Disaster Risk Reduction in the Republic of Fiji

Status Report 2019

adpc Asian Disaster Preparedness Center

UNDRR UN Office for Disaster Risk Reduction

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Status Report
(July 2019)

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About this report

The Disaster Risk Reduction (DRR) report provides a latest snapshot of the DRR progress the Republic of Fiji has achieved under the four priorities of the Sendai Framework for Disaster Risk Reduction. It also highlights some of the key challenges surrounding the issue of creating coherence among the key global frameworks at the country level; and makes recommendations for strengthening the overall Disaster Risk Management (DRM) governance by government institutions and other stakeholders at national, sub-national, and local levels.

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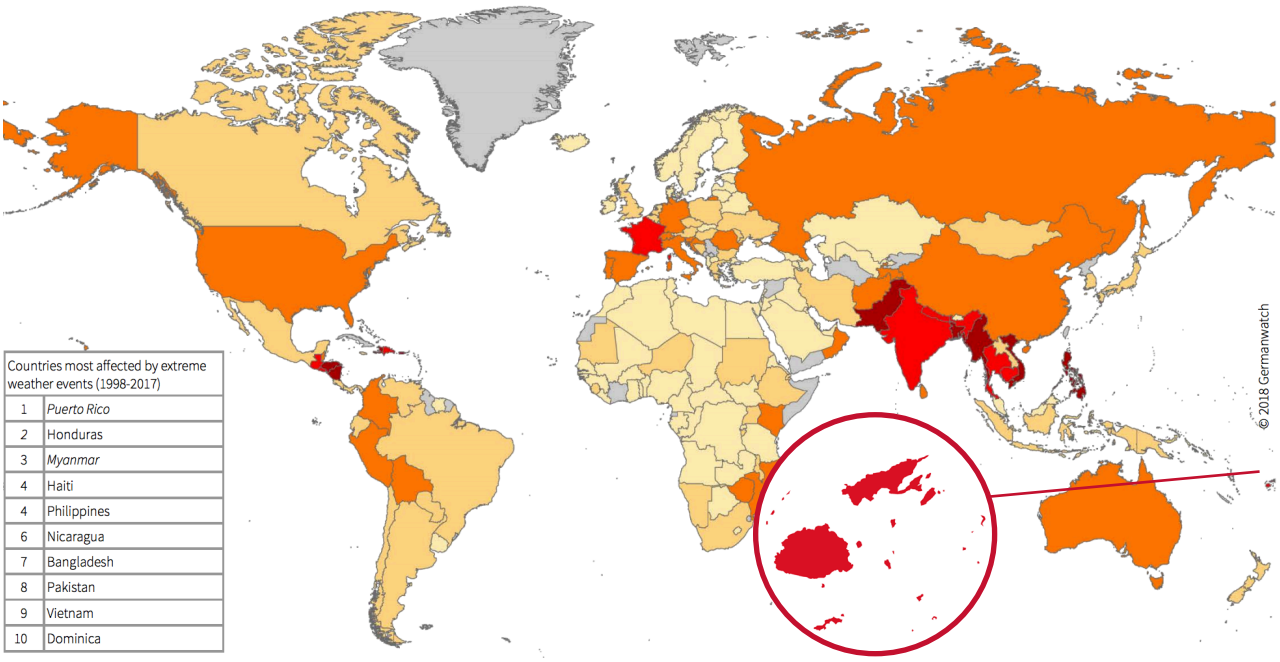
The findings, interpretations, and conclusions expressed in this document do not necessarily reflect the views of UNDRR or of the United Nations Secretariat, partners, and governments, and are based on the inputs received during consultative meetings, individual interviews, and the literature reviews conducted by the research team. While every effort has been made to ensure the accuracy of the information, the document remains open for any corrections in facts, figures and visuals.

UNDRR (2019). Disaster Risk Reduction in the Republic of Fiji: Status Report 2019. Bangkok, Thailand, United Nations Office for Disaster Risk Reduction (UNDRR), Regional Office for Asia and the Pacific



(GermanWatch,2019)

POPULATION 2017	
Total Population	884,887
Urban Population	494,252 (55.9%)
Population Density Per Km^2	46
ECONOMIC INDICATORS	
Gross Domestic Product in Current $US	6.7 billion
GDP Per Capita ($US)	7,903.9
GDP Growth (Annual %)	3.8%
HUMAN DEVELOPMENT	
Human Development Index	0.741
HDI Rank	92
Income Level Category	Lower-middle income

(Fiji Bureau of Statistics , 2017)

Climate Risk Index

Rank 20 / High Risk*

INFORM Risk Index

Rank 115 / Low Risk**

* Climate Risk Index of 2019 analyses the extent to which countries have been affected by weather-related losses between 1998-2017 (GermanWatch, 2019)

** INFORM risk index is a global tool which measures the risk of humanitarian crises and disasters based on 50 indicators assessing hazards, vulnerability and capacity (resources available to mitigate the impact) (INFORM, 2019)

1. Introduction

Fiji is one of the Pacific island groups, located within Melanesia which is one of the three major cultural areas within the geographic region of Oceania. The country is an archipelago state, consisting of 332 islands of mostly volcanic origin, of which 110 are inhabited permanently. The land area of Fiji's islands covers 18,274 km^2, but the two largest islands of Viti Levu (where the capital Suva is located) and Vanua Levu encompass 85% of the total area (CBD, 2018). The overall geographic area covers almost 50,000 km^2, yet despite the size of the country, the majority of the population is concentrated into the two largest islands and urban centers. 75% of all people are inhabiting Viti Levu and 20% reside on the smaller Vanua Levu as of 2016 (Government of Fiji, 2016).

Administratively, the country is divided into Northern, Eastern, Central and Western divisions which are governed by a commissioner for the coordination of governmental activities at their respective regions (Rahman & Singh, 2011). These divisions consist of 14 provinces, headed by Provincial Officers (Roko Tui) at the local government levels, which are operating under the direction of the Ministry of Local Government, Housing and Environment. However, the governance responsibilities of the i-Taukei or indigenous Fijian villages are linked to the Ministry of i-Taukei Affairs at the national level (Winterford & Gero, 2018; Ministry of Finance, 2015). Issues related to community management are firstly discussed by the village councils, followed by district council before reaching the provincial councils and Roko Tui's.

Fiji's islands have a rich ecological diversity; approximately 52% of the landmass is covered by forests, which contain unique biodiversity not found anywhere else on the planet. Half of the flora and 90% of all insect groups present are endemic to Fiji (CBD, 2018). The islands and surrounding reefs also support distinctive marine ecosystems, which are still not thoroughly researched.

