydney.

If you decide to take part in the study and then change your mind later, you are free to withdraw at any time. You can do this by contacting the researchers (See Item 10). There are no negative consequences of withdrawing from the study. Upon withdrawal, all records of your interview will be deleted.

You are free to stop the interview at any time. Unless you say that you want us to keep them, any recordings will be erased and the information you have provided will not be included in the study results. You may also refuse to answer any questions that you do not wish to answer during the interview.

(6) Are there any risks or costs associated with being in the study?

Aside from giving up your time, we do not expect that there will be any risks or costs associated with taking part in this study.

(7) Are there any benefits associated with being in the study?

There is no cost to participate in this study, and there will be no payment to participants. The researcher will offer refreshments during interviews.

The study aims to contribute to the planning of DRR education that is both effective and relevant to the population of hazard-prone communities. Results of this study will help to guide future policies on DRR education at the local, national and international levels.

Some people report that sharing their experiences through research helps them to feel that their experiences are listened to and valued. Research participants may also find that the interviews are useful in helping them to think about their own experiences and feelings.

(8) What will happen to information about me that is collected during the study?

- Unless you opt to be identified, all research participants will be de-identified through the use of pseudonyms as far and early as possible in any of the research materials such as observation notes and interview transcripts to make sure that their identity will neither be used in the reporting of the research data nor in any intended publication of any sort, be it electronic or print media. All records containing personal information will remain confidential and no information that could lead to their identification will be released.
- Your information will be stored securely and your identity/information will only be disclosed with your permission, except as required by law.
- Audio recordings will be made of interviews, and the recordings will be

transcribed by the researcher and/or a third party with whom a confidentiality agreement has been negotiated. This is to ensure that the researcher can appropriately facilitate the discussion without being required to take detailed notes during the interview. The recordings will be analysed as research data and will be used in writing several publications on the research.

- By providing your consent, you are agreeing to us collecting personal information about you for the purposes of this research study. Your information will only be used for the purposes outlined in this Participant Information Statement, unless you consent otherwise.
- Findings from this research project will be disseminated through journal publications and book chapters, conference presentations and a student thesis. You will not be identified in these publications unless you agree to this using the tick box on the consent form.
- All electronic files will be stored on the password-protected laptop computer of the researcher during the project. All hard copies of consent forms and other project documentation will be stored in a locked filing cabinet in the researcher's office, Room 206 of the Education Building Annexe A36, The University of Sydney NSW 2006 Australia. Upon completion of the study and graduation of the researcher from the PhD programme, all research documents will be handed over to her supervisor, Dr Alexandra McCormick. Electronic files will be stored in a password-protected laptop computer; all hard copies of consent forms and other project documentation will be stored in a locked filing cabinet in Dr McCormick's office, Room 506 of the Education Building A35, The University of Sydney NSW 2006 Australia. Only the researcher and her supervisor will have access to the data.
- Audio recordings and ethnographic field notes will be stored in perpetuity as fitting the University of Sydney's guidelines. Upon completion of the project, hard copies such as transcripts of interviews will be securely disposed of. While the data collected will be used primarily for this present research, there is a possibility for the data to be re-analyzed in the future in light of emerging research developments in the field of DRR and DRR education.

(9) Can I tell other people about the study?

Yes, you are welcome to tell other people about the study.

(10) What if I would like further information about the study?

When you have read this information, Liberty Pascua will be available to discuss it with you further and answer any questions you may have. If you would like to know more at any stage during the study, please feel free to contact:

- Liberty Pascua, PhD Candidate, School of Education and Social Work, Faculty of Arts and Social Sciences, University of Sydney
Ph: (+61) 42 808 0023
Email: liberty.pascua@sydney.edu.au
- Dr Alexandra McCormick, Lecturer, School of Education and Social Work, Faculty of Arts and Social Sciences, University of Sydney
Ph: (+61) 2 9351 6215
Email: alexandra.mccormick@sydney.edu.au

(11) Will I be told the results of the study?

You have a right to receive feedback about the overall results of this study. You can tell us that you wish to receive feedback by ticking the relevant box on the consent form. This feedback will be in the form of a one-page lay summary. You will receive this feedback after the study is finished.

(12) What would I do if I experience distress?

If you experience distress as a result of discussing sensitive issues during the interview, you are encouraged to contact the following organizations for free and independent confidential support.

