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I will not go, I cannot go: cultural and social limitations of disaster preparedness in Asia, Africa, and Oceania

Sonja Ayeb-Karlsson, Dominic Kniveton, Terry Cannon, Kees van der Geest, Istiak Ahmed, Erin M. Derrington, Ebinezor Florano, and Denis Opiyo Opiyo¹

While much work has been invested in addressing the economic and technical basis of disaster preparedness, less effort has been directed towards understanding the cultural and social obstacles to and opportunities for disaster risk reduction. This paper presents local insights from five different national settings into the cultural and social contexts of disaster preparedness. In most cases, an early warning system was in place, but it failed to alert people to diverse environmental shocks. The research findings show that despite geographical and typological differences in these locations, the limitations of the systems were fairly similar. In Kenya, people received warnings, but from contradictory systems, whereas in the Philippines and on the island of Saipan, people did not understand the messages or take them seriously. In Bangladesh and Nepal, however, a deeper cultural and religious reasoning serves to explain disasters, and how to prevent them or find safety when they strike.

Keywords: cultural and social attitudes, decision-making, disaster risk reduction, early warning system, evacuation, immobility, loss and damage, religious beliefs, risk perception

Introduction

This paper presents research examples from five settings—Bangladesh, Kenya, Nepal, the Philippines, and Saipan (the largest of the Northern Mariana Islands, a commonwealth of the United States situated in the Western Pacific Region)—where attempts at disaster risk reduction (DRR) have not worked. These failures can be broadly said to have occurred because DRR institutions misunderstood how people perceive risks, and how they behave in relation to different hazards and warnings. The findings relate mainly to situations where the early warning system (EWS) in place did not generate expected results, owing to differences in risk perception and willingness to prepare for hazards, such as earthquakes, floods, and volcanic eruptions.

The study provides evidence of two determinants limiting the success of EWSs: those that are *social* in nature; and those that are *cultural* in nature.² With regard to the social, the EWS failed in Kenya, the Philippines, and Saipan because of a number of factors, including how people behave in relation to (or mistrust) authorities, and problems with how the warnings were designed or delivered. With regard to

the cultural, in Bangladesh and Nepal there were mismatches between evacuation policies and how people themselves explained disasters, pointing to higher powers and beliefs. For instance, it made no sense for people to respond to a warning message and evacuate if they believed that God would save them no matter where they were or if they perceived the disaster to be a punishment for unsacred behaviour. The general assumption of many DRR organisations is that individuals will prepare for and evacuate in response to early warning messages (Cutter, 2003; Mitchell, 2000; Morrison, Duncan, and Parton, 2015). Often, though, this is not the case. For example, people who believe that the disaster is God's punishment for sinful activity may see no reason to leave. Others may assume that hazards are determined by the Gods who control them and thus must be respected and appeased through ritual (Schmuck, 2000; Stephens et al., 2013; Cannon et al., 2014). DRR organisations also tend to assume that EWSs that advise evacuation (normally organised via governmental agencies) will be seen as useful and trusted. Yet, many people who confront serious hazards do not trust the government, or do not respond to warnings in the way that is expected.

DRR and EWSs have been framed as key climate action mechanisms in several global policy frameworks, such as the United Nations Office for Disaster Risk Reduction's Sendai Framework for DRR and Resilience 2015–2030, and the United Nations Framework Convention on Climate Change's 2015 Paris Agreement (UNFCCC, 2015; Wahlström, 2015). Article 8 of the Paris Agreement states that:

Parties recognize the importance of averting, minimizing and addressing loss and damage associated with the adverse effects of climate change, including extreme weather events and slow onset events, and the role of sustainable development in reducing the risk of loss and damage. . . . Accordingly, areas of cooperation and facilitation to enhance understanding, action and support may include: (a) Early warning systems; (b) Emergency preparedness; . . . [and] (e) Comprehensive risk assessment and management (UNFCCC, 2015, p. 25).

Yet, to comprehend fully people's risk assessment, it is crucial to remember that human beings are social entities with culturally-based beliefs that determine their response behaviour.

This paper explores the influence of cultural and social contexts on perceptions of hazards and disasters and the responses to them using case studies from across the world. It aims to increase understanding of why people do not always act as expected among those framing scientific and technological ideas about disaster risks. Current DRR assumptions regarding people's evacuation behaviour involve socioeconomic and technical approaches that assume that people will prepare and respond to early warning messages if they have the means to do so (Mercer et al., 2009; Bankoff, 2015). It is presumed that people's 'natural' logic is to evacuate if they can, but this is not always the case. Risk-related rationalities are differentiated and people's decisions are influenced, inter alia, by social networks and sociocultural norms (Oliver-Smith and Hoffman, 1999; Cannon et al., 2014; Ayeb-Karlsson, Fox, and Kniveton, 2019).

