A PROPOSAL FOR BETTER DISASTER RISK MANAGEMENT IN FIJI

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I. Introduction

Natural disasters are extreme events that occur as a result of the normal processes of earth's atmosphere and crust. Scientists believe that these natural phenomena have been around for millennia, and are a by-product of our planet's unique atmosphere and geological composition. In recent years there has been a noticeable rise in the frequency and intensity of these natural disasters, and many have argued this to be a direct consequence of global warming brought about by widespread anthropogenic activity. In a 2021 study on the effects of climate change on the intensity of tropical cyclones, a panel of climate researchers had noted an increase in the proportion of severe tropical cyclones (categories 3 to 5) in various regions of the world over the past few decades. They projected this to be the beginning of an upward trend with increases in rapid intensification, a poleward migration of the latitude of maximum intensity and a slowing of the forward motion of tropical cyclones.[1] In a 2019 research paper on the earthquake hazard potentiality of Viti Levu (Fiji) and surrounding areas, it was found that earthquake intensity, magnitude and frequency had increased within this zone and in 2017, 58 earthquake events were documented– 10 more than the previous record holding year.[2]

These findings are concerning for regions like the Pacific that are already vulnerable to such natural occurrences. The region's humid climate and warm ocean waters provide the perfect conditions for the formation of cyclones. The world's largest and most active fault line, the circum-pacific belt, better known as the "Pacific Ring of Fire", also runs through the region, posing a constant threat of destructive earthquakes and tsunamis. Fiji is one of the many countries in the Pacific that has been affected by the recent uptick in adverse natural disasters. In the past 6 years alone, the country has been hit by four destructive category 5 tropical cyclones, which included cyclone Winston - the strongest recorded tropical cyclone to make landfall in the South Pacific Basin, claiming 44 lives and resulting in approximately FJD$2.98 billion worth of total damages.[3]

With studies pointing to a continued increase in the average number and intensity of tropical cyclones and earthquakes predicted to occur in the coming years, it is vital that vulnerable countries

[1] T. Knutson, M. Chung, G. Vecchi et al. (2021). Climate change is probably increasing the intensity of tropical cyclones. ScienceBrief.
[2] J. Varo, T. Sekac, S. Kumar Jana. (2019). Earthquake Hazard Micro Zonation in Fiji Islands: A Research of Viti-Levu Island. International Journal of Recent Technology and Engineering.
[3] Category 5 Cyclones NDMO Fiji.

develop a comprehensive disaster risk management plan in order to properly be prepared. This paper will discuss the current disaster risk management efforts in Fiji. It will begin by highlighting some of the major measures and initiatives in place before identifying certain gaps in the model and some of the areas that could be improved. It will then provide a proposal on a few ideas and initiatives that could be implemented to improve the current model and plan, hopefully creating a more comprehensive and effective disaster risk response effort capable of addressing even the most destructive of natural disasters.

II. Current Disaster Risk Reduction Measures and Interventions

Natural disasters create havoc and disruptions to the economic and social fabric of any society. The negative impacts felt in the agriculture, health, housing, and infrastructure sectors and more importantly the environment itself cannot be underestimated. As such, member countries of the United Nations adopted the Sendai Framework for Disaster Risk Reduction 2015-2030.[4] The framework essentially emphasizes reducing existing risks while at the same time, prevention of new risks. In ensuring this happens, it is anticipated there will be less lives lost through disasters and reduced losses to the economic, social, cultural and physical structures and assets of a country. Fiji's National Disaster Risk Reduction Policy 2018-2030 is closely aligned to the NDMA 1998. [56]The policy is Government's undertaking to ensure that an inclusive and systematic approach to disaster risk reduction helps alleviate poverty and ensure sustainable development.

The key to mainstreaming disaster risk reduction and climate change adaption is the inclusion of these in Government policies, plans, strategies, programs and laws of all relevant sectors. For example, the 2017 Humanitarian Policy for Disaster Risk Management was developed to institutionalize humanitarian practices with a focus on being proactive and resilient rather than reactive. Likewise, the 5 year and 20 Year National Development Plan underscores the important of disaster risk reduction strategies and climate change in Fiji's economic and social development.[7]

[4] Sendai Framework for Disaster Risk Reduction 2015 – 2030.
[5].Fiji National Disaster Risk Reduction Policy 2018 – 2030.
[6] National Disaster Management Act 1998.
[7] 5 Year and 20 Year National Development Plan.