In Australia:
Lifeline on 13 11 14
[The Salvation Army](#) on 1300 363 622

In the Philippines:
Hopeline on (02) 804-4637; 0917-5584673; and 2919 for Globe and TM subscribers

In Vanuatu:
Ministry of Justice and Community Services on +678 33615

(13) What if I have a complaint or any concerns about the study?

Research involving humans in Australia is reviewed by an independent group of people called a Human Research Ethics Committee (HREC). The ethical aspects of this study have been approved by the HREC of the University of Sydney [Protocol Number: 2017/802]. As part of this process, we have agreed to carry out the study according to the *National Statement on Ethical Conduct in Human Research (2007)*. This statement has been developed to protect people who agree to take part in research studies.

If you are concerned about the way this study is being conducted or you wish to make a complaint to someone independent from the study, please contact the university using the details outlined below. Please quote the study title and protocol number.

The Manager, Ethics Administration, University of Sydney:

- **Telephone:** +61 2 8627 8176
- **Email:** human.ethics@sydney.edu.au
- **Fax:** +61 2 8627 8177 (Facsimile)

This information sheet is for you to keep

Appendix B (2): Participant Information Statement_Bislama version



ABN 15 211 513 464

School of Education and Social
Work Faculty of Arts and Social
Sciences

CHIEF INVESTIGATOR: Dr Alexandra McCormick
Lecturer

A35 – Education Building
The University of Sydney NSW 2006
AUSTRALIA
Telephone: +61 2 9351 6215
Email: Alexandra.mccormick@sydney.edu.au
Web: <http://www.sydney.edu.au/>

Ol dangerous ples, ol dangerous savy: One stud`y we i comperem Disaster Risk Reduction (DRR) long Austrelia, Filipin mo Vanuatu

PARTICIPANT INFORMATION STATEMENT (Participant Observation)

(1) Stadi ia hemi blong wanem?

Mifala i invitem you blong takepart lo one research study, long side blong Disaster Risk Reduction (DRR) education. Purpose lo study ia hemi blong understandem ol policies an practices about olgeta hazards (problem) and disasters learning long olgeta cyclone exposed communities. Information ia bae i helpem and guidem ol policies blong future long side blong DRR education long local, national and international level.

Mifala i invitem you blong paticipate (takepart) long study from you live long Efate blong 10 years finis.

This fala Participant information Statement bae i talem you about research study, blong yu savy wanem hemi involvem that bae helpem you decide, sapos yu wantem takepart long study ia. Please you readim gud pepa ia and yu savy askem any question that yu no clear gud or sapos yu wantem savy more.

Olgeta participant lo research ia, oli voluntary meanim se, istap long yu sapos you wantem take part or no.

Sapos yu agree blong take part long study ia, i meanem that you:

- ✓ (You understand (savy) wanem yu readim)
- ✓ (Yu agree blo take part lo study)
- ✓ Yu agree blong yusum ol personal infomesen blo yu, olsem oli discribem.

Bae mifala i givim you one copy blong Participant Information Statement blong you keepim.

(2) Who i ranem study ia?

Liberty Pascua hemi conductem this fala study olsem basis blo degree blong Doctor of Philosophy (PhD) long side blong education blong hem, long University blong Sydney. Bae i takem place under long Supervison blong Dr Alexandra McCormick and Associate Professor Ruth Phillips long side blong School long Education and social work, Faculty lo Arts and Social Science.

(3) Bae study ia i involvem mi olsem wanem?

- Study bae i involvem face to face interview, that bae mifala audio tapem.
- One transcript (written record) bae oli makem blong interview. Sapos you wanted readim transcript, bae researcher i givim you one copy long transcript blong interview that oli recordem.
- Interview bae i take place long time and place that hemi convenient blong you. Ol place blong interview i savy olsem Haus blo you/Office blo you/Library/Community centre or one place that igot privacy and i safe blong you and researcher.
- Researcher bae i stap long community blong you, blong 30-45 days. Bae hemi participate (takepart) long olgeta activities, observing (lukluk) and takem notes long ol events, conversations and person bae hem stap interact (deal) wetem. Bae hemi recordem information long notebook.
- Researcher might requestem copy blong olgeta document example photo/letter/journal blong helpem hem long research. Istap long you, sapos you wantem givem or no.
- Researcher might asked for takem photo blong haus blong you/Office blong yu/Artifacts that bae helpem wetem research blong hem.