People's perceptions of the causes of disasters are strongly linked to their cultural, religious, and social understanding of the world. Individual behaviour is deeply influenced by what is expected by the peer group and cultural and social norms (Mercer et al., 2009; Cheema et al., 2015). Nevertheless, such perceptions of climatic risks and responsive behaviour have received limited attention within academia in general (Mitchell, 2000; Krüger et al., 2015; Morrison, Duncan, and Parton, 2015). Religious beliefs about hazards (relevant to a majority of the world's population) are frequently regarded as sensitive and hence their impacts are avoided within academia and policymaking (Ager, Fiddian-Qasmiyeh, and Ager, 2015; Schipper, 2015; McGeehan and Baker, 2017). Many DRR organisations largely underestimate, therefore, the effect of such beliefs in their climate-action approaches. Religion, though, can also serve as a platform to raise people's awareness of disaster risks, as is done effectively, for instance, by Islamic Relief and the Red Cross. Religion, cultural beliefs, and disasters are closely connected in most societies, and arise from the fundamental need of people to understand and explain their everyday surroundings (Ager, Fiddian-Qasmiyeh, and Ager, 2015; Cheema et al., 2015). Seeing an extreme hazard event as an 'act of God' allows for the inability of people to control the event, and to moderate or avoid it through sacrifices and 'righteous' behaviour (Hoffman and Oliver-Smith, 1999; Mitchell, 2000; Ager, Fiddian-Qasmiyeh, and Ager, 2015).

In the 1970s, John H. Sims and Duane D. Baumann analysed differences in response to hurricane and tornado strikes in the US between people who put their faith in God and those who felt that they had greater control through meteorological reports (Sims and Baumann, 1972; Baumann and Sims, 1974). The former was more passive, involving no preparedness or very limited action, as people felt that their fate was predetermined—similar cases are described by Simpson-Housley and Bradshaw (1978), Mitchell (2000), Schmuck (2000), and Schipper (2015).

Culture and religious beliefs are far from the only variables that affect people's risk perceptions and willingness to heed warnings. Social differences, such as age, class, ethnicity, gender, or status, are also often very important factors, and are inherent to the social construction of the risk paradigm that has been widely adopted within DRR (Hewitt, 1983; Blaikie et al., 1994; Wisner et al., 2004). Yet, within this paradigm (which can be summarised by the phrase 'there is no such thing as a natural disaster'), cultural and religious aspects were generally subordinated to economics and politics, including acknowledging the relationship between power, hazard perceptions, and disaster preparedness (Drabek, 1986; Mitchell, 2000; Bankoff, 2015). The social construction paradigm has become very significant in DRR, but its inherent claims of 'rationality', and scientific and technological relevance, have also led to the social limitations evident in some of the case studies. These bounds involve power relations between people within a society, and demonstrate how trust of meteorological data can be vital. Trust and mistrust of technology, national and local government information, or a meteorological department can determine whether or not a warning message is regarded as reliable.

Case studies

Case studies were conducted in Bangladesh, Kenya, Nepal, the Philippines, and Saipan between 2013 and 2016. The country examples are all part of larger research initiatives coordinated by the authors, who were thus directly involved in the collection of the primary data. Each author supplied a case study summary on their local area of expertise, and was active in the comparative analysis.

Most of the research initiatives were based on a mixed-method approach, although the qualitative first-hand narratives principally guided the results. Each employed different methods, involving local people, ranging from focus-group discussions (FGDs) to in-depth interviews and survey questionnaires, and spotlighted an assortment of hazards, including cyclones/typhoons, floods, and landslides. Four of the case studies produced empirical findings based on fieldwork by the authors. The Philippines is the only desk-based case study, combined with informal interviews with disaster preparedness and evaluation actors.

The case studies illustrate how current disaster preparedness systems can fail to warn and protect people owing to cultural and social limitations. The examples are organised into two groups: socially-based (Kenya, the Philippines, and Saipan), encompassing mistrust and miscommunication, power, and social hierarchies; and cultural and religious-based (Bangladesh and Nepal), incorporating attitudes and beliefs with respect to risks and their causes.