Coordination between key disaster agencies, especially in administrative functions have been strengthened to ensure the management of disasters remain pragmatic and effective. The NDMO has been merged with the Ministry of Rural and Maritime Development and the Fiji Meteorological Services with the Ministry of Infrastructure. Moreover, Government has called for both the public and private sector to strengthen its Business Continuity Plans by factoring in disaster risk reduction into the operations and plans of the organization. This will ensure that in times of disasters, both sectors are able to withstand as much as possible the negatives impacts.

Government is working with relevant stakeholders to review and update the archaic building codes currently in place. This should take into account the effects natural disasters as well as climate change have on structures. It is anticipated that once the review and update has been completed, the jurisdiction over building codes will eventually move to the Ministry of Local Government.

Government continues to invest in training and up skilling its people in disaster risk reduction and climate change adaptation. The training aims to educate civil servants out in the districts on how to handle disasters and climate change issues, train civil servants on how to support the most vulnerable during disasters – women, children, the physically challenged and the elderly citizens. NDMO also conducts training of disaster risk reduction trainers at the national, district and community level.

In terms of financing, Government is committed to strengthening its contingency fund and the Prime Minister's Recovery Fund during the response and recovery stage with a view to ensure that all construction undertaken is based on the build-back-better principle. Further, Government through the Ministry of Economy has undertaken to strengthen its disaster recovery and reconstruction subsidy program for disaster victims – a similar scheme, Help for Homes was implemented in 2016 following Cyclone Winston.

Communities that have been directly affected by the impacts of climate change on their surroundings and livelihoods and who have had to relocate to higher or inland areas have been assisted by Government during the relocation. To date there have been ten (10) villages and communities that have been resettled by Government. The Reserve Bank of Fiji's Disaster Rehabilitation and Containment Facility has been in place since 2013.[8] The facility was originally

[8] RBF Disaster Rehabilitation and Containment Facility.

established to assist businesses that were affected by natural disasters. In 2020, the scope was changed to include health disasters such as COVID 19. The facility provides loans to small – medium enterprises at reduced interest rates via lending institutions. The loans aim to assist these businesses continue trading despite the setbacks they may have faced during the disaster.

Government in partnership with the United Nations Capital Development Fund (UNCDF), United Nations Development Programme (UNDP) and the United Nations University as well as other development agencies are embarking on developing affordable insurance for individuals, communities and small-medium enterprises to allow them to respond and recover much quicker after a disaster. Once this is fully realized, it will provide greater coverage to citizens especially the more vulnerable who have had to dip into their already low retirement savings.

In terms of preparedness, Government is doing a great deal of work within the resources and capacities it has. The Ministry of Waterways and Environment is heavily involved in improving and maintaining drainage networks in towns and cities, constructing seawalls and planting mangroves to prevent coastal degradation and flood control embankments to contain the deluge of water during flooding. The construction of new and rebuilding of cyclone ravaged schools and hospitals with the assistance of development partners to Category 4-5 standards is critical in ensuring that children and patients are accommodated in a safe structure. Along the coastline of the Central Division, Tsunami Warning Sirens have been strategically placed to warn citizens of an impending Tsunami. Regular testing is conducted – businesses, organizations and schools use this opportunity to test their own Tsunami or Fire evacuation plans.

New installation of critical utilities like water, telecommunication and electricity are carefully planned to avoid set up in flood prone, drought stricken and landslide areas - as these are utilities that are vital for businesses and homes, any outage is likely to cause both economic and social impacts.

The strengthening of warning systems using relevant technology will allow Government to effectively predict the possible occurrence of disasters and preempt the extent of damage. Government in close collaboration with stakeholders is developing the storm surge and coastal inundation prediction system, the catchment monitoring/management and flood predictions as well as the meteorological drought prediction system and forest fire watch system. These systems, will

allow users to effectively monitor, prepare and put in place measures to counter the impacts of storm surges, coastal flooding, river and inland flooding, droughts and forest fires.

In terms of emergency response, Government has a solid framework for engagement in this area. The emergency medical team is a cross collaboration of medical workers from the Ministry of Health, the Fiji Police and the National Fire Authority who provide immediate assistance and support during times of natural disasters and even as recently as the COVID 19 pandemic. Further, NDMO continues to spearhead relief and rescue works, evacuation guidance and traffic operations in close partnership with the defense forces.

The support of development agencies and multilateral partners, especially international rescue organizations like the International Federation of the Red Cross (IFRC) and UN partner agencies in assisting with immediate emergency response support has been tremendous for Fiji. Their ability to mobilize critical manpower and assistance to reach impacted communities immediately after a disaster is impressive. Here, they work along aside the Ministry of Foreign Affairs and the Defense forces.

The Defense forces are also heavily involved in the rescue and relief operations for displaced people following a disaster. The agencies are engaged following a disaster given their technical expertise on rescue and mobilization. The displaced people are taken by the agencies to the evacuation centers either by vehicles, boats or helicopters.