In terms of economy, Fiji is one of the most developed and fastest growing countries among the Pacific Island Nations, with largest growth sectors in tourism and sugar cane exports (Jayaraman, et al., 2018). Tourism alone contributes to over 10% of the total GDP, and it has been estimated that the direct and indirect effects of tourism to economic growth could reach over 30% (Fiji Bureau of Statistics, 2016). It is also the regional hub for services, such as flights and shipping, among the Pacific islands. However, the economy is still facing challenges due to disasters and external shocks, impacts of which are enhanced by remoteness and by the reliance on vulnerable agricultural exports and visitors. Furthermore, and despite the positive development trends, 35% of Fijians live below the poverty line, with 44% of the rural populations living in poverty in 2016 (Government of Fiji, 2016).

Countries of the South Pacific are among the most disaster-prone in the world, and Fiji is no exception. The country is located in the vicinity of the Pacific Ring of Fire, meaning that earthquakes, earthquake-induced tsunamis and landslides are a possibility. There are also two active volcanoes located in the region, and the volcanic soil is inherently unstable, which adds to the landslide risks especially in areas where farming and settlement is spreading to fertile slopes. Cyclones, heavy rain and flooding are yearly occurrences, and the most common disasters in the past have been the result of high-impact hydro-meteorological events. Majority of the population and infrastructure is located in the

proximity of the ocean, which results in heightened exposure to sea-level rise and weather-related hazards.

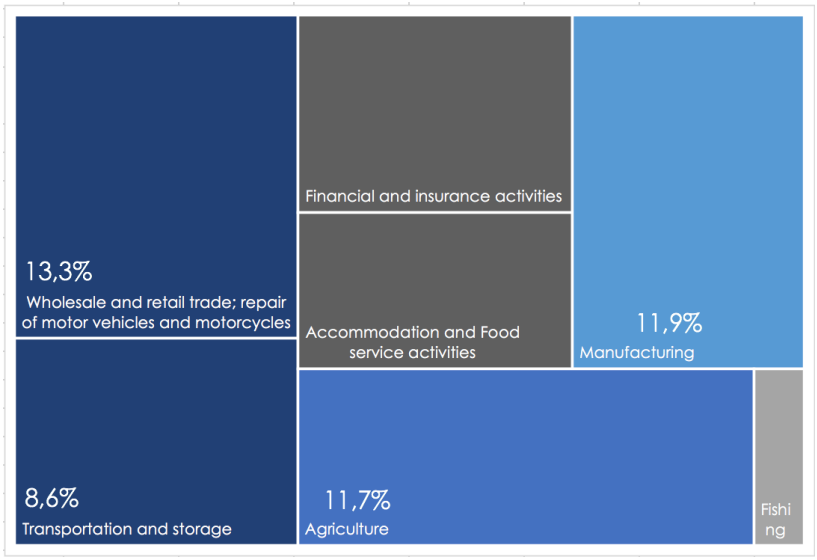


Figure 1. The composition of the GDP of Fiji and largest contributing fields of industry in 2017 (Fiji Bureau of Statistics, 2018)

1.1 Demographic Characteristics

The total population, according to the 2017 Population and Housing Census, has reached 884,887 people, but the annual rate of growth has declined since 1986 due to low birth rates and migration (Fiji Bureau of Statistics A, 2018). Of the total population, 55.9%, or 494,252 people lived in urban areas in 2017, and Ba province alone housed 28% of the population with a growth of 36.7% since 2007 (Fiji Bureau of Statistics A, 2018). The two main ethnicities in Fiji are the i-Taukei and Fijians of Indian descent, with i-Taukei's mostly belonging to various Christian denominations, while the latter groups share diverse traditions originating from Christian, Hindu, Muslim and Shikh traditions (ADB, 2016) along with indigenous practices.

Within the indigenous communities, ownership and access to land among other resources are determined by an individual's relation to a mataqali, or a clan, and households are usually able to request an access from the clan (Becker, 2017). However, there are regional differences in the mechanism by which the clan hierarchies operate. For example, the access to fishing rights in Solevu is determined by a membership to yavusa (tribes) - a larger social unit consisting of number of mataqalis - rather than an individual relation to a mataqali group (Becker, 2017). Vanua (land), has an important communal importance which is attached to the hierarchies of yavusa, and further to the branches of mataqali below these tribal groups. Mataqalis have various social ranks, such as chief of villages (Turaga), the traditionally priestly class (Bete) and warriors (Bati). Understanding the ethnical composure and hierarchies among them is important, especially in the context of disasters and climate, as they will invariably have an effect on the social cohesion and community response and shape the efforts to enhance community resilience.

In terms of gender equality, there are differences within the i-Taukeu and Indo-Fijian groups of women, but male-dominated hierarchies are common and prevalent in the society regardless of ethnicity (Chattier, 2015). Furthermore, inadequate sexual and health education (resulting in increased teenage pregnancies), combined with traditional perceptions about women's role in a household, also affects the education and employment of women and girls (ADB, 2016). As a result, only 46% of women are employed or are looking for work, and the issue is more severe among Fijian women of Indian descent of whom only 37% are engaged in the labor force (ADB, 2016). Commitments for gender equality are not well mainstreamed into institutional structures, planning and budgeting, and despite the fact that the constitution guarantees equality, cultural norms, social environment and the lack of capacity to enforce legislature obstructs the achievement of gender-equality at the grass-root levels (Vunisea, 2016).

1.2 Economic Impact of Disasters

Between 1980 and 2016, annual economic damages caused by disasters have been estimated at FJ$ 35 million, which corresponds approximately to US$ 16.3 million (Government of Fiji, 2016). Cyclones, heavy rain and flooding are causing the most severe impacts due to the value of agriculture and on tourism, the latter of which often experiences losses due to cancellations and damaged assets. However, there are only few comprehensive studies estimating the cost of disasters by each sector. The most recent one was conducted by Benson (1997) according to Jayaraman, et al. 2018. The main observation from both studies with just a decade between them is the persisting lack of understanding the relation of disasters and tourism in Fiji, despite it being a major source of income.