Socially-based determinants

Flood prediction in Kenya: traditions versus technology

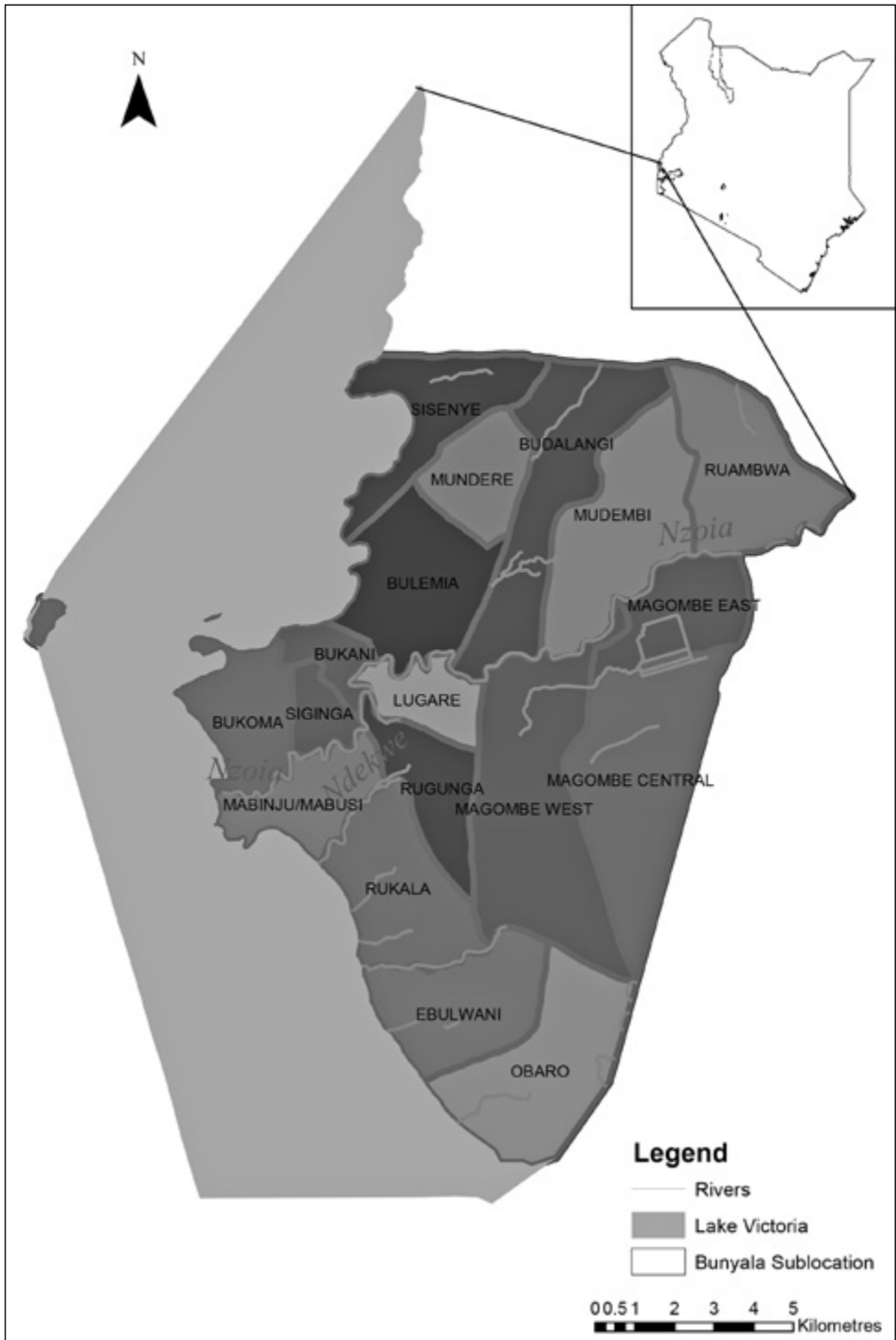
Low-lying Busia County in west Kenya experiences frequent floods as the Nzoia River makes its way towards Lake Victoria (see Figures 1 and 2). Combined with

Figure 1. Map showing the location of the five case study sites



Source: map data © Google 2019; markers showing the five case study sites added by the authors.

Figure 2. Map showing the location of the Bunyala Sub-County of Busia County, Kenya



Source: map created by Dr Denis Mutama Masika at the School of Environment and Earth Sciences, Maseno University, Kenya, 2017.

rapid population growth, the floods put pressure on people's livelihoods (mainly farming and fishing) and on their food security,³ destroying crops, killing livestock, spreading waterborne diseases, and seasonally displacing temporarily thousands of people (Government of Kenya, 2009; Onywere et al., 2011).

Indigenous traditional knowledge (ITK) is a common way of dealing with climatic shocks. This traditional flood warning system involves observation of the behaviours of birds, insects, and reptiles, and changes in the air, vegetation, and water temperature (Opere and Ogallo, 2006; UNEP, 2008). For instance, frogs croaking at night, ants suddenly appearing, or trees losing their leaves are indicators of a potential flood (Opondo and Anyona, 2013). According to respondents in Bunyala, the elders act as 'prediction experts', and are consulted, therefore, when estimating rainfall and predicting floods. Fishermen are also asked to gauge changes in wind patterns.

ITK systems seem to function fairly well, although informants did highlight some social limits. Generational differences between younger and older citizens were noted as the two groups acted out their power positions. The elders did not want to share 'their knowledge', leading younger citizens to state that 'they do not share their knowledge, [s]ome even sell their forecasts predictions in exchange for money'. Consequently, they ignored ITK warnings, which they see as 'undependable and inaccurate', and instead adhered only to technology-based messages. Those elders making a living from their forecasts claimed that such a move ended up costing them their livelihoods.

Compounding matters is the fact that poor coordination between the two governmental agencies in charge of the technological EWS in Kenya has resulted in delays in messages being broadcast on the radio.

A household survey performed in the study site confirmed social tensions between people depending on ITK practices and technical systems. Respondents felt that the implementation of a more 'modern and Western' school system also prevented the transfer of knowledge pertaining to the traditional system from the older to the younger generation.

Supporters of a technical EWS described traditional forecasts as 'pure witchcraft'. This not only fuels social tensions and heightens distrust in the traditional warning system, but also results in disrespect of elders.

This case study provides an example of an alternative warning system emerging in a context where people already had a traditional system. Several social processes serve to weaken the functioning of the technological system, while undermining the traditional system. Those who introduced the new system failed to take account of clashes between the two. It was assumed that because the new system is scientific and supported by technology, people would abandon their traditional prediction mechanism.

