

A state of emergency: how local businesses experienced the 2012 flood in Fiji

Karen E McNamara, The University of Queensland, examines how local authorities in Fiji might better respond in emergencies to ensure the socio-economic wellbeing of the local community is protected.

ABSTRACT

In late March 2012, severe flash-flooding caused loss of life and widespread damage to property, businesses and community infrastructure in and around Fiji's international tourism destination, Nadi. With little warning, local businesses had limited or no time to prepare for inundation once the banks of the Nadi River broke. Drawing on the experiences of local businesses in Nadi, the major causes of extensive financial loss were high recovery costs, limited insurance of property and goods, and contracted levels of government assistance to help them prepare and recover. This was a serious concern for the long-term sustainability of local businesses in the area. Lessons on how local authorities might better respond in the future are proposed, which include more effective early warning systems and strengthened disaster preparation and recovery systems to ensure that the socio-economic wellbeing of the local community is protected in the long-term. [®]

Background and study objective

The flood in late March 2012, which affected Nadi and surrounding areas, was touted by the media and Fiji government officials as the worst flooding event experienced by Fiji in decades. Record high rainfall in March, caused by Tropical Depression TD17F, fell onto an already saturated catchment due to a previous flooding event in January the same year. This torrential rainfall fell over Fiji's Western Division, which makes up the economic backbone of the country due to the location of core industries such as sugar, gold mining and tourism. Devastation was experienced throughout the area, including the Division capital, Lautoka. However, Nadi, a hub for commerce and tourism, experienced some of the most severe and sustained damage as a result of the meandering Nadi River that defines the downtown area. The river meanders

through the main commercial centre of Nadi Town, which contains numerous shops, businesses and homes. The entire Nadi River basin, traversing an area of 517km², is very important to Fiji as it supports the livelihoods of around 65 000 people (IUCN 2011). As a consequence of this flash-flooding, the Nadi River broke its banks early in the morning on 30 March 2012 and the town was inundated by peak floodwaters of six metres above mean levels.

Nadi and surrounding areas are located on a floodplain, and, as such, community infrastructure and settlements are located in low-lying areas that are bound by the Nadi River. Flooding and inundation events are not new to the residents and business owners in this area, but the flooding event in late March 2012 brought with it an unprecedented level of devastation, loss and concern about the future sustainability of this area as an urban centre and a major tourism destination.

With little warning provided to residents and shop owners to move their goods and livelihood assets to higher ground, the result was a staggering financial loss that burdened the large proportion of locals in the affected areas. A correspondent for a Fijian magazine, *Tafazul Gani*, lamented at the time of the flood: 'Basically, if you look at the town, the town is totally decimated. It actually looks like a warzone. There is not a single shop in the town which has not been affected' (Kerin 2012). Four people were killed by the flood, which also temporarily displaced 15 000 people who sought assistance, food and shelter in evacuation centres. There was widespread 'damages to infrastructure, schools, homes, businesses and agriculture' (UN Resident Coordinator 2012, p. 1). Consequently, government authorities declared a state of emergency on 1 April 2012 (AFP 2012).

For the first time in history, the Nadi International Airport, which serves approximately 1.2 million passengers a year, was closed to inbound passengers for four days with a contracted number of outbound flights permitted during this time. The reason for the closure was the severity of the flooding and the inability of people to travel to hotels and homes once in Nadi. This added drain of more people in the disaster area would put pressure on already scarce resources such as food and freshwater.

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 minimise vulnerabilities, hazards and the unfolding of disaster impacts throughout a society, in the broad context of sustainable development' (UNISDR 2004, p. 3). While this definition is broad in scope it makes a very poignant point; that sustainable development should be the core focus in planning for and recovering from disasters.

