

## **Issues in Disaster Management in the Pacific, with References to Flooding Events in Fiji and Solomon Islands**

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### *Abstract*

The Pacific Island Nations are prone to natural disasters. Floods, cyclones, storm surges, tsunamis, and droughts are now no longer regarded as remote events. Natural disasters in the Pacific have catastrophic effects on people. Pacific Island nations started gaining their political independences from the 1960s. Yet one does not see major improvements in disaster management in many of these countries. This paper examines some critical issues in disaster management in the Pacific with special references to some recent flooding events in Fiji and the Solomon Islands.

### **Introduction**

Solomon Islands experienced one of its worst floods in its history in early April 2014; a 6.0 magnitude earthquake followed within the flood period. The real impact was from the raging flood. A slow moving low pressure system gave Honiara and Guadalcanal at least a week of heavy rain which led to rivers bursting banks and causing severe damage to homes and infrastructure. The flood killed 22 people and left 60,000 people homeless in the capital Honiara (Relief Web, 2014). The post disaster events of the Honiara flood may in some ways be similar to the post flood events of Fiji. In March and April 2014, Fiji was hit by two successive floods causing millions of dollars in damage.

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<sup>1</sup> The author declares that he has been a disaster relief volunteer in Vanua Levu in all major disasters which struck there since 1990, and that he was an active participant in the 2003 Cyclone Ami evacuations, relief and rehabilitation, and further that he resides in the area in which Cyclone Ami had the most devastating impacts, including the death of 9 of his relatives.

Flood events are common in Pacific Islands. These have serious impacts on human lives as well as growth and development. Floods which catch people by surprise are bound to cause substantial human losses. Loss of lives tend to be high when people do not take warnings seriously. The Honiara flood is one example where people experienced rain for a week, yet did little to evacuate before rivers reached unprecedented levels. Rain fell for almost a week causing rivers to burst their banks. While heavy rain for a few days is a good enough warning for people to take precautions, many continue to disregard this. In Fiji, some would wait till the last minute to evacuate while some would not move at all and subsequently get caught up in difficult life-threatening situations.<sup>2</sup>

Disaster is not a physical happening; it is a social event (Quarantelli, 1986). A disaster embraces social, economic and political contexts. Lewis (1999) points out that disasters are personal, family, and community events, and only then do they become national or regional events. He further states that the suffering is individual and local (therefore vulnerability reduction must also be local). By this he means that nations cannot rely on international solutions; rather there must be local solutions to what are largely local events. It is common for small islands to rely heavily on international solutions and responses each time a disaster strikes. Small islands have failed to improve their capabilities to manage disaster risks on their own.

Vulnerability to natural disasters in the Pacific is high due to geographical and socio-economic characteristics (Chung, Kaloumaira and Planitz, 2000). A small economic base further complicates disaster risk management of small islands states.

This paper examines some critical aspects of disaster management in the Pacific, with references to post flood scenarios and disaster responses in Solomon Islands and Fiji.

### **Floods**

The April 3, 2014 flood was a catastrophic disaster for the Solomon Islands. Heavy rain was due to a tropical disturbance in the region which later developed into a cyclone, named *Ita*. Between 1st and 4th April, a record over 1000 mm of rain fell at the Gold Ridge mine in Guadalcanal, with 500 mm of rain falling in a 24-hour span. This meant that an average

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<sup>2</sup> A reason for the reluctance of people to evacuate is that they fear looting of their property. Looting is common in most Pacific Islands during and after disasters. But looting is also a problem in other countries; it was evident after Hurricane Katrina (USA) where police were given orders to shoot looters (Schwartz, 2012).

of 20.8mm of rain fell within one hour in the region. The last recorded rainfall of this magnitude was in Fiji during T/C Wally which resulted in severe flooding in Fiji. Table 1 provides some key data on selected flooding events in the two countries.

**Table 1: Key Features, Selected Floods, Fiji and Solomon Islands**

Event	Year	Rainfall (mm)	Lives lost	No. Affected.
<b>Fiji</b>				
Flood	January 2012	863.4mm (highest recording at Vatukoula) <sup>1</sup> (Highest 24 hour rainfall recorded at Nagado: 440mm 24 <sup>th</sup> Jan).	11 <sup>2</sup>	178,153
	Mar–April 2012	811.2mm (Lautoka Mill. 30 March -1 April)	5	150,000
Flood	Jan. 2009	495 mm	11	146,725
Flood	April 2004	n/a	19	n/a
T/C Ami	2003	5 stations recorded > 200 mm of rainfall. Highest one day rainfall: 311mm - Taveuni <sup>3</sup>	17	107,962
T/C Kina	Dec1992-Jan1993	1040 mm (recorded at Monasavu)	23	150,000
T/C Wally	1980	1139 mm	14	n/a
Hurricane Bebe	Oct. 1972	755 mm	18	120,000 <sup>4</sup>
Tropical storm	31 Jan 1956	Flooding in West.(Ba district).	2	N/A
Hurricane	17-22 March 1871	Affected Yasawa, Bua ,Ovalau and Nairai with heavy rains recorded in Bua. Flooding in Rewa.	N/A	N/A
Tropical Storm	23-30 January 1952	28 January: Battered Yasawa-i-rara and Viti Levu.	23	N/A
<b>Solomon Islands</b>				
April flood	2014	1000mm in Guadalcanal	23 <sup>5</sup>	60,000
T/C Freda	Dec 2012	Rainfall figures not available	n/a	n/a
T/C Namu	May 1986	340mm in Honiara.	111	176,809 (62% of pop.)
Tropical Storm	23-30 January 1952	High tide waves inundated and broke coastal houses in Faea. Jetties destroyed. Affected Guadalcanal, Malaita, Isabel, Tikopia,	N/A	N/A