Typhoon Haiyan in the Philippines: miscommunication and mistrust

When Typhoon Haiyan made landfall in the Philippines on 8 November 2013, nine of the country's 17 administrative regions were majorly affected by intense winds and

storm surge. With wind speeds of up to 300 kilometres per hour, Haiyan ended up being one of the strongest typhoons ever recorded in the Philippines. The government's final report estimated that the disaster killed nearly 6,000 people, injured more than 27,000 others, and displaced approximately one million (TRSDG, 2014; Lagmay et al., 2015; Santiago et al., 2016).

Tacloban City on Leyte Island (see Figure 1) was hit the hardest, as a six-metre-high storm surge severely damaged the eastern part of the island. The government was caught by surprise as it had not expected a severe typhoon at this time of the

Table 1. Typhoon Haiyan and national DRR units' responses to issued weather forecasts

Date	Warning status
3 November 2013	The city mayor calls for an emergency meeting after receiving weather reports concerning typhoon activity. An initial disaster preparedness plan is made.
6 November 2013	<p>The eye of the typhoon is located by PAGASA in the afternoon. Upon receiving the information, Tacloban City officials call a press conference to warn citizens. They highlight a strong incoming storm but do not mention a storm surge, principally because they did not fully understand what this meant. Tacloban City Administrator Tecson Lim said that he tried to communicate the gravity of the oncoming situation via the cameras. He recalled saying that '[i]t will be the strongest storm that we have ever faced' and that '[p]eople will not be able to stand up straight in the heavy winds. The storm will be moving cars'. Lim did not mention, though, the likelihood of a storm surge, although it had been spotted by PAGASA. He and other city officials claimed that they had little comprehension of the meaning of the term, let alone how big, or fatal, it would prove. Lim added that: 'What was going through my head was only the strong winds, flying objects and rain' (Chen, Areddy, and Hookway, 2013).</p> <ul style="list-style-type: none"> • The evacuation process started on 6 November 2013, but only about 15,000 of Tacloban's 220,000 or so residents (roughly seven per cent) went to the shelters (Chen, Areddy, and Hookway, 2013). Most decided not to leave for the following reasons: • They were not given a good explanation of why they should evacuate (Chen, Areddy, and Hookway, 2013; NDRRMC, 2013; GIZ, 2014). The inability of the disaster evacuation team to explain what a storm surge was and how it would affect people played an important role here. • Some people reported believing that the typhoon warning was a hoax, similar to the one that they had experienced some 15 months earlier. A tsunami alert was issued in August 2012, and a mass evacuation ensued. The warning was later retracted as a false alarm (Chen, Areddy, and Hookway, 2013). • They believed that there was nothing to fear as they had survived previous typhoons (Chen, Areddy, and Hookway, 2013; GIZ, 2014). • Some people reported being afraid that thieves would steal their property if they went to the shelters. This fear was greater than that of dying (Chen, Areddy, and Hookway, 2013). • They had never heard about, or experienced, a typhoon such as Haiyan. Consequently, they did not believe the warnings or the descriptions of what was to come (Chen, Areddy, and Hookway, 2013; NDRRMC, 2013; GIZ, 2014). <p>The evacuation teams were afraid that a forced operation would trigger violence. In addition, they were not sure of the severity of Haiyan so they allowed people to remain in place (NDRRMC, 2013).</p>
7 November 2013	<p>PAGASA issued the first warning of a potential seven-metre-high storm surge at 12.00. A second warning was sent out at 18.00 (GIZ, 2014).</p> <p>The mayor called another emergency meeting to underscore the gravity of the approaching typhoon. The city officials reported still not being convinced of the likely severity. Looking back, they noted that familiar terms such as 'tsunami' would have been more effective. Minor efforts were made to prepare for a smaller oncoming typhoon (Chen, Areddy, and Hookway, 2013).</p>
8 November 2013	Typhoon Haiyan made landfall over Leyte Island and Tacloban City.

Source: authors, based on a desk analysis and interviews in Chen, Areddy, and Hookway, 2013.

year (Lagmay et al., 2015; Santiago et al., 2016). This was one reason why the residents of Tacloban City did not receive warning messages, or got them too late.

According to several post-disaster reports, the Philippine Atmospheric, Geophysical, Astronomical Services Administration (PAGASA) informed DRR units of the approaching typhoon six days before it made landfall. Thereafter, the national meteorological agency continued to monitor its development and provided the public with weather forecasts (see Table 1). The local DRR units relied on these updates to notify people successfully of when to start preparing, to suspend schools, and to evacuate (Chen, Areddy, and Hookway, 2013; NDRRMC, 2013; GIZ, 2014).

This case study clearly illustrates how warning system failure can be non-technological in nature. The meteorological information was picked up, the warnings sent out, and the messages reached people, but two important social limitations resulted in failure: mistrust and miscommunication between social groups owing to the uneven distribution of control, power, and welfare. It would not have mattered if more warnings had been issued as people did not trust them. Mistrust was reported between the DRR units and those at risk, between the government and the people, and between people. The local government did not trust the information it received from the meteorological experts, and people did not trust the local government's knowledge.