Disasters hinder development. Moreover, development itself can be the root cause of a disaster, and development processes and challenges, such as poverty and limited livelihood resources, can severely influence the extent of damage caused by disasters (see Kelman & Gaillard 2008). Disaster risk reduction and management is multi-disciplinary in that it needs to consider the broader political, socio-economic and environmental conditions in which a disaster unfolds (see Gaillard, Liamzon & Villanueva 2007; Wisner *et al.* 2004). As such, this study was driven by one core objective—to explore how local businesses in Nadi experienced this disaster, drawing on the political, socio-economic and environmental conditions in which the flooding occurred. In understanding the coping responses of shop owners, managers and employees, we can begin to understand how such a severe and damaging event might be better prepared for and managed in the future.

Methodology

The findings of this study are drawn from 34 surveys completed in November 2012 with local businesses in Nadi. These surveys, containing a mix of closed and open-ended questions, used the same set and order of questions to allow for analyses using the statistics program SPSS (version 16.0, see Neuman 2006). The survey enquired about the particular socio-economic characteristics of the business such as type of business, number of employees, and annual profit. The survey captured details on the preparedness and response of individual businesses to the flood in March 2012. For instance, questions probed respondents on the amount of time they had to move shop merchandise to higher ground and evacuate, along with the estimated cost of the flood damage. The survey concluded with a series of open-ended questions along with a number of quantitative attitudinal questions (using a Likert scale) that explored respondents' levels of concern about the incidence of disasters in their community, their preparedness for such disasters through the creation of disaster management plans, and evacuation plans for their businesses.

Starting at the northern end of Nadi's main street (Queens Road), 50 local businesses were approached by the author to participate in this study. On most occasions, survey participants could complete the survey straight away. For others, the survey was left to be completed and the author returned over the next two days to collect the completed survey. All surveys

were self-administered. Businesses in the last block of the main street (at the southern end near the Hindu Temple) were not surveyed as this area has a higher elevation than the northern end and did not suffer major damage. In total, 34 businesses (a response rate of 68 per cent) agreed to participate in the study. For the remaining 16 businesses, limited access to staff and other time pressures prevented their participation. Surveys were provided in English, Fijian and Hindi. Nearly all respondents requested the survey in English (except for one who requested the survey in Fijian), which is indicative of the language spoken most widely at work, and which caters predominately to international tourists.