(4) Bae study i takem hamas time, blong me?

Researcher bae i work wetem normal routine blo you. Interview bae takem 1-2 hours. Bae hem takem part long normal community life. Bae hem needim few hours blo you per week for one month.

(5) Mi savy withdraw (stop) afta we mi startem finis?

Blong tekem part long study ia, hemi voluntary (istap long yu sapos yu wantem take part or no) Decision blong you, blong participate bae ino afectem relationship blo yu wetem researcher or University of Sydney now ia or lo future.

Sapos you take part lo study afta you changem mind blo yu, You free blo withdraw (stop) long any time/You contactem researcher nomo (Lookim item 10). Inogat problem, Time you withdraw (Cancellem) bae mifala i deletem ol record blo ng interview blong you.

You savy stopem interview any time, Sapos yu wantem that mifala keepim iorait, Sapos no, bae mifala erasem (deletem) any recording and mifala bae no includim long result blo study/You got right blong no answerem any questions sapos yu no wantem, Long interview.

(6) I got any risk or costs associated blong take part long study ia?

Blong givim time blong you. Mifala no expectem that bae i gat any risks or costs associated blong takem part long study ia.

(7) I got any benefits/Bae yufala payem (pem)mi blong study?

No - Hemi free blong take part. Study hem free and mifala no payem (pem)Olgeta participants.

Study hem aim blo contribute lo planning lo DRR education that hem i stret/relevant blo olgeta population lo ol Hazard prone communities. Ol result lo study bae help lo guidem ol future policies lo side lo DRR education lo local/national and international level.

Some people reportem that team oli sharem experience blong olgeta through lo ng research, em helpem olgeta blo feelim that experience blong ol igat value (i heavy).

(8) Wanem bae i happen lo information about me, that yufala i collected for thisfala study?

- Bae oli askem name blong you and detail blong where you live lo community blo you. Unless you no wantem that oli identifyem you, Ol research participants bae oli identifyem through use blong pseudonyms as far and as early as possible long any blong research materials blong makem sure that Identity bae neither oli iusum long report blong research data or long intended publication blong any sort (kind) electronic or print media. Ol information ia hemi confidential. No information that bae hem lead long identification long you, bae ol releasem.
- Information bae mifala storem lo wan secure ples. Information long you bae oli storem long one secure (safe) place and Identity/Information bae mifala givim out wetem permission blong you nomo, except sapos law i requirem.
- Bae mifala mekem audio recording blong interview and bae oli transcribem wetem researcher mo one 3rd party, that oli gat negotiation lo one confidentiality agreement. Hemia blong ensurem that researcher savy facilitatem stret discusson without requirment blong takem detailed notes during time blong interview.Ol recording bae oli analysem olsem one research data and bae oli iusum blong writtem some publications long side blong research.
- Blong providem consent you agree blong mifala collectem personal information

long you belong usum lo research. Information blong you,bae oli iusum long purpose that outlinem thisfala Participant Information Statement nomo unless yu no sure.

- Ol findings from this fala research project bae mifala sendem through long olgeta journal publications and book chapters, conference presentations and student thesis. Bae mifala no usum name blong you, unless you tickem box.
- Ol electronic files bae oli storem long password protected laptop computer long research during project. Olgeta hard copies long ol consent forms and olgeta narafala project documentation bae oli storem lo one filling cabinet that mifala lockem lo office lo researcher Room 206 of the Education Building Annexe A36, The University of Sydney NSW 2006 Australia. Long Completion long study and graduation long researcher long PhD program. Olgeta research document bae oli handem igo long supervisor - Dr Alexandra McCormick. Electronic files be lo sortem out long one password protected computer. Ol hard copies blong consent forms and ol other documentation blong project bae ol storem long one locked filing cabinet long office blong Dr McCormick's, Room 506 of the Education Building A35, The University of Sydney NSW 2006 Australia. Only researcher and supervisor blong hem bae got access to the data.

(9) Mi savy telem olgeta narafala pipol about Study ia?

Yes you welcome blong Tellem olgeta narafala pipol.

(10) Olsem wanem sapos mi wantem more information long side blo study?

Time you readem information ia, Liberty Pascua Bae hem available blo talk about and answerem ol question that you got.

More information: Contactem Liberty Pascua and Dr Alexandra McCormick.