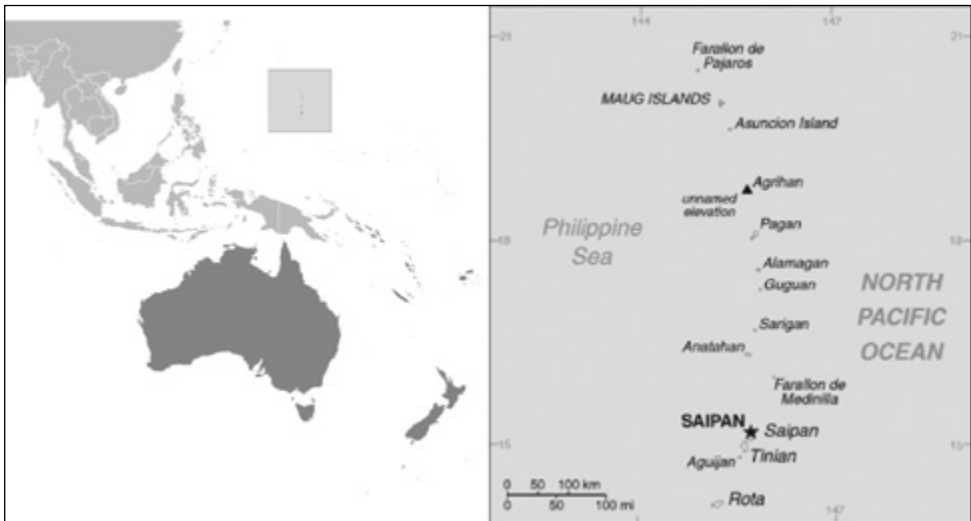
Another crucial factor that heightened mistrust was language differences. People failed to communicate with one another due to a lack of familiarity with specific meteorological or technical terms. The meteorological agency was blamed after the disaster for failing to elucidate the severity of the typhoon. According to reports, the terminology used was only understood by scientists and technical experts (GIZ, 2014; Rasquinho, 2014; Lagmay et al., 2015). The experts spoke 'a language' that normal people do not use or understand. The term 'storm surge' was vague, confusing, and misrepresentative of what was to come. People related the word 'storm' to what they experience on an annual basis, and found it difficult to comprehend 'surge' (Chen, Areddy, and Hookway, 2013; NDRRMC, 2013; GIZ, 2014). As a result, even though the warning message specified a pending storm surge of between five and seven metres, the information was poorly received (Lagmay et al., 2015; Santiago et al., 2016). People said that words such as 'flood', 'tsunami', or 'wave' would have been more appropriate. The islanders would most probably have evacuated if they could have visualised what was approaching (Chen, Areddy, and Hookway, 2013; GIZ, 2014; Rasquinho, 2014).

Miscommunication, though, was not the single cause of system failure. If there had been trust between those who understood the technical language and those who did not, the misunderstanding could have been addressed. The Tacloban City situation reveals, therefore, how social divisions can block early warning messages from making their way successfully to the people.

The case of Saipan: the boy who cried wolf

The extent of the 2015 Pacific typhoon season was slightly above average: 27 tropical storms; 18 typhoons; and nine super typhoons (Lea and Saunders, 2015). Tropical

Figure 3. Map showing the location of Saipan within the Northern Mariana Islands and in the north Pacific Ocean



Source: US Department of the Interior, CNMI (Commonwealth of the Northern Mariana Islands) Office of Planning and Development; modified by the authors.

Storm Soudelor moved towards Saipan on 1 August 2015 (see Figures 1 and 3), but it was not expected to produce any severe damage (Ridgell, 2015). Only hours before making landfall, however, it was upgraded to a typhoon (Kleeschulte, 2015; NCEI, 2015). Ultimately, it turned out to be the largest storm to strike Saipan in nearly 30 years (ABC News, 2015; The Weather Channel, 2015).

The United States Federal Emergency Management Agency (FEMA) issued a major disaster declaration on 5 August 2015 (FEMA, 2015). In the immediate wake of the storm, many residents were without water, and homes and roads were inaccessible.⁴

People were ill-prepared for the arrival of Soudelor, in part because previous typhoons had little impact, and in part because of the rapid increase in the strength of this particular event. The poor preparation meant that people did not have time to store food and water (Ridgell, 2015), and that the number of people who evacuated was low. People reported not making it to the shelters until after the typhoon had passed. When asked why he did not leave, a young man said: 'It's our culture. We live together with our elders. When the storms come, we don't rush grandma. We stay together'.⁵ People living on Saipan are used to a large number of tropical storms and typhoons materialising each year. Prior to Soudelor, people even arranged typhoon parties at which groups would gather to play games and to share food.⁶

People's attitudes towards typhoons changed after Soudelor, although there are still reports of complacency in cases where they are not perceived as dangerous. The large majority of storms that brush Saipan do not present any significant risks. In light of recent history and past experience, people were persuaded to believe that even though there is a warning, the event will not be too bad. The best metaphor

to describe the situation is probably ‘the boy who cried wolf’. The first time the shepherd boy calls wolf in the fable, the villagers listen and come running to help. They also come running the second and third time, but then the call holds little credibility. People are no longer willing to make the effort anymore. Similarly, the perception of low risk has been validated by experience.⁷

Saipan residents also claimed that as they have now just experienced a severe typhoon, it will be a long time until they have to do so again.⁸ This is yet another potentially risky perception that may result in people not taking warnings seriously in the future.