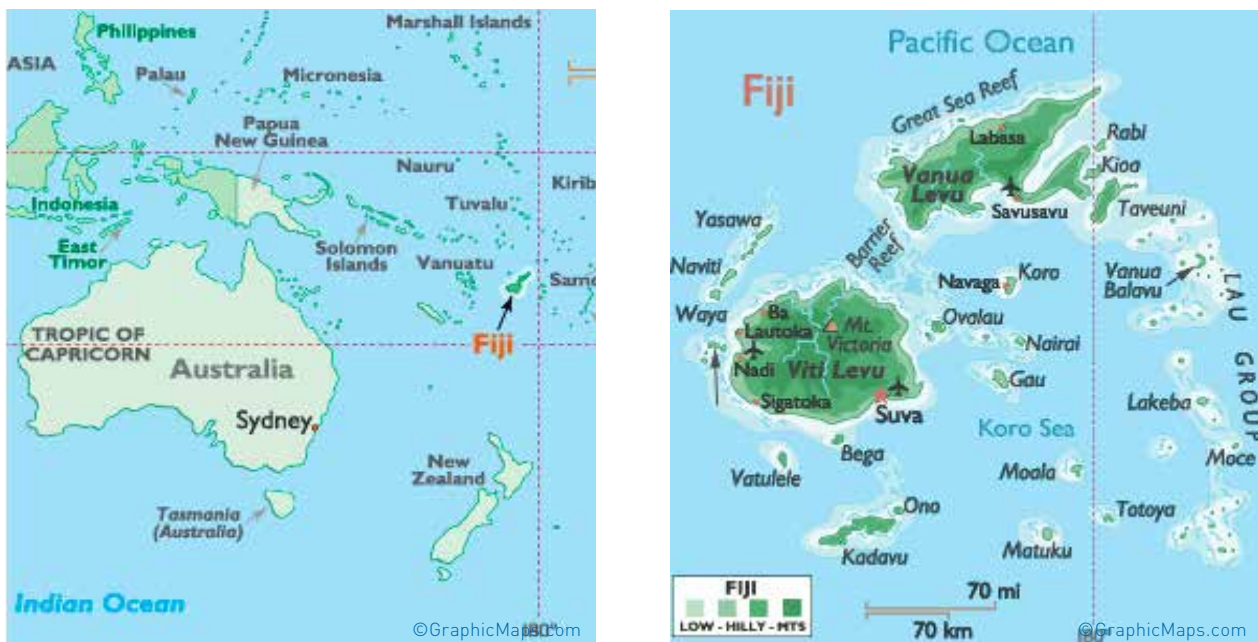


Damage to a business in Nadi, 10 days after the flood.

Location and study sample

Fiji is a well-known Pacific Island country with a population of around 850 000. Fiji is a Melanesian country and encompasses over 300 islands which were formed through volcanic activity over 150 million years ago. Fiji generates its main sources of foreign exchange from a strong tourism industry and large sugar exports. Nadi is the main entry point for international tourists, due to the location of the international airport and gateway to the nearby Port Denarau, Mamanuca and Yasawa group of islands. Figure 1 illustrates the location of Fiji and Nadi, which is positioned on the west coast of the main island, Viti Levu. The majority of survey respondents were shop employees (44 per cent of the sample), followed by shop managers (29 per cent) and shop owners (27 per cent). More males completed the survey (65 per cent) than females (35 per cent).

Businesses had an average of 13 full-time employees across all the 34 businesses. A range of different

Figure 1 Location of Fiji and Nadi (Source: www.worldatlas.com).

businesses were surveyed, however, most of these service the large international tourism market, such as clothing, jewellery and handicraft stores. Larger businesses, such as department stores, supermarkets and a car dealership were included in the sample. A large proportion of respondents indicated an annual profit of less than F\$100 000 (approximately AU\$52 000; 78 per cent), followed by those businesses with an annual profit of F\$100 000–F\$499 999 (13 per cent) or more than F\$500 000 (9 per cent).

Results: experiences of the flood

Local businesses in Nadi were surveyed six months after the devastating flood impacted on the town and surrounding areas. According to 77 per cent of respondents, they were not warned of the impending flood by local authorities. As lamented by one male shop owner:

'They could have given us warning early in the morning when the river was going to flood. No sirens, nothing. We woke under flood, too late to come in the shop. One hundred percent damage. It was a big disaster. I live in fear' (survey #2).

This was the overriding sentiment put forward by respondents; that government failed to provide any warning to the local business community so they could prepare. The bulk of the warnings came late in the evening, which meant that many people missed them. Waking to the news that the Nadi River had broken its banks overnight and flooding was widespread throughout Nadi Town shocked and angered many in the business community who were unable to move their shop merchandise to higher ground and secure their premises.

Despite such views, the government did provide warnings of severe weather conditions to the local

community, predominately through radio broadcasts. However, these warnings either came too late for businesses to adequately prepare or were not pitched at the correct warning level. As a result, the remaining respondents (23 per cent) indicated that the warning provided by the government was inadequate. One male shop owner explained the reasoning behind this: *'Not much flood warning was given only through radio that low lying areas can get flooded'* (survey #8).

The information provided in government warnings—that only some low-lying areas could be flooded—caused complacency for a number of businesses in Nadi. A female shop manager explained that there was a warning but it failed to provide enough detail about areas and streets at threat from flooding: *'Through the radio there was a flood warning for lower areas but I didn't expect it in our shop'* (survey #11).

The extent to which the flooding occurred in Nadi was not expected and this was largely a function of the limited information provided in the warnings to local businesses and the community at large. Overall, the 34 businesses surveyed indicated that the local authorities could have done more to help them prepare for the flood. The need for a more effective warning system was a common theme from respondents which is exemplified by a statement by a female shop owner: *'They should have one effective networking system where they can advise us about the flood'* (survey #22). This was one strategy put forward to mitigate the threat of flood; others included the need to improve flood forecasting and create more co-ordinated disaster preparedness.