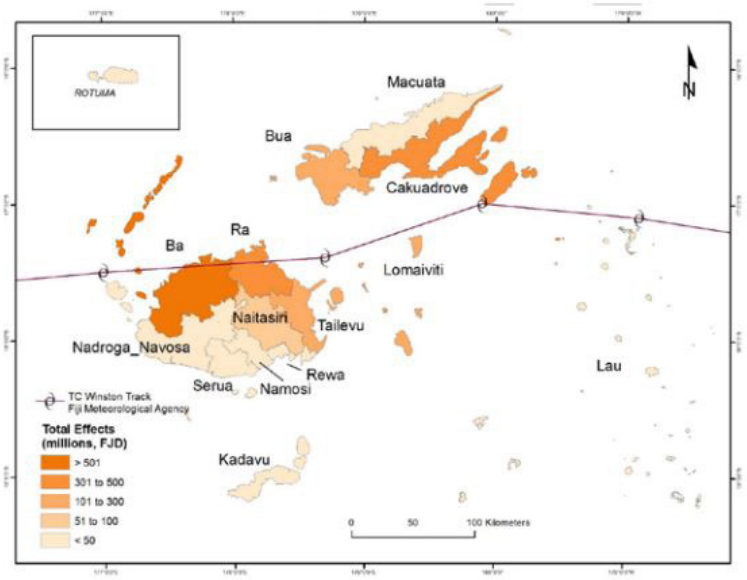


Figure 2. Spatial distribution of the economic damage of Cyclone Winston by province (Government of Fiji, 2016)

In 2016, category 5 tropical Cyclone Winston reached average wind speeds of 233km/h, making it as one of the most powerful cyclones to be recorded in the Southern Hemisphere (Government of Fiji, 2016). The overall value of destroyed assets reached US$ 1.3 billion, nearly half of which came in damages in the aftermath of the disaster as the national economy struggled to recover. Agricultural sector suffered an estimated of 65% of

all losses due to production loss, and the impacts were expected to carry on for several years, even in the case of fisheries due to fish habitat losses (Government of Fiji, 2016). People in Ra, Bua, and Lomaiviti suffered per capita disaster losses and damages of FJ$ 8,500 to over FJ$ 10,000 (US$ 4,650) (figure 2), which is a significant portion of the average annual household income (Government of Fiji, 2016). The overall estimated damage to future growth was estimated to be reduced by 2.5% due to damages to key sectors including housing, transport, manufacturing agriculture and electricity. Overall damage and losses as a proportion of GDP was estimated at 20% (ADB, 2019).

Even without the impact of cyclones, floods are one of the greatest causes of economic damage in Fiji. Just in Navua (rural centre located approximately an hour away from Suva), floods of 2004 caused a minimum of FJ$ 13 million in damages, including household, business and other losses without accounting for loss of value in the future (Holland, et al., 2011). In 2009, intense rainfall induced most severe flooding since 1931, reaching up to 3 to 5 meters in some locations, causing loss of yields and affecting roughly 15% of the sugarcane farms, along with damaging four mill sites with a total cost of US$13.4 million (Lal, 2011). In the year 2012, the combined economic damages of flooding in the Ba River and Penang River catchments was estimated at FJ$ 81.1 million (US$37.7 million) (Brown, et al., 2014). Furthermore, agriculture sector is not only vulnerable to weather-related losses due to rain-fed farming practices and flooding, but also because the fields have been expanding on steep hills (Lal, 2011) which are prone to landslides.

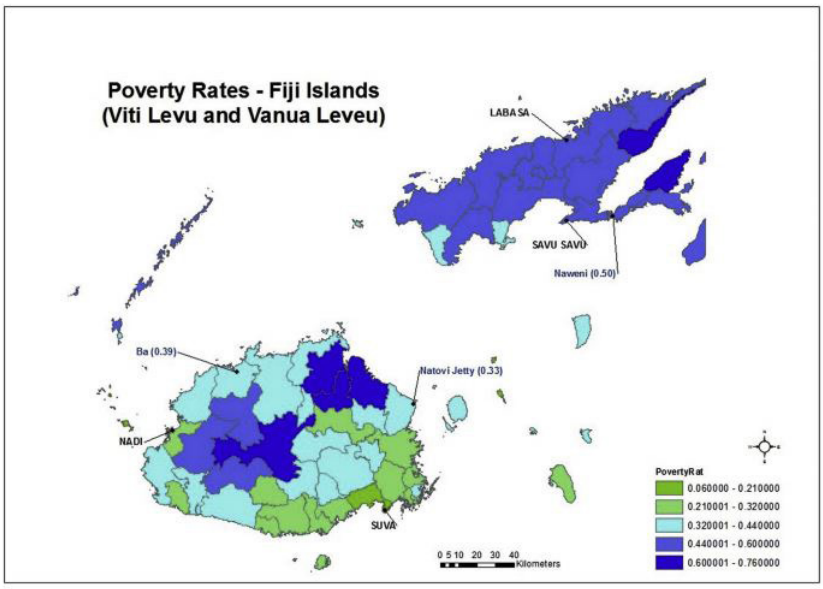


Figure 3. Poverty rates across the two largest islands in Fiji (Singh-Peterson & Iranacolaivalu, 2018).

Given the fact that tourism has been considered as the major future driver of Fiji's economic growth while country's sugar industry is in decline due to decreasing global demand, (Bernard & Cook, 2015; Prasad, et al., 2011), understanding the impacts of flooding and disasters to the sector are crucial. Also, the impacts of disasters to agricultural production (including cassava and fish which are major contributors to national food security) should be thoroughly investigated to safeguard the production from losses and damage to the households.

1.3 Social Impact of Disasters

Cyclone Winston in 2016 affected 62% (540,400 people) of the country's population, causing 44 fatalities, destroyed 30,369 houses, 495 schools and 88 health clinics. Furthermore, 60% of all livelihoods of the population were compromised as a result of the disaster (Government of Fiji, 2016). Remoteness became an immediate issue in the phases of response (and later in recovery); the central government or aid could not always reach smaller communities located far away from the urban centers (Miyaji, et al., 2017). Distribution of supplies across the country was difficult due to lack of capacity to process and disseminate supplies from overseas, lack of baseline data obstructed impact measurement and needs assessment, and in many areas local, small healthcare units were not operational for months (Kitabatake, 2017).

Loss of livelihoods during disasters is a severe issue in Fiji. In the aftermath of the 2009 flooding, almost 50% of the affected farming families with livelihoods tied to sugar farming were expected to fall below the poverty line, and 40% were estimated not to be able to meet basic nutritional needs (Lal, 2011). The farmers were also likely to have pre-flood debts, little savings and their income was already suffering due to global market conditions of sugar – indicating that the response capacity of farmers to flooding is also low with no access to risk transfers (Lal, 2011). In rural areas and in the remote regions of the country, a large number of households depend on the marine and terrestrial ecological systems as their main source of food (Martin, et al., 2018). Thus, disasters affecting sources of food may also have detrimental impacts on food security within communities.

Children have also been found to be affected by disasters, and not only by losing the continuity in their education. For example in the case of flooding in 2012, economic burden of lost assets forced families to keep their children home to care for other children, or to earn money in various means, including sex work (UNWomen, 2014). Furthermore, disasters have often been found to correlate with an increased incidence of gender-based and sexual violence. In the aftermath of the Cyclones in 2012, women in relief centers were reportedly experiencing violent sexual coercion by their husbands, suffered from over-crowding and lack of privacy (UNWomen, 2014). In the aftermath of the Cyclone Winston, women were also reportedly experiencing the threat of violence at the evacuation sites (Sivertsen, 2016).