In terms of recovery and reconstruction, the close collaboration between Government agencies, international partners, NGO's and communities has allowed for a multifaceted approach to recovery and reconstruction. Some of the initiatives and interventions include: immediate recovery activities for infrastructure – ensuring that schools, hospitals and roads are able to be assisted immediately after a disaster, immediate restoration of utilities that have been affected – the provision of water and electricity is critical to the return of normalcy in society.

The provision of counselling, psychological support and mental health service for those in immediate need after a disaster has helped many cope with trauma and mental issues. These services are provide both by Government and NGO's. The provision of immediate relief assistance after a disaster – food, water, shelter, clothing and medication has allowed communities to meet their immediate social and health needs while awaiting targeted support from Government.

The development of a National Reconstruction Plan with assistance of the Pacific Regional Infrastructure Facility (PRIF) has ensured that any attempts at reconstruction is underscored by the principles of build-back-better. The utilization of technical and financial assistance to support the reconstruction of infrastructure and public facilities is ongoing and has lessened the pressure on Government finances and resources.

Relocation schemes continue to prove successful after a disaster has struck – communities or individuals are relocated to safer areas to reside and rebuild. The Post Disaster Needs Assessment (PDNA) is conducted after a disaster to evaluate, record, share and publicly account for the losses attributed to a disaster with a view to understanding and addressing the economic, social and environmental impacts of the disaster by way of a concerted effort involving Government and interested stakeholders.[9]

III. Limitations of Current Disaster Risk Reduction Measures and Interventions

Although the current Government efforts to address disaster risk reduction and climate change in Fiji is significant, focused and commendable, there are still gaps, the most evident of which is funding. Government funding is often never sufficient to meet all planned disaster risk reduction and climate change adaptation operations and targets in a year. Disaster risk reduction and climate change adaptation issues are still not fully incorporated into sectorial planning and budgeting process – hence the lack of corresponding funding to NDMO and related agencies to meet these targets.

While the NDMO is the designated agency responsible for all coordination pertaining to disaster risk reduction, there still are gaps in coordination between the Office and other relevant agencies (other Ministries and Departments, NGO's, development partners and international organizations, etc). Coordination mechanisms that currently exist for programs and projects appear to be deficient and lacking.

[9] Fiji National Framework for Disaster Risk Reduction 2018-2030.

Human resource impediments also obstruct the full realization of disaster risk reduction initiatives, programs and projects as personnel lack the required skills set and expertise to manage disaster issues, Government is unable to retain and support qualified personnel and they leave for better opportunities elsewhere and there is a general lack of appreciation of the importance of disaster risk reduction and climate change adaptation expertise in established positions across Government.

The successful implementation and adoption of disaster risk reduction strategies are often impeded by the lack of public awareness and understanding of disaster risks and the effects of climate change. Further, there is poor access to disaster and climate change information for those outside of Government – communities, private sector and NGO's. Another problem is the lack of information sharing between Government agencies, at the central and district levels.

There is no monitoring to ensure that schools incorporate compulsory disaster management programs in their operations. The assessing and updating of disaster risk reduction and climate change related material in the education curricular and tertiary courses is still lacking. [10]

IV. Proposal of Initiatives to Improve Current Disaster Risk Reduction Measures and Interventions

A. Disaster Risk Insurance Coverage

As earlier mentioned, one of the main shortfalls of the current DRM efforts in Fiji, is a lack of sufficient financing especially in the event of severe natural disasters that result in significant loss and damages. In these instances, Government and its relevant disaster agencies often find themselves having to rely upon development assistance and private donations in order to fully implement their disaster relief measures and initiatives. In the recent 2021-2022 national budget, $FJD 1.5 million was allocated for national disaster management operations and measures. A further $FJD1.5 million was set to be received in aid from JICA for the mainstreaming of disaster risk reduction.[11] As stands, a budget of this size would likely only be sufficient in covering damages associated with a category 2 or 3 cyclone.

[10] Fiji National Framework for Disaster Risk Reduction 2018 – 2030.
[11] 2021-2022 Republic of Fiji Budget Estimates.

Considering the increased likelihood of at least one category 3-5 cyclone making landfall a year in the region, ensuring that sufficient financing is available to fund disaster risk management measures and initiatives is vital. For this reason, it would be beneficial for the Fijian Government to invest in a disaster risk insurance policy from the Pacific Catastrophe Risk Insurance Company (PCRIC) in order to bolster their financial reserves in the event that a severe tropical cyclone was to hit the country. PCRIC offers a comprehensive tropical cyclone product that can be tailored to meet a policyholder's immediate needs. It is a parametric type of insurance coverage, which provides an immediate payout when a predetermined threshold has been reached. The amount of payment is set according to the size of the event – and is calculated using a specific formula. A policy insuring against category 4 and 5 cyclones would be a useful financing tool to provide much needed funds during the aftermath of a severe tropical cyclone. Government will be able to combine this payout with the funding already allocated for disaster relief measures and the assistance given in aid, to create the financial capacity needed to address the needs of a nation following a highly destructive tropical cyclones.