A series of six attitudinal statements were also provided to respondents to ascertain the level of agreement based again on a Likert scale of 0 ('do not agree') to 4 ('strongly agree'). Responses clearly indicated that government has a responsibility to prepare local communities and businesses for natural

disasters in the future (flood, droughts, cyclones, mean=3.3 and climate change, mean=3.3). One female shop employee argued: *'Local authorities have the responsibility to provide information in advance so that the people of Fiji could prepare themselves for the disaster'* (survey #32).

The root of local business owner anguish towards government authorities on the lack of adequate warning was two-fold: warnings were not heard by many people as they were broadcast late in the evening and it was too late for many businesses to prepare, and warnings appeared to downplay the severity of the impending disaster and business owners did not rush to secure their shops and merchandise. While authorities may not have done an effective job of warning local businesses of the impending flooding in Nadi's main commercial precinct, there also appeared to be little responsibility taken by the business owners themselves. The history of flooding in Nadi and its identification as a flood-risk town should have been enough to prompt business owners to adopt a precautionary approach once torrential rain started. This may have avoided such a substantial financial and psycho-social burden that an event such as this causes.

According to survey respondents, the estimated cost of the flood damage for individual businesses ranged from F\$1 000 to F\$1 million with a mean damage bill of F\$129 000. Based on the annual profits indicated by these local businesses, the damage bill averaged out to cost them their annual profit. Not only was the cost of recovery high, a large proportion of surveyed local businesses (85 per cent) believed that the local authorities could have done more to help businesses in Nadi recover from this flood. While this finding is concerning, it is not surprising. Lessons that emerge from most disaster situations across the globe speak to the need for greater support and assistance from authorities, regardless of the country or level of socio-economic development. For instance, one of the most highly-criticised disaster emergency responses occurred in the United States when the government was publically accused of mismanaging both the preparations for and relief response to *Hurricane Katrina*—a category 5 hurricane which made landfall over southern Florida in August 2005, causing close to 2 000 deaths and inundating 80 per cent of New Orleans as a result of a failed levee system (Masquelier 2006). In the case of Nadi, local businesses levied their criticisms of the inaction of authorities because little help was provided to shop owners to clean their shops and move damaged stock elsewhere. In previous flooding events (for example, January 2009), the Fiji Government provided local businesses with army personnel who helped with the clean-up, particularly the removal of mud, silt and damaged stock. This support was not on the same scale for the 2012 flood.

Much of the relief and recovery efforts were pitched at local communities rather than businesses, with an acute focus on the following thematic cluster areas:

- health and nutrition

- water, sanitation and hygiene
- education
- emergency shelter, and
- food security and agriculture (UN Resident Coordinator 2012).

It took up to five days for the flood water to recede. The government and Fiji Red Cross (amongst other teams) assessed the damage and started co-ordinating and providing relief across the identified priority cluster areas. According to the humanitarian action plan by the UN Resident Coordinator (2012), electricity was restored and water was partly restored 10 days after the flood. Initial assessments made on the cost of sustained damages to key economic sectors amounted to more than F\$71 million, and yet little assistance was provided to economic sectors (such as local commercial businesses) to recover from the disaster. Not only did local businesses indicate that there was an inadequate level of warning of the impending flood, the damage bills were high and the recovery and assistance from local authorities was lack-luster. These experiences do little but instill fear of future flooding events in communities.

All survey respondents indicated they were concerned about the possibility of another flood in Nadi. In particular, 49 per cent of respondents were 'extremely' concerned, 39 per cent were 'very' concerned, six per cent were 'moderately' concerned, and only six per cent were 'a little' concerned. As put succinctly by a male shop owner: *'We are very concerned unless precautionary measures are put in place'* (survey #8).