- Liberty Pascua, PhD Candidate, School of Education and Social Work, Faculty of Arts and Social Sciences, University of Sydney
Ph: (+61) 42 808 0023
Email: liberty.pascua@sydney.edu.au
- Dr Alexandra McCormick, Lecturer, School of Education and Social Work
Faculty of Arts and Social Sciences, University of Sydney
Ph: (+61) 2 9351 6215
Email: alexandra.mccormick@sydney.edu.au

(11) Bae yufala telem me ol result blong study ia?

You got right blong receivem feedback about results long study. Tickem right box long consent form, sapos you wanted receivem feedback. Feedback be hemi one page long summary. Bae you receivem feedback afta lo study.

(12) Bae mi makem wanem, sapos mi no feelim gud?

Sapos yu no feelim gud long side blo talk about some issue that oli sensitive, Mifala encouragem you blo contactem:

Ministry of Justice and Community Services on +678 33615 Blong one for free and independent confidential support

(13) Olsem wanem sapos mi got one complaint or concern lo side blo this fala study?

Ol research lo side blo humans lo Austrelia, oli reviewem wetem wan independent Group, oli callen Human Research Ethics Committee (HREC) University blong Sydney i approved ol Moral/Issue ia under [Protocol Number: 2017/802].

Lond side lo process, mifala agree blong carryem out study follem National Statement on Ethical Conduct in Human Research (2007). This fala statement, oli been developem blong protectem ol pipol that oli agree blong take part long research study.

Sapos you concern about way that mifala conductem study ia or wish blong makem complaint. Please contactem University lo address below (andanit).

The Manager, Ethics Administration, University of Sydney:

- **Telephone:** +61 2 8627 8176
- **Email:** human.ethics@sydney.edu.au
- **Fax:** +61 2 8627 8177 (Facsimile)

Information paper ia, hem for you belong keepi

Appendix B (3): Participant Information Statement_Filipino version



School of Education and Social Work Faculty of Arts
and Social Sciences

ABN 15 211 513 464

**PUNONG MANANALIKSIK: Dr Alexandra
McCormick**
Lektyurer

A35 – Education Building
The University of Sydney NSW 2006 AUSTRALIA
Telephone: +61 2 9351 6215
Email: Alexandra.mccormick@sydney.edu.au
Web: <http://www.sydney.edu.au/>

Mga nanganganib na kaalaman sa mga lugar na mapanganib: Isang pag-aaral na maghahambing ng edukasyon patungkol sa Disaster Risk Reduction (DRR) sa Australia, Pilipinas, at Vanuatu

Impormasyon Para sa Mga Kalahok sa Pananaliksik (Etnograpiko)

(1) Saan patungkol ang pag-aaral na ito?

Ikaw ay iniimbitahang maging kalahok sa isang pag-aaral hinggil sa edukasyong ukol sa pagmamaneha ng mga panganib at sakuna, o ang tinatawag na Disaster Risk Reduction (DRR). Layunin ng pag-aaral na ito ang maintindihan ang mga patakaran, gawain, at mga kaparaanan ng pagtuturo tungkol sa mga sakuna at mga likas na panganib sa mga mabagyang lugar. Makakatulong ang impormasyong makakalap upang lalong mapaghusay ang mga patakaran patungkol sa edukasyong DRR sa antas ng lokal, nasional, at internasyonal.

Inaanyayahan kang maging kalahok sa pag-aaral na ito dahil ikaw ay residente ng Calayan sa nakalipas na sampung taon. Ang dokumentong ito ay siyang magpapaliwanag ng saklaw ng pag-aaral na ito. Makakatulong ang nilalaman nito sa iyong pagdedesisyon kung nanaisin mong maging kalahok o hindi. Maaari lamang na masusing basahin ang nilalaman nito at magtanong patungkol sa kahit na anong bagay o detalye na hindi malinaw o gusto mo pang mas maintindihan.

Hindi sapilitan at kusang-loob lamang ang paglahok sa pag-aaral na ito. Sa iyong pagsang-ayon na maging kalahok, sinasabi mong:

- ✓ Naintindihan mo ang iyong mga binasa.
- ✓ Umaayon kang maging kabahagi ng pag-aaral ayon sa mga detalyeng nakalahad sa ibaba.
- ✓ Umaayon kang gamitin ng mga mananaliksik ang iyong personal na detalye ayon sa pagkakasaad sa ibaba.