This case study demonstrates that people are reproducing attitudes that can leave them vulnerable to risks and hazards. Warning messages are indicators that bad weather is approaching, but people are not very concerned about it. The system fails as people do not fully associate warning messages with danger. Messages are sent out to alert people to an approaching typhoon, but generally it does not strike the island. Disaster awareness training could help to ensure that people understand completely the range of warning signals disseminated by the system, as well as the potential danger of staying behind.

Cultural and religious-based determinants

Cyclone Sidr in Bangladesh in 2007: God will protect us

People in Bangladesh have experienced tremendous losses in the past, most notably as a result of cyclones in 1970 (Bhola), 1991 (Gorky), and 2007 (Sidr) (Shamsuddoha and Chowdhury, 2007; Asgary and Halim, 2011). In response to the devastating Bhola Cyclone in 1970, the Government of Bangladesh and the Bangladesh Red Crescent Society initiated a Cyclone Preparedness Programme, with an EWS component (Paul, 2012; MoDMR, 2013; Roy et al., 2015). Recent studies show, however, that although warning messages were sent out, for instance, in 1991 and 2007, and people received them, many still decided not to evacuate (Paul et al., 2010; Penning-Rowsell, Sultana, and Thompson, 2013; Paul, 2014; Ahsan et al., 2016).

Dalbanga South is a fishing- and farming-dependent village in Barisal District, southwest Bangladesh (see Figure 1). Here people portray cyclones as one of the most dangerous threats to them. Respondents described Cyclone Sidr as the most recent devastating disaster. The village had an EWS in place in 2007, but a number of problems made it inadequate (Ayeb-Karlsson et al., 2016).

People received alerts about Cyclone Sidr, but opted not to evacuate to a shelter. Instead, they tried to survive the event in their homes. As one interviewee noted:⁹

During Sidr we all stayed in my house. I told everybody to go to the second floor. The water level kept increasing that is why we had to leave the house and tried to swim across the field. We grabbed on to a tree, and waited until the water level went down.

Respondents also said that sometimes messages are not sent, or they are received too late, limiting trust in the system. As was observed during a FGD:¹⁰

The warning messages do not always go out. People from the other side of the village also cannot see the warning flags. They must come over to this side of the village to spot them. Sometimes, the flags even blow away in the storm.

We do not get the warning messages in time. When we finally receive them, it is already too late . . . by then we have already been able to see from the weather that something very bad is about to happen. We do not get the warning messages until it is a signal seven or nine [out of ten]. On top of that, the volunteers do not come here in fear of losing their own lives.

Trust in the system is crucial if people are going to react to warnings. However, the case study also found that many people received warnings in time but still remained at home, owing to cultural and religious beliefs. These convictions guided people's perceptions of how to deal with approaching risk. As two interviewees stated:¹¹

No one can save us but Allah. The NGOs [non-governmental organisations] cannot do anything. If Allah does not want you to survive, all your efforts will be in vain and you will die. We must follow Allah. . . . During a cyclone, it is Allah's wish that will determine if my house is protected. It is first when my house collapses that I will come out.

During Cyclone Sidr and Mahasen, I survived because Allah helped me. There were so many buildings that got washed away, but my house still stands. I stayed in my house throughout every single cyclone. Allah even helped us surviving the aftermath. People came here with food such as rice and other things. That is how we survived.

Religion accorded people a framework on how to deal with cyclones—that is, what to do, where to be, and how to stay alive. People trusted that God would watch over them no matter where they were. This belief kept people 'safe' and eliminated their fears. In the words of two interviewees:¹²

When I think about why I survived that day, the day of Sidr, why I did not drown although the flood pulled me away. There is only one answer: Allah looked after me. Allah kept me safe.

I am not afraid. If Allah wants to take me, he could easily do so. What is the point of being afraid? It is out of my hand just like the grief that my land went into the river. It was Allah's property, and he took it away. This is not a problem as he is the one who keeps us alive. He will make sure to feed us. If another cyclone strikes, there is nowhere to go since we lost our land on which we could have rebuilt our houses. You still have to keep your faith in Allah, and wait out the cyclones patiently in your room. What else can you do? This is our story, the story of every single person in this village.

Religion was also used to explain why the village was experiencing repeated cyclones. Women contravening social norms, for example, was said to have angered Allah. In this area, women generally stay at home and do not work outside. They

are expected to refrain from ‘unnecessary’ movement beyond the house, or the shelter. As two interviewees commented:¹³

Why are there so many disasters? Because we must have left his [Allah’s] path. Women are working outside the house and going here and there. This is not good. We have to return to his path. Otherwise, we will have to face the consequences. The cyclone shelter will not be able to save us then.

I can feel that the weather is changing. I think it is happening because we forgot about Allah. It is the punishment of Allah. . . . The cyclone strikes are holy creations. The same way God created man, he created cyclones. Therefore, God will decide how they will affect you. Those who have done him right, and who have followed in his footsteps will be put in safety.