[Notes: 1. Fiji Met Services (2012); 2. WHO; 3. Terry, et.al; 4. Michael (1975), 5. ABC News, 22 May 2014]

(Sources: d'Aubert and Nunn, 2012 ; Terry, et.al., 2004; WHO; Lal, 2003; [http://en.wikipedia.org/wiki/2009\\_Fiji\\_floods](http://en.wikipedia.org/wiki/2009_Fiji_floods); [http://en.wikipedia.org/wiki/Cyclone\\_Ita](http://en.wikipedia.org/wiki/Cyclone_Ita); Fiji Met. Services, 2012)

Both countries, being volcanic in nature, have rugged terrains consisting of large numbers of streams and some large rivers. The water shed areas collect large volumes of water during rainfall causing rapid flooding of rivers and lowlands.

Small island nations which experience torrential rainfall during storms are vulnerable to huge losses as experienced during the April flood in Solomon Islands and during T/C Ami floods in Fiji. The level of preparation, time taken for evacuation warnings to be given out by authorities, precautionary measures taken and time taken for the formation of disaster relief units are major determinants of death figures during disasters. The fifteen day 'State of Disaster' declared in Fiji after the 2012 floods in the Western division reflected the severity of the disaster.

One key factor that influences climate is the El Niño-Southern Oscillation. 'The El Niño-Southern Oscillation (ELSO) is recognized as a near-global phenomenon causing climatic extremes across the Pacific and around the globe' (Fagan, 2009; Sarachik, 2009). In the Southern Hemisphere, it is the South Pacific Convergence Zone (SPCZ) which is the most extensive and persistent rain band. It's variability is influenced by ELSO events. It moves North-East during El Niño period and South – West during La Niña period. Rainfall is heaviest during December to February but significant rainfall is still persistent until April. In Fiji, most severe flooding event has occurred between December and April. ENSO is increasingly blamed for a number of near-global impacts - droughts, heatwaves, storms, torrential rain, sea level changes, drought and severe tropical cyclones (d'Aubert & Nunn, 2012).

Pacific Islands are projected to get more rainfall with extreme rainfall days which are likely to be more intense and more frequent. Over the course of the 21st century, this change is likely to be slightly greater in countries such as Fiji, Niue, Papua New Guinea and the Solomon Islands (PACCSAP,2014). Flood intensities are, therefore, bound to increase in the Pacific Island nations with good river systems.

Pacific Islands, however, are not fully prepared for extreme disaster events such as flooding and tropical cyclones. This is reflected in the number of deaths and losses.

As shown in Table 1 except for Hurricane Bebe (Fiji, October 1972), and TC Namu (May 1986), all major events took place between December and April. The table also provides rainfall data, lives lost and number of people affected by each of the listed flood events.

The very large number of people affected (compared to the respective national populations) on a continuing basis, as well as the large number of deaths due to flooding, again on a continuing basis, confirm that

Fiji and Solomon Islands have never been able to learn lessons from the past and/or fully prepare for floods.

### **Defining Disaster Risk Reduction and Early Warning Systems**

The United Nations International Strategy for Disaster Risk Reduction (UNISDR), defines disaster risk reduction as 'the systematic development and application of policies, strategies and practices to minimize vulnerabilities, hazards and the unfolding of disaster impacts throughout a society, in the broad context of sustainable development' (UNISDR, 2004: 3). It aims to reduce damage caused by natural hazards such as earthquakes, floods, tsunami's, cyclones etc., through prevention. DRR includes disciplines like disaster management, disaster mitigation and disaster preparedness. UNISDR further states that DRR is deeply rooted in sustainable development as unsound development policies increase disaster risk. For example, housing settlement in flood-prone areas is anti- developmental and will not be sustainable in the long term; relocation costs will tend to be higher and cumbersome. Likewise, construction of industries in coastal areas affected by sea level rise may become unsustainable in the longer term. People usually find better options after suffering from disaster. There is only a short moment of sentiment after which people adjust to their new environment. This is referred to as 'hedonic adaptation'. The ability of people to readjust to new situations quickly no matter how dreadful those situations are is universal. They deal with shocks and settle back to their previous state. (Mutter, 2015: 21).

Pacific Island people despite suffering heavily from one flood event would largely continue to live in the same location, without steps to mitigate potential effects of future floods. Reliance on prayers - hoping that the next flood would not be as devastating as the last one - is also notable in most countries. Those who wish to move to safer location find that institutions are weak to support these initiatives. Governments also do little to provide long term sustainable solutions.

Solomon Islanders blamed the government for 'dragging its feet in their future', accusing government of neglecting their plight by failing to make a decision to release land for rebuilding (ABC news, 2014). Thus the poor either through their ignorance or being helpless continue to live in fragile, poorly built homes, often in marginal lands close to flood plains (Mutter, 2015:29). Solomon Islands capital Honiara suffered extensive losses to houses built along the Mataniko river.

Impacts of floods, other than death, are severe in developing countries on account of the high dependence on agriculture. Floods affect ag-

riculture foremost. With loss of agricultural crops, peoples livelihoods are affected directly, requiring immediate relief for victims. Poor countries do not have insurance cover for farmers. But even where insurance covers to be available, one can say with certainty on the basis of insurance industry behaviour in settling cyclone insurance claims in Fiji, accessing these for relief purposes would be a major problem.<sup>3</sup> In any case, any available insurance would often be intended largely to rehabilitate farms rather than provide immediate food, water, clothing, shelter and medical supply relief. In Fiji and Solomon islands, farmers have suffered huge economic losses from numerous floods hitting them.