Bibigyan ka ng sarili mong kopya ng dokumentong **Impormasyon Para sa Mga Kalahok sa Pananaliksik**.

(2) Sino ang namamalakad ng pag-aaral na ito?

Si Bb. Liberty Pascua ay siyang nagsasagawa ng pag-aaral na ito bilang batayan sa paggawad ng Doctor of Philosophy (PhD) in Education na titulo sa University of Sydney sa bansang Australia. Ito ay pinangangasiwaan nina Dr Alexandra McCormick at Associate Professor Ruth Phillips ng School of Education and Social Work, Faculty of Arts and Social Sciences, bilang kanyang mga superbisor.

(3) Ano ang saklaw ng aking paglahok?

- Titira ang mananaliksik sa iyong pamayanan sa loob ng 30-45 na araw. Siya ay makikipamuhay at makikibahagi sa mga karaniwang mga gawain, magmamasid, at magtatala ng mga obserbasyon sa mga pangyayari, pag- uusap, at mga taong kanyang makakatalakayan. Itatala niya ang mga impormasyong makakalap sa isang kuwaderno.
- Maaaring ikaw ay interbyuhin ng mananaliksik Ang panayam na ito ay gagamitan ng audio- recording. Ang interbyu ay isasalin sa nakasulat na anyo o ang tinatawag na transkrip. Kung iyong nanaisin na mabasa ang transkrip, bibigyan ka ng mananaliksik ng kopya nito matapos ang pagsasalin.
- Ang interbyu ay gaganapin sa oras at lugar na angkop sa iyong kalalagayan. Ilan sa mga angkop na lugar para sa interbyu ay ang iyong bahay, opisina, silid-aklatan, pampublikong lugar, at mga lugar kung saan palagay at ligtas ang mga sangkot.
- Sa kahabaan ng interbyu, ikaw ay tatanungin ng mananaliksik patungkol sa mga bagyo, ang mga panganib at sakuna na kaakibat nito, na siyang nanalasa o paulit-ulit na nakakaapekto sa iyong pamayanan. likot ang pag- uusap sa iyong mga karanasan ng bagyo, kung paano ka namumuhay kasama ng iyong pamilya sa paulit-ulit na pananalasa ng bagyo, at kung paano mo ipinapasa ang iyong kaalaman patungkol sa bagyo sa mga mas nakababatang miyembro ng iyong komunidad.
- Maaaring humingi ang mananaliksik ng kopya ng mga materyales kagaya ng larawan, liham, o mga kasulatan upang kasangkapanin sa kanyang pagsusuri ng mga datos. Maaari kang tumanggi at hindi mo kailangang ipaliwanang ang dahilan ng iyong pagtanggi.
- Maaaring hingin ng mananaliksik ang iyong permiso upang kuhanan ng larawan ang iyong bahay o lugar kung saan ka nagtatrabaho, at iba pang mga gamit na sa tingin niya ay makabuluhan para sa kanyang pag-aaral. Maaari kang tumanggi at hindi mo kailangang ipaliwanang ang dahilan ng iyong pagtanggi.

(4) Gaano katagal ang aking partisipasyon?

Magtatagal ang interbyu ng 1 hanggang 1.5 oras. Anumang pag-uusap pagkatapos ng interbyu ay inaasahang magtatagal ng 10 hanggang 30 minutos.

(5) Kinakailangan ba ang aking paglahok? Maaari bang hindi magpatuloy kung nagsimula na ang pag-aaral?

Ang pakikibahagi sa pananaliksik na ito ay kusang-loob at hindi ka pwersadong makilahok. Hindi makakaapekto ang iyong desisyon ng paglahok o hindi paglahok sa iyong relasyon, sa kasalukuyan man o sa hinaharap, sa mga mananaliksik o kahit sino man sa University of Sydney.

Kung sa nanaisin mong makibahagi sa kasalukuyan ngunit magbabago ang iyong isipan sa hinaharap, malaya kang magpasya na umalis sa pag-aaral anumang oras. Maaari mo itong gawin sa pamamagitan ng pakikipag-usap sa mga mananaliksik (Tingnan ang Aytem 10). Walang negatibong epekto ng pagtigil sa paglahok sa pananaliksik na ito. Kaagad na buburahin ang mga datos ng iyong pakikipagpanayam matapos matanggap ang iyong pormal na pahayag.