2. Disaster Risk Profile

2.1 Hazards and Climate Change

Fiji frequently experiences hazards common to the tropical marine environments, which are heavily affected by the South Pacific Convergence Zone (SPCZ) and the El Niño Southern Oscillation (ENSO) conditions acting as the main drivers of climatic variations in the region (Government of Fiji A, 2018). Due to the vicinity of the Pacific Ring of Fire, Fiji is also classified as high risk country for earthquakes with over 20% chance of potentially-damaging event taking place during the next 50 years (GFDRR, 2019). Two active volcanoes are also located in the region, one of which (Taveuni) has been predicted to have a high probability for an eruption within the same period of time (Cronin, et al., 2001). The threat of tsunamis is also present at the vicinity of the volatile and earthquake-prone tectonic fault systems(PreventionWeb, 2017).

Flooding is a regular occurrence during the monsoon season (November to April) in the Fiji islands, causing loss of lives as well as damages to infrastructure, agriculture and livelihoods (Yeo, et al., 2010). Most of the severe flood events usually occur alongside cyclones and tropical storms in low pressure zones which bring in high intensity rainfall and may induce flash flooding and landslides as well. However, flooding tends to be more severe in the delta regions of Fiji where high spring tides coincide with the passage of tropical disturbances, especially during the years of La Niña (Yeo, et al., 2010). Also, the heavy winds of the Southern Ocean and the Tasman Sea have been known to generate swells known as loka waves, which can have destructive impacts to reefs and cause severe coastal inundation especially in the south west of Viti Levu (Cyprien, et al., 2015).

Landslide hazards are present on some of the islands due to the combination of high precipitation, violent winds and steep slopes suffering from erosion (Drazba, et al., 2018). They have also been identified as one of the major threats to human lives, causing nearly 25% of annual disaster-related deaths while having a significant impact on communities and livelihoods (Drazba, et al., 2018).

Droughts are also a frequent occurrence in the country, usually linked to El Niño events which have the potential to reduce annual rainfall up to 50%. Droughts also have a great spatial variability and are more likely to have regional impacts to drought-prone areas such as the west of Viti Levu (Government of Fiji A, 2018). Also, faeco-orally transmitted typhoid fever is a serious threat to the countries in the South Pacific, and among them, Fiji is reporting the highest number of annual cases (Jenkins, 2017).

Climate change is likely to enhance all weather-related hazards in Fiji. Flood severity has already found to be increasing and the impacts are likely to be worse in the future (figure 5). However, it has been recognized that severe impacts on fisheries and agriculture are a major concern due to potentially decreasing livelihoods tied to coastal resources.

Impacts on human health are also expected to be severe due to the fact that dengue fever is expected to become more prevalent, as the risk of annual cases is predicted to increase following climate change (figure 5). Adverse weather, loss of habitats, and anomalies in ocean temperature also threatens the unique marine ecological systems, which are inhabited by an estimated number of nearly 1,200 fish species, 1,000 invertebrates and roughly 1,000 coral reeds (CBD, 2018). 67% of the known marine mammal species are currently being threatened, and the natural habitats such as the extensive mangrove forests are now degraded.

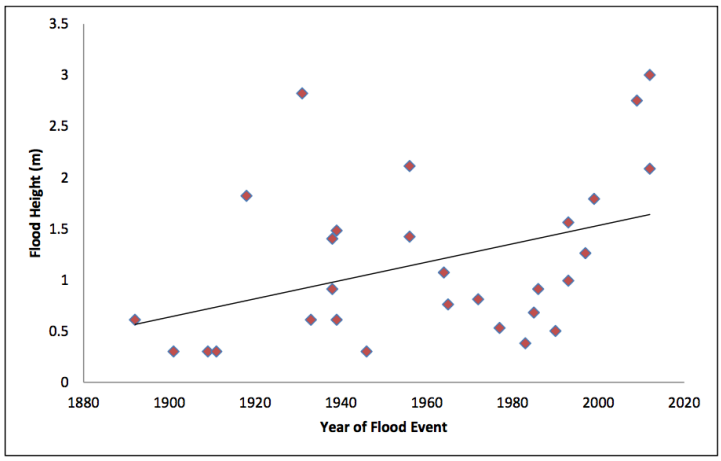


Figure 4. Flood height of the Ba river over time (Brown, et al., 2014)

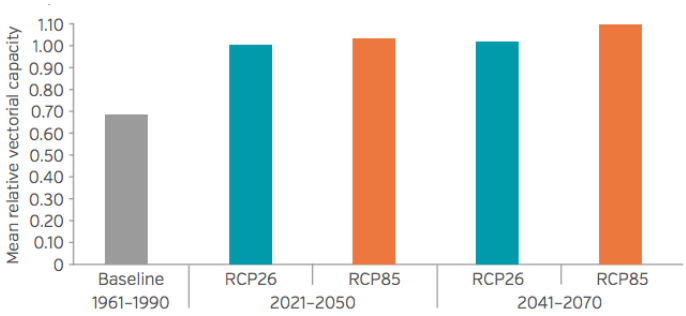


Figure 5. Mean relative vectorial capacity for dengue fever transmission in both, low and high emissions scenario in the future (WHO, 2015).

2.2 Exposure

Despite the fact that over a half of Fiji's population lives in, or in the vicinity of, urban areas, the effects of sea level rise affect most regions of the country due to shoreline erosion and groundwater salinization processes, which are accompanying climate change (Martin, et al., 2018). Between 1992-2009, the sea level in Fiji has increased by 5.5 millimeters per year, which is twice the global average (Wairiu, et al., 2012; Martin, et al., 2018). This poses a risk to the availability of groundwater, the main source of which is often thin lenses of freshwater resting on the ocean underneath a highly permeable ground. Threat to dwellings and settlements is also significant given the low elevation of some of the islands; already about 38% of the population and 19% of all economic activities fall under the high or very high flood impact categories (The World Bank, 2016).

Landslide risk is significant in any areas with steep slopes due to unstable soil conditions, high precipitation and heavy winds which are common to the region. The lack of understanding of soil stability combined with unsustainable development of farm lands and housing in dangerous areas has enhanced the risks throughout the country (Drazba, et al., 2018). Along with being exposed to the threats of tsunami, earthquakes, flooding, cyclones and heavy weather, there are also two known active volcanoes in the country (Wilkinson, et al., 2016). 14,500 people live on the Taveuni island, which hosts an active basaltic shield volcano which has a relatively high probability for renewed activity within

the next 50 years according to Cronin, et al. (2001). Volcanic sites such as the Nabukelevu dormant volcano are also prone to failures, with a potential to produce massive landslides due to composition of the magma deposits and weak rock zones, which often fail during seismic activity (Cronin, et al., 2004).