97% of natural disaster related deaths occur in developing countries (World Bank, as cited in UNISDR, 2002). One of the key reasons for this is that poor nations have limited capacities to effectively mitigate disasters. Lack of good weather forecasting technology and/or skills, lack of quality early warning systems, and lack of adequate public education on disaster responses are critical factors accounting for this state of affairs.

It is often the case that high death tolls are results of poor planning and coordination. This remains a crucial area to focus on by authorities in the Pacific. Vulnerability to natural hazards is growing. Early warning systems (EWS) which are not people-centered will not have desirable outcomes. People-centered early warning systems empower communities to prepare for and confront natural hazards. EWS is only effective if lives are saved and there is reduction in losses (Villagran, Bogardi, et.al., 2006). Early warnings from authorities which take time and reach people late are basically ineffective and render people helpless.

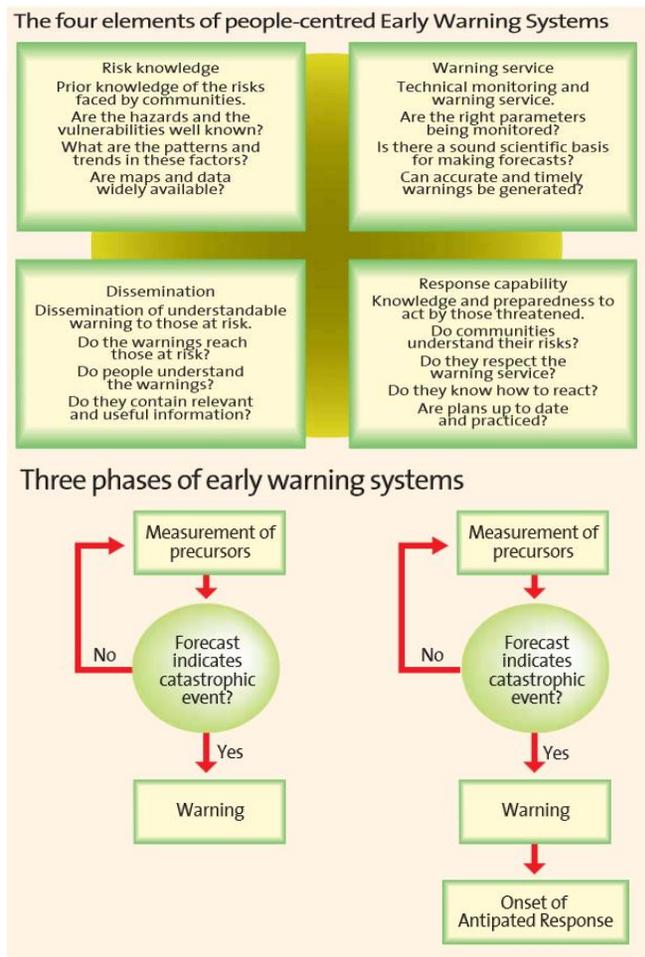
The UNISDR defines an early warning system as 'a set of capacities needed to generate and disseminate timely and meaningful warning information to enable individuals, communities and organizations threatened by a hazard to prepare and to act appropriately and in sufficient time to reduce the possibility of harm or loss' (UNISDR, 2004). It places high emphasis on people, and on the four core elements: risk knowledge, warning service, dissemination and response capability.

A core component of a good EWS is the quality of weather forecasting technology and/or skills. Figure 1 provides the four key elements in a quality people-centred EWS. As listed, technical monitoring capacity is one of the four core elements.

The quality of weather forecasting technology and/or skills in Fiji and Solomon Islands specifically, and the Pacific generally, is an issue on

<sup>3</sup> In Fiji, documentation and processing of normal cyclone house damage claims, which are quite straight forward, take considerable time, often upwards of 3 months.

Fig. 1: An Early Warning System



(Source: Villagran, et.al., 2006)

which not much information is publicly available. Meteorology stations in neither country have released detailed independently verifiable statements on their capacities to forecast flood and related events. External audit reports on these capacities are, if they have been done, also not

available in the public domain. This area, thus, needs considerable attention and transparency. EWS' can not function without quality weather forecasting.

Other critical components of a good EWS are 'Risk Knowledge', 'Dissemination', and 'Response Capability'.

A major problem area which the Fiji and Solomon Island floods showed clearly is the lack of risk knowledge in either country. No organization in either of the places had prior knowledge of risks faced by the communities nor were the vulnerabilities known or registered. The sudden and extremely rapid rise in waters in the Fiji flood indicate that there were contributory factors. People have talked about the managers of the nation's largest water dam releasing substantial amounts of water to safeguard the integrity of the dams at the peak rainy period. There is no public information on this. These are the types of information which are required for decision makers and people to develop their risk database. Generally, poor nations have much less access to disaster-related information, and even if they have the access, the information itself or its dissemination is compromised in many ways. The elites are able to access information or authorities in times of disasters or know how to protect themselves because they have the means to do so. They are also able to learn how to protect themselves because they are able to understand and interpret scientific information (Mutter, 2015: 81). The poor may not have access or link to high profile officers or ministers and may not have simple devices such as TV (due to absence of electricity) or mobile phones to communicate or know more about impending disasters.