This case study demonstrates that people decided not to evacuate and to stay at home with their family for various reasons, most notably because they put their fate in God’s hands. If God has the power to decide if one lives or dies, ultimately it makes no real difference whether or not one opts to evacuate (Schmuck, 2000; Stephens et al., 2013). God will save you no matter where you are as long as you have done him right.

The landslide in Nepal in 2014: when God was not obeyed

A major landslide occurred in the densely-populated district of Sindhupalchok, situated some 80 kilometres northeast of Nepal’s capital city, Kathmandu, on 2 August 2014 (see Figure 1). The debris created a dam that blocked the Sunkoshi River, resulting in households located in settlements downstream having to be evacuated owing to the threat of an outburst. Army engineers subsequently used force to create openings in the dam to reduce the risk of inundation.

A survey conducted six months after the landslide revealed that 74.4 per cent of the 234 respondent households took preventive steps to guard against landslides and other extreme events (Van der Geest and Schindler, 2016; Van der Geest, 2018). However, open questions about the effectiveness and the limitations of preventive measures revealed that the respondents did not expect a landslide of this scale. The FGDs and unstructured interviews also unearthed alternative explanations of why the landslide had occurred and how it could have been avoided. The informants suspected intervention by a deity, and in hindsight, some recognised foreshadowing warnings from the Gods.

The informants pinpointed three reasons for the landslide. First, they claimed that Nagraj (the Hindu serpent God of rain) appeared in the area hit by the landslide when people were butchering cows—consuming beef goes against the Hindu tradition. Second, the Nepalese Army spotted some children walking across the dam. When they tried to get close to save them, they disappeared. Consequently, it was said that a Mataji, meaning ‘respected mother’ in Hindi, had declared that the water

would not flow from the dam until the children were found. If they tried to move the debris and release the water, this would have painful repercussions. When the water finally burst, people reported seeing Nagraj flying eastwards at the speed of light. Third, the respondents stated that Mahadev (Shiva), the God of all Gods, the creator, ruler, and destroyer of the world, visited the valley and blocked the river because he wanted to take a bath.

The three explanations above have a few things in common, particularly the cultural and religious reasoning at the heart of them: people had either wronged the Gods or the landslide was because of their contravention of holy rituals. This rationale helped people understand the incomprehensible, and provided them with a means of decreasing the risk of a similar event in the future. If people obey and respect God, or ensure greater sacrifices, landslides may be avoided.

How such cultural or religious limitations influence people's responses to disaster warnings or DRR measures must be acknowledged. If people believe that a disaster will not strike as long as they obey God, then safety will be sought through prayer and sacrifice, rather than via a warning system.

Analysis

The five case studies presented in this paper illustrate how cultural and social factors can limit the effectiveness of EWSs, and DRR programmes. The findings show, too, how people explain disasters in ways that make conventional DRR interventions difficult.

The social limitations referred to in this study relate to organisational or structural elements connected to the economic or political system of a society, whereas the cultural limitations pertain to the belief system of a society. This in no way suggests that the two do not overlap, however. A cultural belief system strongly influences a society's social structures. Even though a belief can be thought of as autonomous vis-à-vis the political economy of a society, it may still have a bearing on its structure. For instance, where people believe that flooding is God's punishment for unsacred behaviour, this results in financial investment savings for the government and in it exercising less responsibility towards its people.

The example of the Busia floods in Kenya revealed how two competing EWSs ended up competing against one another. Important social structures, such as the hierarchy and power relations, were brought into focus in a generational dispute. Elders were accused of carrying out witchcraft, whereas the village youth was said to have fallen into a Western state of mind, forgetting heritage.

When Typhoon Haiyan struck Tacloban City in the Philippines, miscommunication and mistrust were evident among social groups owing to the uneven distribution of control, power, and welfare. This was reported to be the reason why people chose not to evacuate. Those responsible failed to explain clearly what was pending, and those who did listen, failed to understand the warning. By contrast, in Saipan,

it was not that people did not listen to warnings about Typhoon Soudelor, but that, after repeated false alarms, they had been socially structured to think that such an event would not occur.

In all three of these scenarios, functional EWSs failed because of social factors. People in Kenya received warnings, but not from the system they supported; people in the Philippines received warnings, but did not understand or trust them; and people on the island of Saipan received warnings, but did not take them seriously.

The other two case studies, Cyclone Sidr in Bangladesh in 2007 and the landslide in Nepal in 2014, were said to have happened because people must have angered God. Here, disaster preparedness failures were the product of a specific belief system in society. In Bangladesh, people underlined how God will save you no matter where you are located, resulting in people not evacuating to shelters. Cultural, folklore, and religious convictions ultimately limited the preparedness measures put in place by the government and DRR organisations.

Fatalistic attitudes can exist but they are not necessarily overly persuasive. DRR actors should work with local religious leaders, *inter alia*, to address them and to introduce preparedness initiatives. In Bangladesh, NGOs such as Islamic Relief and the Bangladesh Red Crescent Society are making great strides in this respect. Mosques are being used as cyclone shelters, and loud speakers for prayer are serving to issue warnings. However, much work still remains to be done, and detailed vulnerability assessments need to be conducted to establish if certain groups in society are more protected than others. For example, the second floors of mosques are at times earmarked for men, meaning that women have to shelter from cyclones on the riskier ground level.