Precautionary measures

Of the 34 businesses surveyed, only eight had insurance (24 per cent). These eight businesses included the large department stores, car dealership, major supermarket and two of the telecommunication shops. According to UNDP (2007, p. 80), 'Insurance can play an important role in enabling people to manage climate risks without having to reduce consumption or run down their assets'. For local businesses in Nadi, it is difficult and extremely costly to obtain insurance. Local insurance companies refuse to insure businesses in Nadi due to the high flooding risk. This leaves businesses with only one option of securing insurance—through international companies, which can be costly. As one female shop owner explained: *'Since we don't get insurance policies locally and international ones are very expensive, I have a bank account in which I save F\$50 a week for any disasters that may come'* (survey #22). This difficult situation, where smaller local businesses do not have insurance could be improved by, as one male shop owner recommended: *'I believe we should have a flood insurance system'* (survey #15).

According to the *United Nations Human Development Report* of 2007-2008 there are a number of 'factors that create a predisposition for the conversion of risk into vulnerability' (UNDP 2007, p. 79). Among those, 'limited access to insurance' plays a central role in increasing



Image: Karen McNamara

Local businesses without insurance found it hard to recover quickly or had to close down.

vulnerability (UNDP 2007, p. 80). In terms of individual households and small business proprietors, insurance plays an important role in managing climate risk by enabling crucial assets to be protected. Without such protection (as is the case for the majority of Nadi small local businesses surveyed), proprietors are open to absorbing the shocks of such climate hazards without the necessary protection. Severe flooding, at increased intervals, is likely to eliminate saved capital and lead to businesses closing their doors if they cannot absorb the cost of stock, infrastructure and other capital losses.

Respondents were asked to reflect on their level of concern over a series of 20 diverse issues in their community, ranging from unemployment, transport infrastructure, governance structures, and the maintenance of cultural identity. The purpose of this question was to compare how respondents viewed a series of important community issues and to ascertain whether localised flooding was a core concern. This level of concern was assessed using a Likert scale of 0 ('no concern') to 4 ('extreme level of concern'). The issue that showed the highest level of concern by respondents was high crime levels (mean=3.3) and the frequency and severity of floods (mean=3.3), followed closely by the low-lying nature of Nadi itself (mean=3.2). Crime and looting were reported in the media and referred to by respondents as a serious problem during the 2012 flood. These findings indicate how the three major concerns for respondents all relate to the disastrous impacts of localised flooding events on the Nadi community and surrounding areas.

Another prominent issue of paramount concern for respondents (gauged in a separate question) was that the Fiji Government should pay more attention to natural disasters such as floods when making planning decisions (mean=3.5). Some survey respondents

explained how and why the government needed to seriously consider how it manages disasters, such as floods, in the future. For one male shop owner:

'I feel for the sake of livelihood in Nadi, the government should divert the Nadi river to avoid any more disasters as the people of Nadi has suffered a lot in the past due to flood. This is the best option and the government must take keen interest in protecting jobs, safety and security of not only businesses in Nadi but also the general public' (survey #10).

Expectation was clearly placed on the Fiji Government to address and manage disaster preparedness (including more effective warning systems) and recovery for local businesses. A large proportion of respondents voiced their support for the Nadi River to be diverted. This is also a mainstream and widespread request from the broader local community.

While it seems like an unreasonable and even unrealistic request, it is something that has been seriously considered by authorities but no clear plan for the future has been executed. The Nadi Town council and officials from the Japanese International Cooperation Agency have carefully considered a river re-divert plan as a way of providing a solution to Nadi's flooding problems. It is likely that the main impediment to its implementation is finances. Diverting the Nadi River away from the town centre and the majority of the population, via a three-kilometre diversion channel is estimated to cost F\$62.9 million (Wise 2012). This funding has not yet been forthcoming.