Dissemination of advisories and warnings is also critical. While both Fiji and Solomon Islands have extensive reach of radio, TV, and phone mobility technology, the issue remains whether these were adequately utilised. What is known is that in the Fiji floods, the warnings came late in the evenings, by when at least the commercial sector had become totally vulnerable to loss on account of inability to move stock or otherwise secure their properties. This resulted in losses of millions of dollars in commercial stock, much of which could have been saved had the flood warnings come in a timely manner. A survey after the 2012 flooding in Nadi indicated that 77% of respondents were not warned of the impending flood by local authorities (McNamara, 2012). Similarly, the lack of advance warning during the April 2014 flood in Viti Levu affected Navua hospital and residents of low lying areas as timely evacuation could not be carried out. Bureaucratic procedures need to be cut out from all information dissemination, but especially from EWS. Bureaucratic procedures leading to warnings reaching potential victims late is

one cause of human losses. In flood and disaster situations, every minute is valuable and can make the difference between life and death.<sup>4</sup>

Equally important to timely and good quality (user friendly) advisories/warnings, are evacuation protocols and rules, and the need for capable leadership. Knowledge and preparedness of likely victims to understand the risks, respect the advisories and warnings given, and to take action are important. Drills and evacuation protocols and procedures can prove very effective; for this continuous education on disaster preparedness is necessary. But most important of all is the need to take correct action on the basis of assessing the risks on the ground. Local level leadership - at the community, institution, and family level - is absolutely vital. These leaders need to interpret the warnings, the risks, plan evacuations and make relevant on-site decisions. During the 2011 Tsunami in Japan, for example, the Ookawa Elementary School on Matsushima Bay, which is built on a narrow flood plain, had teachers panicking. They made the wrong choice and followed evacuation rules instead of climbing a nearby hill. As a result of this, seventy four children died; one of the eleven teachers who chose to climb the hill survived but later committed suicide (Ehrlich, 2013).

Public education of disasters is critical. It is generally agreed that different disasters require different warning systems. A warning for a tsunami or flood, for example, would be different from that of a drought. At the same time, local knowledge of people is very helpful. Under this system, risk knowledge for common well known hazards, for example flood, is not an issue. However for those hazards that are uncommon but pose potential risks such as tsunami, risk knowledge becomes a major concern.

Thus, cutting across the last three elements of a good EWS, is local knowledge. Good knowledge of specific area/locality risks, and dissemination of this knowledge to both policy makers and the community is vital. This includes not only knowledge on terrain, routes, and range of evacuation shelters, but also on traditionally acquired knowledge<sup>5</sup> and

<sup>4</sup> The 5 lives lost in April 2004 in Fiji when a landslide swept their bus into the flooded Wainibuka river, would have been avoided if timely warning was issued to the public transport sector; in its absence, the ill-fated bus continued with its journey along Kings Road ultimately getting caught in the devastating landslide.

<sup>5</sup> During the 2006 Indian Ocean Tsunami, leaders of Simeulue community received a prestigious UN award for saving tens of thousands of lives during the tsunami. This was possible through their traditional knowledge of how the sea behaves and the reaction of buffaloes ahead of the tsunami. This community of some 80,500 people fled the shore to the nearby hills resulting in only 7 people dying on this island community. Likewise at a tourist resort near Phuket Thailand, a young British school girl recog-

nized that the turbulent sea and loud noise of the waves meant a tsunami was coming, alerting her parents and others which saved 100 lives. She had learned about tsunamis in her class at her school (UN/ISDR, 2005; Clinton, 200%).

such matters as availability of drinking water, food and medicine (including herbal sources of medicine), particularly for children and the elderly. Local knowledge is commonly found in many communities in the Pacific but often under-utilized and poorly shared. For people living along the Mataniko River in Honiara and in lowlands, one week of rain was sufficient for them to realise, without relying on official warnings, to evacuate. In Fiji, using traditional knowledge to predict disasters such as flooding and cyclone was widespread, but because of its unrecognised status, and the tendency of the 'educated' to spurn this knowledge, it is in serious risk of dissipation.

Thus, while warnings need to be swift containing all necessary procedures in easily understood medium, reaching those affected in the shortest possible timeframe with all the relevant information, it is the local level leadership and local knowledge which is critical in making the necessary impact. This will determine whether even people take disaster warnings seriously, and if they do, whether their response is adequate and timely. The Fijian and Solomon Islands floods show weaknesses on all these fronts.

### Solomon Island and Fijian Floods

The 2014 Solomon Islands flood destroyed 250 homes in Honiara with over 2,000 homes damaged or destroyed in Guadalcanal (World Vision, 2014). Search and rescue teams had a difficult time to account for at least 50 people who were missing. *Four days after* the devastating floods, at least 24 evacuation centers were set up in and around Honiara (ABC News). The ability to cope with disasters such as floods has been weak in SI. Search and rescue operation capabilities are poor due to unavailability of modern equipment, rescue helicopters and equipment. The death toll from the April 2014 Honiara flood was 23, which was higher than the death toll from the more recent Fiji floods. In 2003, Cyclone Ami devastated Vanua Levu in Fiji killing 17 people (Lal, 2003).

Could all, or some of these at least, have been avoided? Chances are that they would have been were policy makers to take disaster preparedness and management seriously.<sup>6</sup>

<sup>6</sup> Cuba's tropical cyclone early warning system is credited with reducing deaths dramatically for weather-related hazards such as tropical cyclones, storm surges and re-

An unrecognised issue is that total death figures are not correctly given (sometimes due to political reasons) or not easily known. The directly counted bodies are mainly minimum death tolls (Mutter, 2015: 39). The number of people who died during cyclone Winston in Fiji in February 2016 revolved around 42 to 44. In March 2016, the NDMO reported that there was an increase in death toll from 43 to 44 (Fiji Times, 12 March 2016). The newspaper maintained this number one year later (Fiji Times, 20 March 2017). One year later on 20 February 2017, the Fiji government commemorated the cyclone Winston event and remembered the victims of the cyclone in Suva city. On 20 February the Fiji Sun put photographs of 43 victims in the newspaper. A day later the daughter of a victim claimed that her mother's name was not in the list - the 72 year old Lusiana Tagi from Koro Island died 2 days later at CWM hospital. She was airlifted from Koro Island after losing both legs, one arm and sustaining head injuries when tidal waves swept through the Nakodu village. It was reported that the death toll list was prepared by NDMO. If NDMO could add one more death to the list on 12 March 2016 (over a year since the event), it is strange how they forgot to add another victim to the list who merely died 2 days after the cyclone. Ironically, the headline in the Fiji Sun newspaper on 20 March 2017 read '*PM - never forget the victims*'. If Fijian authorities are not able to give an accurate death toll which is less than fifty in number to count, it certainly should leave one worried on their accuracy of giving actual death toll during times of bigger disasters later on.