Maaari mong ipatigil ang panayam anumang oras. Maliban na lamang kung nais mong imbakin namin ang iyong mga datos na ibinahagi, ang mga ito ay agarang buburahin at hindi isasama sa ulat ukol sa pag-aaral. Maari ka ding tumanggi na sagutin ang mga katanungang hindi mo nais sagutin sa interbyu.

(6) Ako ba ay manganganib o gagastos sa aking paglahok?

Maliban sa oras na iyong gugugulin para sa interbyu, wala kaming maisip na anumang panganib o gastos sa mga kalahok sa pag-aaral na ito.

(7) May mga benepisyo ba akong matatanggap sa aking paglahok?

Walang bayad na sisingilin para sa pag-aaral na ito sa mga mananaliksik man o sa kalahok.

Ang pag-aaral na ito ay naglalayong makadagdag sa kaalaman ukol sa pagpapalano para sa edukasyong DRR na mas epektibo at may katuturan sa mga pamayanan na parating nakakaranas ng sakuna. Ang resulta ng pag-aaral na ito ay naglalayong maging katulong sa paggawa ng mga smas pinahusay na patakaran sa edukasyong DRR sa antas ng lokal, nasional, at internasional.

May ilang nagsasabi na ang pagbabahagi ng kanilang karanasan sa pamamagitan ng pakikilahok sa isang pananaliksik ay nakakatulong dahil pakiramdam nila ay sila'y napapakinggan at napapahalagahan. Maaari ring maramdaman ng mga kalahok na ang mga panayam ay nakakatulong upang maproseso ang kanilang mga karanasan at damdamin.

(8) Ano ang mangyayari sa mga datos na makakalap tungkol sa akin sa pag-aaral na ito?

- Maliban na lamang kung pipiliin mong isiwalat ang iyong pagkakakilanlan, lahat ng mga kasangkot sa pag-aaral na ito ay itatago sa ibang pangalan o palayaw sa haba at sa simula pa lamang, at sa lahat ng mga materyales para sa pananaliksik.

Gagawin ito upang siguraduhing ang mga pagkakakilanlan ng mga kalahok ay hindi magagamit sa pag-uulat ng mga datos o sa kahit na ano mang klase ng publikasyon, maging ito ay elektronik o inilimbag na anyo. Mananatiling kumpidensyal ang lahat ng nakatalang datos na may personal na impormasyon at walang impormasyon ang lalabas na maaaring magbigay-daan sa pagkakakilanlan ng mga kalahok.

- Segurong iimbakin ang mga impormasyon patungkol sa iyong pagkakakilanlan. Ipagbibigay-alam lamang ang iyong identidad kalakip ng iyong permiso, maliban na lamang kung ito’y may kaugnayan sa pagpapatupad ng batas.
- Isasalin sa transkrip ang mga interbyu ng mananaliksik o ng ikatlong partido na sumang-ayon sa isang kasunduang kumpidensyal. Gagawin ito upang matiyak ng mananaliksik na mainam ang pangangasiwa ng talakayan na hindi kinakailangan ang pagnota ng detalyadong impormasyon. Susuriin ang mga interbyu bilang mga datos ng pananaliksik at gagamitin ito sa samu’t saring mga publikasyon ukol sa naturang pag- aaral.
- Sa paggawad ng iyong pahintulot, sumasang-ayon ka sa pagkalap ng mga personal na impormasyon para sa mga layunin ng pag-aaral na ito. Ang impormasyon na ito ay gagamitin lamang upang makamit ang mga layuning nakasaad sa pormas na ito, maliban na lamang kung taliwas dito ang iyong pagsang-ayon.
- Ipapalaganap ang mga tuklas mula sa pag-aaral na ito sa pamamagitan ng mga publikasyon sa mga akademikong diyurnal, mga kabanata sa aklat, presentasyon sa mga kumperensiya, at tesis. Hindi malalaman ang iyong mga pagkakakilanlan sa mga publikasyon na ito maliban na lamang kung ikaw ay magbibigay ng iyong permiso na makilala sa mga publikasyon sa pamamagitan ng pagpili sa karampatang kahon sa Pormas ng Pahintulot.
- Iimbakin ang lahat ng elektronikong mga papeles sa isang protektadong laptop computer ng password, na pag-aari ng mananaliksik sa kabuuan ng proyekto. Lahat ng nakalimbag na kopya ng Pormas ng Pahintulot at iba pang mga dokumento ay iimbakin sa isang nakakandadong aparador sa opisina ng mananaliksik, sa Room 206 ng Education Building Annexe A36, The University of Sydney NSW 2006 Australia. Pagkayari ng pag- aaral na ito at sa pagtatapos ng mananaliksik sa kanyang PhD, ililipat ang lahat ng mga dokumento para sa pananaliksik sa pangangasiwa ng kanyang superbisor na si Dr Alexandra McCormick. Iimbakin ang lahat ng elektronikong mga papeles sa isang protektadong laptop computer ng password; lahat ng nakalimbag na kopya ng Porma ng Pahintulot at iba pang mga dokumento ay iimbakin sa isang nakakandadong aparador sa opisina ni Dr McCormick, sa Room 506 ng Education Building A35, The University of Sydney NSW 2006 Australia. Tanging ang mananaliksik at ang kanyang superbisor ang makakahawak sa mga datos.
- Ang mga datos sa interbyu at mga talaang etnograpiiko ay iimbakin ng pamalagian bilang naaayon sa patakaran ng University of Sydney. Pagkatapos ng proyekto,