B. Reviewing and updating the current National Building Code of Fiji 1990

In a report published by the Pacific Region Infrastructure Facility (PRIF) in July of this year, on the "Constraints in the Application of Building Codes in the Pacific", several issues were identified regarding the current national building code of Fiji. The first of which was its suitability. The current code was developed in the late 1980s under the funding of an Australian Aid program and no updates have been made since. The provisions embodied in the code were modelled after New Zealand and Australian building standards and do not cover vernacular construction methods and practices used in Fiji. Enforcement is also an issue. There are currently no guidelines in the Public Health (National Building Code) Regulations 2004 or in the Public Health Act 1934 that outline how the regulations are to be administered, enforced, or regularly reviewed. Couple this with the fact that there are no local programs available to train building inspectors on how to properly inspect buildings and ensure compliance is met under NBCF regulations - the result is there are currently a large number of homes and smaller structures that do not meet cyclone-certified standards.[12]

[12] R, Gwilliam. (2021) Constraints in the Application of Building Codes in the Pacific. Pacific Region Infrastructure Facility.

In order to address these issues, the current 1990 NBCF must urgently be reviewed and updated. Regulations must be added that are capable of protecting all new structures against the current threats posed by natural disasters, and that cover the unique building practices and methods used in Fiji. New protocol should be introduced requiring that all new homes be built with a concrete footing, to secure the foundation of the building and full cyclone strapping to secure the roof. Not everyone may be able afford to concrete structures for homes or include all the specifications necessary to achieve full cyclone certification. However, a small measure such as this, is an affordable and easy way to ensure that even the simplest of village homes will be protected against a strong tropical cyclone winds. Amendments should also be made to the Public Health (National Building Code) Regulations 2004 and the Public Health Act 1934 – to include specific provisions that outline how the regulations are to be administered, enforced, and regularly reviewed. Courses should also be introduced in universities that teach those who work in and around the field of construction, structural engineering, and architecture on how to properly implement building standards. Building Inspectors should also be given training on how to properly examine structures and ensure that standards and regulations are met. With these few initiatives, a great improvement can be made in the quality of building structures in Fiji, capable of withstanding many of the adverse effects of destructive tropical cyclones.

C. Improved Coordination

Coordination is key to ensuring that the strategic objectives of disaster risk reduction and climate change adaptation are met successfully. To strengthen coordination the following recommendations are proposed – the NDMA 1998, NDMP 1995 and other central guiding documents need to clearly reflect and define the authority levels and responsibilities of each key agency and the expectations of them; policies, processes, plans and procedures must ensure clarity and not leave any room for ambiguity. Coordination and communication between Government agencies, the public, development agencies/international partners and NGO's must be strengthened to allow for greater transparency so that disaster work/operations are able to continue without disruption; continued strong leadership is key for coordination to be effective and finally,

a clear organization structure that is adequately resourced with qualified staff is critical for NDMO to effectively deliver on its mandate of coordinating all natural disaster operations in Fiji.[13]

V. Conclusion

In summary, a comprehensive disaster risk strategy is vital to ensuring that a country is well-prepared for the adverse effects that come along with destructive natural disasters. Strong DRM measures and capabilities protect a country's financial reserves, and ensures that essential funds needed for the running of government and important economic activities are maintained. This builds a level of resiliency, and allows vulnerable developing nations like Fiji, to quickly recover and get back on their feet, almost immediately after a natural disaster. Public awareness and understanding of disasters and climate change must continue to be strengthened by key stakeholders – access to information should be made easy for everyone and also available in the vernacular. The heightened use of social media, roadshows, TV and radio, and mobile communication must be maintained. NDMO visits to disaster prone areas must be strengthened especially prior to the cyclone season to make communities are aware and prepared for a disaster. School curricular and tertiary education course material must include a significant portion on disaster risk reduction and climate change adaptation so the younger population are made aware of the impacts of disaster as often these are the most vulnerable group in society during a disaster. Finally, the political will must exist to ensure disasters are taken seriously by those in power – providing adequate funding, appropriate laws and legislation and governance frameworks will ensure support and compliance to Government directives during disasters.

[13] Fiji National Disaster Management Plan.

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