Usually, it is the economic loss of disasters, based on GDP figures, that is used to report severity of a cyclone. Social harm (loss of lives, injury and displacement) is hardly considered as significant (Mutter, 2015). In situations where true death tolls are not known, it makes it even more flawed to come up with an accurate measure of overall loss.

Flooding in Fiji, particularly in the Western division, has increased in magnitude and duration (Nunn, 2010: 245). Likewise is the case for Solomon Islands.

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lated flooding. Interestingly, in five successive hurricanes in 2008, only seven had died. Hurricane Gustav in 2008 was considered to be the strongest to hit Cuba in the last 50 years; it had zero fatality although more than 100,000 homes were destroyed. The absence of fatalities was attributed to an EWS and an effective response, enabling people at risk to evacuate quickly. However, strong participatory and collaborative approach from various sectors (government, private and local community) is necessary to see an efficient EWS. The presence of qualified staff at NDMO is vital for mounting effective EWS, conducting training and maintaining consistency (Tsirkunov and Rogers, 2001).

### ***Evacuation Centres***

Schools, community centres, municipal halls, churches, etc., are usually opened as evacuation centres in Fiji and Solomon Islands. Schools are favourite picks by disaster managers in the PICs. They are generally of stronger built, are sufficiently large and have water and toilet facilities better able to cater for the communities than other venues. But this also means that education is affected during the time schools are occupied as evacuation centres. After the April 2014 floods in Solomon Islands, 14 schools were used as evacuation centres (UNICEF). During the April 2014 Fiji flood, 11 schools were used as evacuation centres. Likewise for the March 2012 floods in Fiji, a significant number of schools were marked as evacuation centres.

While the use of schools as emergency evacuation centers is unavoidable, prolonged periods of occupation is not desirable as it directly affects both, rehabilitation and education. Governments must be quick to send people back home as soon as the disaster is over so that victims could start rebuilding their homes. Reluctance on the part of some victims in moving out of evacuation centres, is due, in part, to the perception that staying in evacuation centers prolongs the period during which the state would take care of their basic needs of food, incidentals, etc.

It ought to be also noted that some people choose not to leave their homes for fear of looting and the thought that the disaster will not affect them. This has been a feature of the 2009 and 2012 floods in Fiji.

Occupation of evacuation centers for prolonged periods puts pressure on government resources. Three months after the Honiara flood, 4,000 people were still sheltered at various evacuation centers waiting for government to provide safe land where they could build their houses (ABC News, 22 May 2014). Most of the victims refused to move out as they had lost everything and required assurance from government to provide them safe and reliable packages so that they could rebuild their lives. Sometimes, it is out of laziness that victims prefer to stay longer in evacuation centers. In Honiara there were three main reasons for victims to stay longer in evacuation centers: first, evacuation centers provided venue for people to share ordeals and stories, thus 'lightening their burdens'; second, victims knew that government food ration will continue to be provided on humanitarian grounds, and third, many victims had lost everything and had no place to return to, waiting for concrete assurance from government on monetary assistance and new land to move to.

The slow pace of rehabilitation causes stress and tension. These are common post-disaster outcomes. In Honiara, frustration of victims who

refused to return to their homes led to riots in May. By June, it was reported that emergency authorities were running out of funds and encouraging 1,500 evacuees to return to their homes (ABC news, 2014). There were over 10,000 people in various evacuation centers set up by the government. The large number of evacuees signified not only the serious extent of the disaster, but also the government's inability to handle the crisis sufficiently well.

### ***Relief Aid and Recovery***

Six weeks after the Honiara flood, victims were engaged in looting and rioting demanding monetary help from the government. In one incident, a shopping centre was burned down, alcohol was looted and a road block was set up (ABC news, 19 May 2014; Leni, 2014). Honiara flood victims demanded monetary assistance and land from government so that they could re-settle. Many of the victims had lost everything in the flood including their houses, making it difficult for them to rebuild on their own without availability of new land. More than a month after an earlier flood (2009) in Solomon Islands, especially in the North East and East Central Guadalcanal, victims still waited for food supplies. Government had set aside \$11 million towards relief efforts but it was reported that government did not have money to purchase rice (*Solomon Times*, March, 2009).

Victims get uneasy if state assistance is not timely. Inadequate assistance, or assistance which is not timely, leads victims to engage in looting and riots.

Governments which lack concrete and decisive plans for relief and rehabilitation usually cop criticism from public and donor agencies. Donor agencies do not normally tolerate donations being misused. Thus, it is important for governments to prioritize post-disaster operations as part of their disaster management strategies. During cyclone Kina in 1999, Nausori town was flooded and substantial looting took place as electricity was cut off. In 2003, during cyclone Ami, shops were broken into as flood waters entered the Labasa town (Lal, 2003). Such events are common in Pacific Islands.<sup>7</sup>

The ability of the people and communities to be self-sufficient and resilient can make for quicker recovery. But for this, a community needs to move away from a hand-out mentality. This is possible when people

have their own means to stand again after disasters. Pride is not an attribute which grows in a vacuum; it needs to be nurtured with solid resource and material conditions of living. In that environment only a helping hand from relief agencies would be sufficient for recovery.