Not everyone agrees, however, that diverting the river or dredging the mouth of the river is the best approach to mitigate the threat of such flooding events in the Nadi area. An eight and a half kilometre stretch of the Nadi River was dredged following the flood in January

2009. Despite the removal of 1.1 million cubic metres of silt from the river system, the dredging proved ineffective in preventing the flood in March 2012. Nunn (2010) argued that diverting the Nadi River away from the town centre would be ineffective in mitigating flood risk. Nunn (2010) claimed that sea level rise, which is expected to continue to increase over the next century, is the root cause of the increased flooding events in Nadi and, hence, the diversion exercise would make little or no difference. For Nunn (2010, p. 246), the 'only realistic option for Nadi town is to relocate as soon as possible'. This proposed long-term adaptation strategy for Nadi and nearby areas to relocate to higher ground brings with it a host of concerns about rights to land and culture (Farbotko & Lazrus 2012), and a complex set of socio-economic and psycho-social community impacts (McNamara & Westoby 2011) that require careful and sensitive consideration.

Lessons and conclusions

Across the Pacific region, communities are faced with a series of challenges—economic uncertainty, socio-cultural change, and natural resource management. Climate change and the severity of natural disasters are a major threat to the sustainability of Pacific populations, both in the short and long-term. Adaptation to hazards is likely to be exacerbated by sea-level rise, which is a critical issue for all Pacific Island countries. As appropriate and sustainable strategies are developed by governments and civil society organisations across the region to respond to climate change and climate-induced events in the future, it is crucial that we learn how past disasters have been experienced and managed. This event in Fiji exemplifies the complexity of longer-term planning, particularly as it appears that local communities are becoming more reliant on others to assist in developing solutions.

The flood in March 2012 was considered by the media and Fiji Government officials as the worst flooding event experienced by Fiji in decades. Based on a survey of 34 local businesses in Nadi, six months after the flood, their experience was epitomised by this male shop manager: *'This last flood was the biggest and we couldn't help each other'* (survey #15). The experiences of local businesses with this flood have highlighted a number of shortcomings and subsequent recommendations for the future. Little warning, high recovery costs, poor levels of assistance from the government to help businesses prepare and recover, and limited insurance were all serious factors that undermined the capacity of businesses to cope with the disaster. Many respondents *'live in fear'* (survey #2) that another flood will cause further devastation and force more local businesses to close down their operations.

Disaster risk reduction and management is a multi-disciplinary and cross-sectoral issue. As such, it should not only be mainstreamed at the national level, but be a national and local priority. Respondents made it clear that the government—across all levels—needs to provide greater attention to disasters when making planning decisions for the Nadi area. At the national level, work should continue through the National Disaster Management Office which co-ordinates emergencies such as this one, on improving early warning systems and disaster preparedness and, if necessary, improved flood forecasting. There was a clear deficiency in the warnings provided to local businesses, and indeed the community at large, prior to this flooding event. Another approach that could be explored by local government is the re-planting of the forests upstream, which have been cleared extensively in the past and are, in part, responsible for the rapid rate at which rainwater drains into the lowlands. Such re-vegetation initiatives could reduce the velocity of floodwaters, delay the flooding of towns, and increase the warning time provided to local communities to prepare.



Nadi Town becomes a flurry of activity a week after the flood with numerous local businesses holding 'flood sales'.

Flooding events are common in Fiji. However, the incidence of such events, particularly in the Western Division, has also increased in 'magnitude and duration over the past five years' (Nunn 2010, p. 245). This presents a significant challenge to the long-term sustainable development of the country, especially in high-risk locations such as Nadi, which is home to the core pillars of the Fijian economy. In facing these challenges, there is an urgent need to explore lessons learned from past events and develop further strategies to mitigate the threat of floods. Some lessons have been briefly explored in this article and have revolved around the need for more effective early warning systems and dissemination of accurate information to people, greater external assistance to local businesses to help in the recovery stage, and better long-term planning decisions around land-use and catchment management. Respondents also reflected on their fear of future flooding events and the hardships they face as a result of being unable to insure their business. It is hoped that such lessons can also value-add to current discussions surrounding disaster risk management and climate change (see Gero, Méheux & Dominey-Howes 2010; Mercer 2010). At present, these discussions are very prominent at the regional level in the Pacific, with a process underway to develop an integrated Pacific regional strategy for disaster risk management and climate change adaptation and mitigation for 2016-2025. It is hoped that such an integrated strategy will be beneficial to how local communities and businesses prepare and recover from disasters in the future.

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