segurong itatapon ang mga transkrip ng mga interbyu.

- Bagaman ang mga datos na nakolekta ay gagamitin una sa lahat para sa pangkasalukuyang pag-aaral, may posibilidad na muli itong susuriin sa hinaharap sa kadahilanan ng patuloy na pag-usbong ng mga sangay ng pagsisiyasat sa DRR at edukasyon para sa DRR.

(9) Maari ko bang ipagbigay-alam sa ibang tao ang pag-aaral na ito?

Oo, maaari mong ipagbigay-alam sa ibang tao ang pag-aaral.

(10) Paano kung gusto ko ng mas marami pang impormasyon ukol sa pag-aaral na ito?

Pagkabasa mo ng nilalaman ng dokumentong ito, si Liberty Pascua ay handang talakayin ng mas mainam ang mga detalye at sagutin ang iyong mga katanungan. Kung naisin mong mas maintindihan ang pag-aaral na ito, malaya kang kausapin sina:

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(11) Malalaman ko ba ang resulta ng pag-aaral na ito?

May karapatan kang makatanggap ng katugunan ukol sa pangkalahatang resulta ng pag-aaral na ito. Maaari mong ipagbigay-alam sa amin ang iyong naisin na makatanggap ng ulat sa pamamagitan ng pag-tsek ng kaukulang kahon sa Pormas ng Pahintulot. Ang ulat ay isasapanid sa isang isang pahinang buod. Matatanggap mo ang ulat na ito pagkatapos ng pag-aaral.

(12) Ano ang gagawin ko kung makararanas ako ng pagkabalisa?

Kung ikaw ay makararanas ng pagkabalisa sanhi ng pagtalakay sa mga sensitibong mga paksa sa kahabaan ng interbyu, aming iminumungkahi na kausapin ang mga sumusunod na grupo para sa isang libre, independiente, at kumpiyansang pagpapayo.

Hopeline sa (02) 804-4637; 0917-5584673;
2919 para sa Globe at TM subscribers

(13) Paano kung mayroon akong reklamo o pagkabahala ukol sa pag-aaral?

Ang mga pananaliksik sa Australia na may mga taong kalahok ay sinusuri ng independienteng grupo na kung tawagin ay Human Research Ethics Committee (HREC). Aprobado ng HREC ng University of Sydney [Protocol Number: 2017/802] ang mga etikal na aspeto ng pag-aaral na ito. Kaakibat nito ay ang aming pagsang- ayon sa pagpapatupad sa mga patakaran ng National Statement on Ethical Conduct in Human Research (2007) sa Australia. Binuo ang paglalahad na ito upang protektahan ang mga taong pumayag na maging kalahok sa mga pananaliksik kagaya nito.

Kung ikaw ay nababahala sa paraan ng pamamahala ng pag-aaral na ito o kung nais mong maghain ng reklamo sa isang ahensiya na independiente sa pag-aaral na ito, mangyari po lamang na sumangguni sa pamantasan gamit ang mga detalyeng nakasulat sa ibaba. Maaari din lamang na banggitin ang pamagat ng pag-aaral at numerong pagkakakilanlan (protocol number)

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Para sa iyo ang papeles na ito