Unfortunately, this is a matter on which Fiji particularly but Solomon Islands also to some extent, are short of the mark. A mentality of waiting for relief for as long as possible, has been inculcated for political expediency. Relief work in Fiji particularly has been a highly politicised activity, where the inadequacy of state relief activities, coupled with a marked racial pattern to relief work of established relief agencies like Red Cross, led relief agencies aligned with different political parties and interests competing in relief work in 'vote banks'. Thus, multiple relief supplies, or relief supplies where none were necessary in those quantities or at all, have become an accepted behaviour.

Relief assistance getting in 'wrong' hands is also a serious concern. In Fiji, during the 2003 cyclone, food ration distribution process was questioned by some who were affected. Abuse of assistance is common especially where there is poor control, poor reporting, and poor accountability mechanisms. Abuse also abounds where relief workers are either related to victims or know victims well, or have religious or ethnic empathies with categories of victims, and where there is absence of trained and qualified people to conduct surveys and carry out other aid work.

After the 2003 Cyclone Ami, reports surfaced that many Indian settled communities were disregarded by government in the distribution of rations (food and building materials). A *Fiji Times* report revealed how hungry Indian families were being turned away from government relief centers because their losses were not surveyed two weeks after the cyclone (28 January 2003). Subsequently, those areas not surveyed or left out were not included in the government list and, therefore, not considered for any assistance.

In Solomon Islands, constituency development funds (CDF) were released by the government to its MPs' to 'enable members to meet the needs of the people' (Transparency Solomon Islands, 2014). \$300,000 was released to each MP for the purpose of assisting affected members in their constituencies. Such funds are potentially immediately available to victims, but if poorly managed and controlled, it could become a perfect recipe for corruption and abuse. Funds given to MP's would raise serious questions on criteria used for distribution and fairness in distribution. Not all constituencies were affected but the CDF was given out to all MP's. It has potential to create rift in communities if opposition members are selectively missed out.

<sup>7</sup> In contrast, looting is largely non-existent in one of the most disaster-prone countries of the world, Japan. Reasons could be attributed to strong religious (Shintoism) and ethical value systems.

Disasters are known to bring abuse of relief related funds to the front in some countries. The 2007 Solomon Islands Auditor-General's report on Tsunami relief funds (which the government refused to table in Parliament) highlighted widespread mismanagement, misappropriation and in some cases, outright theft of money donated for the needy (Transparency Solomon Islands, 2014).<sup>8</sup> Accountability and transparency on disaster aid must be well monitored and documented. Governments need to be transparent, reveal all donations received and have these independently audited at the end of each disaster project. This will bolster people's confidence and respect of charitable persons, entities and donor agencies.

**The April 2014 Honiara and March 2012 Fiji Floods: Some Lessons**

The April 2014 flood in Honiara and March 2012 flood in Fiji are regarded as two of the worst that the Pacific Island nations had in recent years. An examination of key features of the two floods is illustrative of some of the issues in disaster management particularly on post-flood relief systems in these countries. Table 2 provides some key features in this regard.

<sup>8</sup> It is human nature more than Nature that makes disasters so terrible (Mutter, 2015: 7). Mutter describes how disasters have been used by the elite to prosper leaving the poor even more vulnerable. Those in power sometimes surround themselves with powerful supporters whom they reward with lucrative contracts or favours to conduct business. In return they get loyalty and kickbacks without any scrutiny of their own wealth generating activities. None of them in power really show much care for their people except during election time when they greatly show sympathy to people and pretend that they care for them (Mutter, 2015: 163).

Relief aid, whether local or international, must reflect transparency and accountability. Political corruption in relief efforts in some major disasters around the world is well documented. Empirical studies have found that large amounts of aid in some recipient countries actually increase government corruption; in some cases unmonitored or misappropriated donations have strengthened abusive governments, fuelled conflicts or provided funding to terrorist organizations (Pisano, 2013). Pisano (2003) highlights that some of the 'targeted donations' seem much like bribery than philanthropy. In Haiti, after the 2010 earthquake, rampant corruption and lack of donor transparency began to plague Haiti's rebuilding efforts. Mutter (2015: 104-105) further pointed out that sexual violence particularly rape surged to ghastly levels and revealed through a group of researchers who estimated that nearly 10,500 women and girls were raped in the aftermath.

Furthermore, governments must be careful in receiving aid which may be ill-intended as it may have negative effects despite the fact that development aid funds are made to be seen to philanthropically benefit the nation.

**Table 2: A Comparison of Fiji and Solomon Island Floods**

	<b>Fiji: March 2012 Flood</b>	<b>Solomon Islands: April 2014 Flood</b>	<b>Description</b>
<b>Reaction time</b>	Slow (very little time for evacuation). Business owners in Nadi were not forewarned of the impending flood by local authorities.	Slow (warning given but reaction time was slow).	The flood in Western division of Fiji was extremely rapid giving very little time to people and authorities to act.
<b>Evacuation centres</b>	About 50 out of over 80 evacuation centres were Schools	14 out of over 40 evacuation centres were schools	Schools are regarded as safe and thus used as evacuation centres.
<b>Lives lost</b>	5	23	
<b>No. of people affected</b>	150,000	60,000	Sudden floods largely affecting low lying regions which are heavily populated.
<b>Relief distribution</b>	Religious organizations first on the scene followed by government assistance and international donors.	Government assistance came in slowly, largely in evacuation centres. International donors provided assistance.	Presence of strong religious bodies in Fiji, which were quick to offer food rations to victims.
<b>No. in evacuation centres</b>	13,000 and later reduced to 800 <sup>1</sup>	10,000 but many remained for weeks after the flood.	
<b>Max. duration of stay in evacuation centers</b>	3 weeks. (Most families slowly returned to their homes).	11 weeks. (1500 people were still in evacuation centers as of 11 June 2014. <sup>2</sup>	Most victims in Honiara lost their houses to the flood and had no place to return to. In Fiji, victims were asked to return to their homes after the flood and clean up.
<b>Other notable features</b>	Nadi town was under 6.2 meters of water. One of the worst floods. State of emergency was declared following the flood.	Regarded as one of the most severe floods in SI. Almost half of the island's population was left homeless. State of emergency declared.	Post-flood looting and rioting was evident in Honiara. Isolated looting but no rioting was noted in Fiji following this flood.