In terms of typhoid fever, the exposure is commonly increased following cyclones, and in environments which have poor water hygiene and sanitation practices, where drinking water is drawn from creeks and rivers, which have a low socio-economic status and where living-conditions are crowded (Jenkins, 2017). Environmental factors such as rainfall-induced flooding and proximity to rivers increase the risk factors, illustrated after the Cyclone Winston when an outbreak of typhoid spread through the north-eastern Viti Levu (de Alwis, et al., 2018).

2.3 Socio-economic Vulnerability

Loss of livelihoods is a significant issue especially for the low-income households who depend on farming and small-scale artisanal practices. The disaster impacts have ripple effects on households who lose their main sources of income such as crops or fishing equipment, which may result in children dropping out of school, or destabilize the food security within remote communities. Also, the high demand for skilled workers of the luxury resorts may exclude local populations from the tourism industry and cause income leakages to outside of the country without retaining the benefits of the resort industry within the local economies (Xie, et al., 2013), which further increases the poverty incidence among low-income households. Often the poorest are residing in remote communities, which poses multidimensional challenges; it is not only an issue during phases of response and in delivery of aid, but also creates issues for farmer families who are facing difficulties to transport their products (income-generating crops) to larger markets (Singh-Peterson & Iranacolaivalu, 2018). Under such circumstances, cycles of poverty begin to form.

Aspects of poverty are often gendered. For example, great discrepancies exist between women and men even in farming. In the case of the female mud-crab fishers in Bua Province, women faced challenges in the aftermath of Cyclone Winston in 2016 because they could not access credit services to receive loans, and they had fewer opportunities for income diversification when their access to the mangrove forest was lost or they lost their fishing equipment (Thomas, et al., 2018). Thus, women are sometimes disproportionately vulnerable to disaster impacts due to social dynamics.

Altogether, women represent only 33% of the economically active population, earn less than men and 64% of earning women earned below the conservative poverty line (ADB, 2014). Finally, loss of traditional knowledge may have further contributed to the increased vulnerability to disasters. Pacific Islands, including Fiji, have a strong oral tradition, but it has eroded during the past 150 years due to European settlement in the second half of the 19th century – now, they are mostly remembered in fragmented form by the elderly (Janif, et al., 2016). Loss of traditional environmental, social, economic, political and spiritual knowledge systems (especially among the young) due to modernization of indigenous communities may lead to an erosion of local resilience (Campbell, 2009). Introduction of cash crops, Christian practices and relief aid have all contributed to the erosion of practices that have previously been the key elements of island resilience (Campbell, 2009). For example, the provision of relief food reduces the need to ferment

food for storage or to utilize “famine foods” (obtained from plants of the rainforest), thus creating a resilience gap among the young who may never learn such practices, and are expecting aid delivery.

Loss of tradition also results in lessened community cohesion. Tightly-knit small communities can and have supported each other during the aftermath of disasters by intensifying fishing, for example (Takasaki, 2015), and are eager to provide aid for the affected. Hospitality, such as sharing food among family, friends and visitors is a significant part of the Melanisian culture (Singh-Peterson & Iranacolaivalu, 2018), and the role of social cohesion can be a significant source of strength. For example, the communities have been found to seek refuge from neighboring settlements before waiting for government’s assistance, and preparations for cyclone events may include considerations for the needs of others (Singh-Peterson & Iranacolaivalu, 2018). To support community resilience, traditional practices should be valued, and the systems sustaining the mechanisms should be protected.

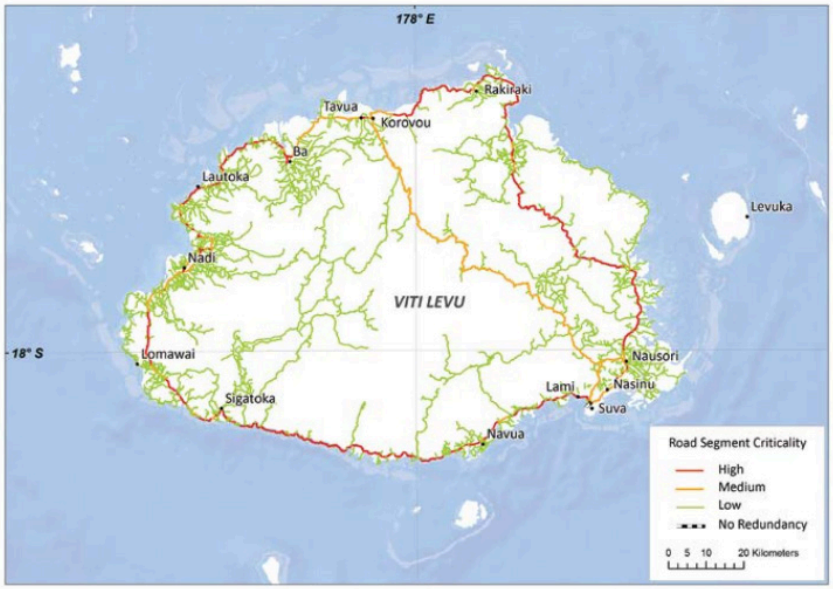


Figure 6. Critical road segments in Viti Levu (The Goverment of Fiji, 2017).

2.4 Physical Vulnerability

90% of the population reside in the coastal regions, which are prone to flooding, cyclones and sea-level rise, and often the quality of housing is not climate-resilient or built in consideration of climate-risks (Government of Fiji A, 2018). Agriculture is also highly vulnerable due to the fact that many farms have expanded into areas which are prone to flooding or have a high risk for landslides, and thus the risk for livelihood loss have been increased. Furthermore, some of the critical infrastructure is highly exposed to weather-related events and require significant investments to enhance their resilience (figure 7).

To improve building safety, the National Building Code of Fiji was devised in 1990. However, it has been left unrevised since. Estimates suggest that structures following this code (mainly commercial and industrial buildings) are able to withstand a cyclone up to category 4; however, any events above may compromise the structural integrity of wide range of traditional and non-traditional buildings (Aquino, et al., 2018). Furthermore, the number of informal structures is increasingly vulnerable across the country due to their makeshift nature. In the villages, builders have little formal education in engineering or carpentry, and the trade is passed down across generations, resulting in lack of qualified engineers to supervise building projects (Aquino, et al., 2018).

Unsustainable development has also been found to impact the environment and increase flood risk in and around some of the luxury tourist resorts. One of these is the island of Denarau, where five-star establishments have mushroomed during the last decades. Natural mangrove forests acting as buffer zones were removed during the construction phases, which also affected livelihoods of locals as fish disappeared from the area (Bernard & Cook, 2015). The loss of buffer zones has permanently damaged the local communities and is now repelling tourism due to the frequent flooding in the area, with an estimated loss reported in millions (Bernard & Cook, 2015).