Cultural perceptions and social behaviour are not unchangeable. They are components of a flexible process that transforms as people relate to one another. This paper does not seek to use the case studies to point out obstacles that are impossible to overcome in specific country areas. People may view the risk of a specific disaster in one place at any one time in a particular way, and choose to respond accordingly, but they may see it differently if the threat manifests itself again.

The scenarios described are all context-specific. If one was to prepare a tree for an approaching storm, one could opt to ignore culture and social norms. However, disaster preparedness was made by human beings for human beings, and thus one cannot ignore these values. They are passed among people via social interactions, whether through the media or from a parent to a child.

Cultural attitudes and social hierarchies play an important role in determining what climate information to trust, or whom to follow, or how to respond when told to evacuate. Complex considerations, as portrayed, can impede an otherwise functioning system or disaster preparedness system. Ironically, during some of the local consultations in the study sites, a lack of training, knowledge transfer, and evaluation was highlighted as a potential solution to overcome these cultural and social limitations. One of the problems depicted was that disaster training was often thought of as a pass or fail endeavour, akin to that of a driving test. However, unlike a driving

test, preparedness knowledge needs to be refreshed. There must be a local evaluation after every disaster. The people on the ground will best be able to determine what went wrong, and how lives could have been saved.

Conclusion

People's survival and protection of their livelihoods in disaster-prone parts of the world largely depend on messages notifying them when an event is about to occur. The current framing of the debate around non-evacuation behaviour, within academic and policy circles, focuses too much on socioeconomic and technical approaches. It is assumed that people will prepare and respond to early warning messages if they have the means to do so. An automatic assumption is that people's 'natural logic' is to prepare or evacuate, but this is not always the case. The rationale concerning disasters and responses to them is different, and people's decisions are influenced by cultural beliefs and social norms.

Cultural and social limitations can impede a seemingly functioning disaster preparedness system. Greater involvement of local residents in preparedness plans and EWSs, for example, and of religious actors in DRR endeavours, could help to ensure that people facing risky situations are better protected.

Correspondence

Dr Sonja Ayeb-Karlsson, University of Sussex, Arts C308, Arts Road Building C, Falmer, Brighton BN1 9SJ, United Kingdom. E-mail: S.Ayeb-Karlsson@sussex.ac.uk

Endnotes

¹ Dr Sonja Ayeb-Karlsson is a Lecturer in Global Health at the Brighton and Sussex Medical School, University of Sussex, United Kingdom and a Senior Researcher at the United Nations University's Institute for Environment and Human Security, Germany; Prof Dominic Kniveton is a Professor of Climate Change and Society at the University of Sussex, United Kingdom; Mr Terry Cannon is a Research Fellow at the Institute of Development Studies, United Kingdom; Dr Kees van der Geest is Head of Section at the United Nations University's Institute for Environment and Human Security, Germany; Mr Istiaq Ahmed is a Programme Coordinator at the International Centre for Climate Change and Development, Bangladesh; Ms Erin M. Derrington is an Environmental Consultant and the Lead Planner at the CNMI (Commonwealth of the Northern Mariana Islands) Office of Planning and Development, United States; Dr Ebinezer Florano is an Associate Professor at the University of the Philippines, the Philippines; and Mr Denis Opiyo Opoyo is a PhD candidate at Maseno University, Kenya.

² Here, *social* refers to the structure or organisation of a society derived principally from the economic and political systems that engage in control, distribution, ownership, and welfare, whereas *cultural* refers to a system of beliefs, such as a society's attitudes, customs, ideas, perceptions, and values. The authors recognise, however, that it is difficult to separate the two or to exclude cultural from social as there are overlaps.

- ³ Most information presented in this subsection is derived from a United States Agency for International Development (USAID)-funded study conducted in the Bunyala Sub-County of Busia County in Kenya between 2013 and 2014.
- ⁴ Interviews conducted by one of the authors on 19 September 2016 and 20 September 2016, Saipan, CNMI, US.
- ⁵ Interview conducted by one of the authors on 19 September 2016, Saipan, CNMI, US.
- ⁶ Interview conducted by one of the authors on 19 September 2016, Saipan, CNMI, US.
- ⁷ Interview conducted by one of the authors on 19 September 2016, Saipan, CNMI, US.
- ⁸ Interview conducted by one of the authors on 20 September 2016, Saipan, CNMI, US.
- ⁹ Interview conducted by one of the authors in Dalbanga South, Barisal District, Bangladesh, on 19 May 2014.
- ¹⁰ Focus-group discussion in Dalbanga South, Barisal District, Bangladesh on 27 October 2014.
- ¹¹ Interviews conducted by one of the authors in Dalbanga South, Barisal District, Bangladesh, on 19 May 2014.
- ¹² Interviews conducted by one of the authors on 19 May 2014, Dalbanga South, Barisal, Bangladesh.
- ¹³ Interviews conducted by one of the authors on 19 May 2014, Dalbanga South, Barisal, Bangladesh.

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