(Notes: 1. Pacific Islands Report, 3 March 2014. 2. ABC Radio)

**Large number of people affected and disaster warnings**

The large number of people affected in both countries is evidence of either poor disaster warning system in place or laxity and carelessness of people to take disasters seriously. The latter is because of absence of

robust community and school based disaster risk reduction training and education. PIC's must have early warning systems that are people-centered, timely and well-coordinated. State must invest in search and rescue operations and training, and acquire sophisticated equipment to overcome intense (and sometimes difficult) disasters. This could reduce number of deaths from disasters.

### ***High number of evacuees in evacuation centres***

Three months after the April 2014 flood, Solomon Islands authorities could not relocate more than 1000 people who were still living in evacuation centres because many did not have any home left to go back to, and due to the delay in government funding (Radio NZ, July 2014).<sup>9</sup>

The high number of evacuees in evacuation centres creates burden on donors and state to provide for food and essentials. Occupation of schools as evacuation centres hinders education. It is essential that governments have evacuation centres in various locations to ease the burden of school occupation during school term and improve its national emergency operations capacity. Victims remaining in evacuation centres in Solomon Islands for as long as eleven weeks reflects dependence on government and inability of people to rebuild on their own through total loss or poverty. Poorly monitored and overcrowded evacuation centres has potential for further spread of diseases together with abuse of children and women by strangers sharing same facility. Abuse at evacuation centres is not always highlighted by victims' families and authorities out of fear, disrespect, creating bad image, etc.

### ***Non-consideration of disasters in (urban) planning and local community participation***

In Honiara, the large number of houses that were washed away, was in the first place allowed to be constructed in such vulnerable locations unchecked. People, especially urban dwellers, look for cheaper options and build houses in vulnerable locations risking their lives many times and increasing the risk of urban tragedy. Governments need to relocate people from vulnerable zones to safer zones so that disaster losses are reduced. Poor nations usually blame lack of funds to carry out post-disaster

<sup>9</sup> Yet again, in 2016, a flood in Malaita region had victims waiting for two months before they started to receive food supplies, that too depending on availability of transport.

relief and rehabilitation work and preparedness. They need to ensure that people are not living in vulnerable locations such as flood prone areas or storm surge prone locations. Both Fiji and Solomon Islands have seen influxes of urban dwellers living in flood prone areas or squatter settlements which are vulnerable to floods. Such high density areas mean huge losses ultimately accumulating on the shoulders of governments. This diverts other important urban developments from taking place.

Disaster risk reduction must carefully look at relocation of settlements from flood-prone areas to safer flood-free areas. Short term strategies such as river dredging have proven costly and ineffective. The Nadi River, for example, was dredged in 2009, involving the removal of 1.1 million cubic meters of silt and costing millions of dollars. This, however, did not prove effective at all in preventing the 2012 flood (McNamara, 2012). Diverting the Nadi River may not prevent flooding of Nadi town. The only realistic solution would be the relocation of the activities from the current town area to higher grounds. Such long term adaptation strategies need to be the key focus of Pacific Islands.

Likewise, the settlements along Mataniko river in Honiara have been unplanned or at best poorly planned. Any new settlement must not occur at the banks of this river.

Strengthening community participation in disaster risk mitigation is lacking and poor. Communities are seen by government authorities and sometimes experts as those who do not understand disasters and they need to simply answer questions that are asked. People who have seen and experienced disasters are more capable and knowledgeable to tackle disasters but are excluded from decision making. This gap leaves communities more vulnerable and non resilient.

### ***Accountability in local and international relief and rehabilitation***

One worrying feature of PIC's is the delay in release of vital funds for rehabilitation, disaster mitigation and adaptation. This means that rehabilitation works take long, adding more social harm to victims. In 2015, almost after one year, the Solomon Island government was still considering a rehabilitation package for the 2014 flood victims (Radio NZ, Jan 2015). A more recent example is Cyclone Winston rehabilitation in Fiji. This cyclone hit Fiji in February 2016. Rehabilitation and rebuilding is still incomplete after more than a year (*The Fiji Times*, March 2017). The sooner PIC's leaders start taking disasters, mitigation and adaptation seriously, the better it will be for these nations. It is always the poor who are disproportionately affected before, during and after the disasters. Gov-

ernments make it worse for everyone through delays coupled with politics.

It is evident that NGO's and sometimes international donors reach victims faster than national institutions. The former play important roles in providing relief assistance to victims. Pacific Island nations must build capacity of community and faith-based humanitarian organizations towards disaster risk reduction as this helps reduce losses and sustains victims until state assistances arrive. But governments must not rely entirely on these organizations and international donations. They must have their own budgets and supplies readily available to provide relief and rehabilitate victims within a reasonable time span. Governments' relief aid distribution must be on the principles of fairness; equity is fairer than one based on equality. Discrimination, bias or 'targeted donations' do more harm than good. Likewise, foreign aid that feeds corruption will need to be eradicated. Fair distribution of relief aid builds confidence of the victims as well as those coming forward to assist the victims. A system that generates segregation and social exclusion (Mutter, 2015) does more harm than good.