2.5 Future of Disaster and Climate Risks

Future predicted temperature increase has been estimated to reach 1.0°C by 2030, and up to 5 degrees in the worst-case scenario simulations by 2080. Yearly rainfall variability is also expected to fluctuate, with atmospheric models projecting an increase in the average rainfall over the entire country. By 2050, the expected annual losses due to extreme weather could potentially reach 6.5% of the GDP as a result of climate change (The Goverment of Fiji, 2017). Every year, the number of Fijians pushed into poverty could reach 32,400 people, cost of climate related disasters could increase 30% and the rising sea levels could threaten more than 30% of the population by 2065 (The Goverment of Fiji, 2017). An estimated amount of US$ 4.5 billion is required over ten years to increase the resilience and capacity of Fiji to climate change – an amount which corresponds to the country's yearly GDP (The World Bank, 2017). According to the government's estimates, Fiji has a 50% probability of experiencing a catastrophic disaster in a scenario where losses could exceed US$ 800 million, and on average, the yearly losses from earthquakes and cyclones are expected to reach US$ 85 million (Government of Fiji, 2016). Overall, the estimated impact of climate change on GDP could reach -2.75% by 2050, half of which is attributable to the loss of agricultural sectors (The World Bank, 2016).

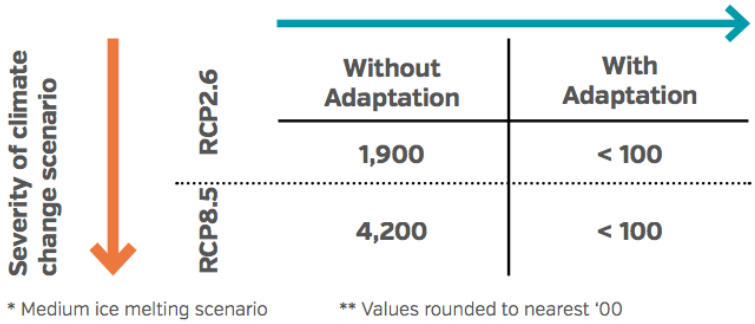


Figure 7. Annual number of people exposed to flooding due to sea level rise in Fiji between 2070-2100 under high and low emission scenarios (WHO, 2015).

Majority of the economic impacts in the future are expected to be most severe to household crops and local businesses. Even in a moderate scenario, annual losses could increase by 100%, and in the most severe estimates, 300% increase in losses can be estimated in the catchments of Ba and Penang Rivers (Brown, et al., 2014). Also, hypothetical estimates of the future are not the only source of information. Recent surveys have already found out that on community levels, cyclone intensity has worsened, and shortages of drinking water have increased (Brown, et al., 2014). Increasing occurrence of tropical cyclones and heavy rains is also likely to contribute to rain-associated land-instability, especially in regions where slope erosion is present due to unsustainable farming practices (Martin, et al., 2018).

It has been estimated that under high emissions scenario, sea level rise in the future could result in yearly annual average of 4,200 people being affected by flooding if adaptation measures are not undertaken (figure 7). To manage the rising threats to population and the infrastructure, significant investment and resources are required to be dedicated for disaster and climate risk management in the future. As a result of floods and cyclones, an additional 36,200 people could also fall into poverty annually by 2100 (Government of Fiji, 2018).

Overfishing, warming of the oceans, pollution and exploitation of the environment have also been found to pose the greatest risk to habitat loss for marine fauna. Furthermore, several invasive species of fish and shellfish have been introduced to the marine environment for sports, and ornamental purposes, and uncoordinated tourism plays a part in the degradation of the marine ecological systems (CBD, 2018), which places the livelihoods of thousands under threat.

3. Disaster Risk Reduction and Climate Action Interventions

To illustrate the government's will and commitment to protect the population and the country from future disasters, the following chapters shed light on Fiji's process in disaster risk reduction (DRR) and climate change adaptation (CCA), as mandated and guided by the global policy frameworks: Sendai Framework for Disaster Risk Reduction (SFDRR), Sustainable Development Goals (SDGs) and the Paris Climate agreement.

Priority 1. Understanding Disaster Risk. Fiji has invested in comprehensive studies to thoroughly understand the impacts of climate change and disasters. One of these is the Climate Vulnerability Assessment of 2018, which has been used to guide various development policies and frameworks until 2036, and it identifies detailed cross cutting issues affecting sectors and well-being of the population (Government of Fiji, 2018). Fiji has also developed a National Notifiable Disease Surveillance System and the Fiji Syndrome Surveillance System which tracks epidemics such as dengue cases. The mechanisms and the information they contain can be used by health workers to report incidents to district levels to help in the mapping out of the extent of epidemics (Tong, 2017). Fiji has also established a centralized geospatial platform "GeoNode" for managing risk information with the support of UNESCAP, which is an open mapping tool and platform for sharing data for the purposes of DRR and sustainable development. It is currently being managed by the NDMO, and contains documents, data and maps related

to disaster risk, climate, topography of the islands, demographic details and farming (NDMO, 2017). However, the service is not regularly updated, and the availability of disaster-related data (especially SADD disaggregated data) is inconsistent.

Priority 2. Strengthening Disaster Risk Governance to Manage Disaster Risk. The Natural Disaster Management Act of 1998 is the instrument institutionalizing disaster management in Fiji related to disaster response and management. It is also the foundation for the Fiji National Disaster Management Plan which outlines roles and responsibilities of government agencies and other stakeholders involved in disaster management activities (ADB, 2019). The government also started the revision of Disaster Management Act of 1998 and the Disaster Management Plan of 1995 in 2018 to ensure that the learnings from Cyclone Winston were incorporated into the legislative frameworks and disaster governance. With the support of the International Federation of the Red Cross and Red Crescent Societies, the documents were to be updated according to selected priority areas, including the role of climate change in disasters, and with an enhanced focus on the needs of vulnerable groups (The Pacific Community, 2018).The new National Disaster Risk Reduction Policy for 2018-2030 has been implemented to strengthen risk governance and identify priorities for future action by learning from the past. The intention is to mainstream sustainable development and risk reduction into all policies, plans and practice, even at the community level (UNISDR, 2018).

Also, different ministries have their own sectoral disaster management plans, such as Ministry of Rural & Maritime Development and Disaster Management which is mandated to coordinate and manage the rural development and to carry out the disaster management strategy (Ministry of Rural & Maritime Development and National Disaster Management, 2014). The National Disaster Management Council manages and coordinates agencies under the guidance of the National Disaster Controller and Permanent Secretary of the Ministry. The main focus of the ministry is to enhance self-help, to promote equal opportunities, to improve rural housing and public sector and to alleviate national poverty.