Failures and inefficiencies of governments have led to long delays in rehabilitation and abuse of funds. Governments can claim that it is they who have provided assistance whereas the assistance is really donated to government to be provided to victims. For this reason, some foreign entities prefer to donate to NGO's or disaster and relief agencies to carry out rehabilitation as there is a greater level of efficiency as well as transparency and accountability in these. However, any assistance, be it cash or kind provided by organizations must be documented so that who gets assistance and who doesn't is known to all, including the full range of donors. This will enable assistance to the unassisted quickly. But NGOs do risk the wrath of governments. The Vanuatu government after Cyclone Pam, for example, accused NGO's of working on their own rather than in corporation with the government (ABC news, 2015).

Both Fiji and Solomon Islands failed to provide lists of those assisted to donors or opened these lists to public scrutiny. There are strong chances that neither government documented their relief and rehabilitation activities. Surveys to ascertain rehabilitation work must be swift and well-coordinated void of any duplication. NGOs', governments and donor agencies must avoid duplication as these would lead to delays in rehabilitation and rebuilding process as well as waste. Disasters can conceal as much as they reveal (Mutter, 2015). What is concealed is hard to detect and not easily accessible to researchers or ordinary people because of the powerful few who have control over disaster funds and the whole relief

and rehabilitation operations.

Profiteering from disasters is a distinct possibility. Profiteers are not only those who supply relief and rehabilitation materials, but also those who exploit disasters for their private and political gains. To a few companies, disasters bring them good fortune, provided they are in good books of those responsible for relief and rehabilitation programmes. Food relief supplies could be purchased from selected suppliers, to the detriment of not only competing suppliers but also to quality and value for money. Rebuilding works also consume large sums of money; allegations of favoured companies selling materials to rehabilitation projects at inflated prices, involving in scandals (like charging money but not supplying goods), and outright fraud are made in almost every disaster rehabilitation work. Such activities raise the costs of disasters, often sending the countries into further cycles of debt and misery. It is the responsibility of independent state entities to ensure that prompt and effective action is taken to prevent profiteering; likewise it is the responsibility of the media and the civil society to expose every profiteering activity.

### ***Disaster Reports***

Uniform templates for recording must be designed for any damage assessment by National Disaster Management Offices and used by any party which is conducting surveys for the purpose of providing relief assistance and rehabilitation. Likewise, survey results must be made available to disaster managers for analysis and reference with governments own assessment reports. All these must also be available for public scrutiny and to independent audit agencies. Such a system is currently lacking in Fiji and the Solomon Islands, and possibly in other Pacific Island countries as well.

Furthermore, disaster reports must follow a uniform format of reporting. Currently, disaster reports of Fiji and Solomon Islands are haphazard.

A structured uniform report would have the following format for all disasters:

- 1) Introduction;
- 2) Background;
- 3) Emergency procedures, relief operations (Government, NGO, and International) and contingency plans including rescue and recovery;
- 4) Damage assessments (including costs for each sector);
- 5) Rehabilitation and reconstruction by sector and timelines;
- 6) Actual government spending, donations received, and recipient lists

by amounts.

- 7) Recommendations;
- 8) Conclusion, and
- 9) Appendices (containing maps showing areas/regions affected, number affected including loss of lives, government budgetary allocations, breakdown of assistance provided through government, NGO's (local and international) and foreign governments, etc.).

Such a system of reporting is transparent. These can be made available to audit agencies and public for scrutiny. None of the past disaster reports in Fiji and Solomon Islands contained detailed information on specific government assistance to victims.

## Conclusion

Pacific islands are prone to disasters. Small island nations have small economic bases. Natural disasters can have severe impacts on their economies. Along with the fragility of poor people's dwellings, Pacific Island countries generally have weak institutions, if any at all, that are geared to prepare for disasters and reduce suffering of the people. This paper has examined some of the most critical issues concerning disaster management in the Pacific, with special references to some recent flooding disasters in Fiji and Solomon Islands. The paper argues that the most critical aspect of disaster management which continues to be absent in the Pacific is quality early warning systems. Another major problem is the lack of disaster risk reduction education and training. Fiji and Solomon Islands in particular, lack public sector expertise in and commitment to developing and implementing quality early warning systems, developing and carrying out disaster risk reduction education and training programmes, and in organising effective relief and rehabilitation works. Establishing, mobilising and coordinating relief operations have been demonstrated to be severely inefficient and insufficient in these countries. Post-disaster management of relief and rehabilitation have remained major challenges for Fiji and Solomon Islands. Likewise, the expertise and commitment to developing effective and sustainable mitigation measures are seriously lacking in these countries.

The paper suggests that the Pacific Island policy makers must change their thinking on disasters. Disasters are serious events, which require serious consideration. Quality expertise in every aspect of disaster - from top meteorologists, excellent scientists who can team with qualified

and experienced professionals in developing and implementing early warnings, relief and rehabilitation activities and in mitigation, and high quality public officials who can implement disaster management plans effectively - need to be engaged, empowered and retained. Secondly, adequate budgetary support and accountability measures need to be put in place. Third, transparency in information on disaster relief and rehabilitation work is vital. Finally, there ought to be a realisation that disasters are not personal or matters of the ruling governments only; disasters are national events which affect people. As such, engaging people, communities, NGOs, and non-government experts in each of the processes dealing with disaster management must become a core element of approaches to disaster management. Traditional knowledge and time tested experiences of people need to be valued and continuously tapped. Ultimately, the capacity of people to respond to impending disasters need to be developed, including a shift in the mindset of the people from one of being a victim to one of an active participant in ones own rehabilitation.

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