For climate change concerns, The National Adaptation Plan of the Republic of Fiji was developed based on the National Climate Change Policy (2018) as a response to national needs and international commitments to combat climate change, where strategic guidance has been devised to guarantee risk-informed climate resilient development in the future (Government of Fiji A, 2018). The plan contains 160 most urgent sectoral adaptation measures for the next five years. The Low Emission Development Strategy for 2018-2015 was developed as a living document to further assess the needs and limitations for mitigation actions across relevant sectors, and it defines pathways to guarantee future low emission development to reach zero carbon emissions by 2050 (Ministry of Economy, 2018). The Climate Change and International Cooperation Division of the Ministry of Economy is the main entity coordinating and facilitating the implementation of the NAP under the supervision of the National Climate Change Coordination Committee (NCCCC).

At the sub-national levels, The Local Government Act provides a mechanism for coordinating the activities at the sub-national level under the direction of the ministry of Local Government, Urban Development, Housing and Environment. However, the efforts to implement DRR and CCA at the local levels are not harmonized with the central government's approach, and the lack of budget, human resources and technical capacity further obstruct the effective localization of disaster and climate action initiatives.

In terms of enhancing equality, women's participation is also still lacking in the official governance of Fiji. The number of women in the parliament in 2016 was still well below the global average with 14%, despite efforts to increase the representation of women through various means (Charan, et al., 2016). Among these, Fiji's first "Women Parliament" was organized for three days, inviting 50 women across the country and from remote areas to participate in the decision making, and concerns were voiced about the lack of women representation in the current official infrastructure (Charan, et al., 2016). However, Fiji's political landscape is still male-dominated, and gendered social norms create perception of men as better leaders as opposed to women; thus there is more work to be done to include women in decision-making (Chattier, 2015).

IMPLEMENTATION	LEGISLATION/POLICY	SCOPE	PURPOSE
NATIONAL DISASTER MANAGEMENT OFFICE	National Disaster Management Act (1998), reviewed in 2018	National, Divisions Provinces,	Focusing to address the role of climate change in disasters and emphasizes vulnerable groups. The act itself is used to allocate responsibilities and to institutionalize disaster management in Fiji
NATIONAL CLIMATE CHANGE COUNTRY TEAM	National Climate Change Policy (2012)	National, Divisions, Provinces, NGOs, Private sector	Update to the National Climate Change Policy Framework of 2007, guiding multi-sectoral, coordinated approach to mitigation and adaptation
HIGH LEVEL MULTI-STAKEHOLDER PANEL ON SUSTAINABLE DEVELOPMENT	Green Growth Framework (2014)	All relevant parties from government to households	A tool to support and complement the existing policy frameworks to integrate inclusive sustainable development into all levels, to drive poverty reduction and to help all sectors, agencies and individuals to identify their role in sustainable development
GOVERNMENT OF FIJI, RELEVANT PARTIES	5-year and 20-year Development Plan (2017-2036)	National, Divisions, Provinces	National development plan in consideration of climate change and disasters, aligned with SDGs by setting out clear indicators and targets
GOVERNMENT OF FIJI RELEVANT STAKEHOLDERS	National Adaptation Plan (2018)	National, Divisions, Provinces, Private Sector	Prioritized adaptation measures for a range of relevant stakeholders, based on the Climate Vulnerability Assessment, and identifies all the linkages across existing plans and policies for effective streamlining

IMPLEMENTATION	LEGISLATION/POLICY	SCOPE	PURPOSE
GOVERNMENT OF FIJI, PRIVATE SECTOR STAKEHOLDERS	Fiji Low Emission Development Strategy (2018-2050)	Private Sector, other relevant stakeholders	Identifies Pathways to reach zero carbon emissions by 2050 across all sectors of economy
GOVERNMENT OF FIJI	National Disaster Risk Reduction Policy (2018)	National, Divisions, Provinces, Other relevant stakeholders	To mainstream DRR and sustainable development across all policies, plans and practices at every sector to enhance the resilience of systems and communities against disasters
GOVERNMENT OF FIJI	National Humanitarian Policy for Disaster Risk Management (2017)	National, Divisions, Provinces	Designed to institutionalize humanitarian practices, and to guarantee the fulfilment of responsibilities of the government in protection

Table 1. Disaster and climate risk reduction policies, plans and legislation in the Republic of Fiji

Priority 3. Investing in Disaster Risk Reduction for Resilience. Despite the Public Finance Management (PFM) in Fiji being generally well tied to legislative frameworks, and while the compliance to them is reportedly high, there are issues in terms of accountability and projection-based budgeting in disaster and climate finance in Fiji. All public expenditures flow through a system of PFM modules of planning, allocation of resources, execution, as well as monitoring and reporting (Ministry of Finance, 2015).

However, a robust PFM system targeted for climate change and disaster risk management is missing. Improved PFM could be beneficial to raise the confidence of development partners, to better manage and track public expenditures, to increase funding efficiency and improve the overall access to climate finance (Ministry of Finance, 2015). The level of spending on climate change and disaster risk management is not measured by the entities involved in climate change and DRM (including Departments of Environment, Agriculture, Fisheries, Forests, Energy and Meteorological Services), because no data is disaggregated to differentiate the activities related to risk management (Ministry of Finance, 2015). Lack of adequate measurement and tracking (availability of comprehensive PFM modules) hampers estimating the needs for policy improvements and obstructs the evaluation for future project needs as there is no reliable way to measure disaster and climate finances to guide prioritization. However, addressing this gap is currently being supported by a project conducted by the UNDP country office. Most recent estimates place adaptation expenditure at US$ 98 million in 2014, US$ 64 million for disaster risk reduction, which illustrates a slight decrease since 2012 (Ministry of Finance, 2015). Fiji is most likely to face significant challenges to fund all disaster and climate-related activities in the future; according the estimates by the World Bank, the coastal protection spending by 2040 costs of increasing sea walls and other protection measures could go up by US$ 86 to 329 million per year which is about 1-3% of the projected GDP (The World Bank, 2016).

Priority 4. Enhancing disaster preparedness for effective response to "Build Back Better" in recovery, rehabilitation and reconstruction. Fiji has taken steps to establish comprehensive hazard warning systems. For flood monitoring and early warning, The Fiji Meteorological Service (FMS) under the Ministry of Disaster Management and Meteorological Services provides early warnings for cyclones, rain and droughts, and disseminates the information through SMS, social media, as well as radio and TV networks (Fiji Meteorological Service, 2015). The FMS has also developing an early warning system for flash floods, which will complement the existing systems at various islands (WMO, 2018). Tsunami early warnings are being coordinated by the Inter-governmental Oceanographic Commission in the region, and Fiji has also adopted their own Tsunami Response Plan to appropriately prepare for impending mass-scale inundation (PreventionWeb, 2017). There are 10 tsunami early warning sirens on the Suva peninsula, and they are tested monthly in coordination with the NDMO (ETC, 2017). However, to address the gaps within the existing systems, a suggestion has been made to combine and streamline existing early warning system across the Pacific nations to create a cost-effective and sustainable hazard monitoring umbrella through joint efforts (The Government of Fiji, 2015).

To guarantee effective surveillance of epidemics, the country is a part of the Pacific Syndromic Surveillance System which tracks the outbreak of infectious diseases in the South Pacific through 121 sentinel surveillance sites placed in 21 countries (Craig, et al., 2016). The evaluation of the early warning, alert and response system (EWARS), which was utilized by the Ministry of Health and Medical Services with the support of WHO in the response of the Cyclone Winston to control outbreaks of several epidemics gave positive results. No outbreaks were left undetected, the system performed well during the response period, 325 alerts were generated and three large-scale outbreaks requiring intervention were successfully managed (Sheel, et al., 2019).

For disaster response, a mechanism consisting of various committees, offices and entities governed by strong institutional arrangements has been developed. During an emergency, the Emergency Committee will convene daily to review emergency operations and take relevant operational decision (Ministry of Finance, 2015). Preparedness activities are guided by the Preparedness Committee, which is responsible for raising community awareness and public sector preparedness activities. However, poor coordination and scarce resources have hampered disaster risk response in the past, and overlapping responsibilities between managing agencies continue to create confusion in the absence of an overarching mechanism or an entity to harmonize relevant efforts of numerous ministries (Ministry of Finance, 2015).

Building Back Better initiatives have been identified as crucial for developing resilience; it has been estimated that stronger reconstruction could reduce overall disaster-related well-being losses by more than 40% (Hallegatte, et al., 2018). In the aftermath of Cyclone Winston, commitments were made to build back stronger, for example by providing the Help for Homes program to provide grants, materials and training to assist people in reconstruction efforts. However, it has been established that the response to Cyclone Winston did not affect institutional arrangements or longer-term disaster governance due to conflicts between institutional approaches between different levels of government, and because humanitarian response has mainly focused on infrastructure rehabilitation by prioritizing housing and other severe physical damage at the expense of "soft" approaches (Winterford & Gero, 2018). Lack of risk integration and "building back better" approaches and understanding of how shared experience from humanitarian response

could be used to inform development is lacking, and the current development approaches, by and large, are not aligned with the international development landscape, especially at the sub-national level (Winterford & Gero, 2018).

4. Coherence with Sustainable Development Goals & the Paris Climate Agreement

Fiji has assumed a leading role among the South Pacific nations to promote and engage with the SDGs, supporting the implementation by capacity building, working with development partners and conducting voluntary needs assessments within the region to identify priority areas for action (Parliament of the Republic of Fiji, 2018). However, work is required in the future to achieve successful graduation. The findings of the self-assessment report published in 2018 identified needs to increase the availability of reliable data, localize the SDG activities to sub-national levels, to mainstream SDGs to the parliamentary mechanisms, to implement a monitoring mechanism, and to engage with the public to increase the understanding of the SDGs (Parliament of the Republic of Fiji, 2018).

Fiji also became the first country to formally ratify the Paris Agreement, as the archipelago state has recognized climate change as the first priority to be addressed in the future due to increasing threats of flooding, storms and degrading ecological systems (Cuff, 2016). For the period of 2020 – 2030, Fiji as pledged to reduce CO2 emissions by 30%, 10% of which would be achieved by the successful implementation of the Green Growth Framework of 2014 (The Government of Fiji, 2016). Furthermore, while pledging its participation and promise to increase mitigation, the government has promised that the initiatives will not be implemented at the expense of raising the costs of living, acknowledging that with the annual capita emissions of 1.5 tons of CO2 – nearly four times below the global average – Fiji is not as much responsible for climate change as the developed world (The Government of Fiji, 2016). The National Adaptation Plan, and the Nationally Determined Commitments roadmap are the main instruments used to identify linkages across policies and to create coherence across various climate and environment-related frameworks.

In terms of mainstreaming DRR and CCA in the past, national development plans have not considered disaster risk or climate change as guiding priorities. The first legal instrument Fiji developed to mainstream climate change and disaster risk management was the National Development plan, which is the main instrument guiding development for 2017-2022, intended address CC and DRM as cross cutting issues to be addressed at all levels of governance across sectors (Ministry of Finance, 2015). The National Adaptation Plan of Fiji has also been aligned with other policy documents and frameworks, including National Development Plan. It is also aligned with the National Climate Change Policy and tied to the Government's Nationally Determined Contributions process for the Paris Climate Agreement (Government of Fiji A, 2018). Furthermore, disaster risk reduction has been mainstreamed within these frameworks and plans to further increase the coherence between various legislative instruments.

Cross cutting linkages also exist to the SDGs goals and are aligned with the principles of the Sendai Framework for Disaster Risk Reduction. Furthermore, indicators to support the measurement of SDGs targets have been determined and streamlined, including the measurements of contributions of tourism, GDP growth and employment (Fiji Bureau of Statistics, 2016). It has been acknowledged by the government that Fiji requires industries to become greener and reduce unsustainable development due to the interdependence between environmental and economic systems (Ministry of Strategic Planning, National Development and Statistics, 2014). Balance is being sought out by developing overarching policies to harmonize the National Development Plans of 2016-2035, and with the considerations as identified in the Fiji Tourism Development Plan 2020 to identify cross-cutting themes for sustainable tourism and growth (Fiji Bureau of Statistics, 2016).

Sectoral Aim	Policies with Linkages to Sendai Framework for Disaster Risk Reduction	Policies with Linkages to Sustainable Development Goals	Policies with Linkages to the Paris Climate Agreement or Environment
National Development	5-year & 20-year National Development Plan: Transforming Fiji (2017-2036)	National Roadmap for Democracy and Sustainable Socio-Economic Development (2010-2014) 5-year & 20-year National Development Plan: Transforming Fiji (2017-2036)	Green Growth Framework (2014) 5-year & 20-year National Development Plan: Transforming Fiji (2017-2036)
Environmental Protection	National Adaptation Plan (2018)	Fiji Islands Environment Management Act (2005)	Green Growth Framework (2014) National Climate Change Policy (2012)
Disaster and Climate Risk Reduction	National Disaster Risk Reduction Policy (2018) National Adaptation Plan (2018) National Disaster Management Act (1998/2018)	Fiji Agriculture Sector Policy Agenda (2014-2020) National Adaptation Plan (2018)	Fiji Low Emission Development Strategy (2018-2050) National Adaptation Plan (2018)
Vulnerability Reduction	National Humanitarian Policy for Disaster Risk Management (2017)	Fiji National Gender Policy	Energy Sector Resiliency Strategy (2018)
	National Disaster Management Act (1998/2018)	Rights of Persons with Disabilities Act (2018)	National Adaptation Plan (2018)
Land Use Planning	5-year & 20-year National Development Plan: Transforming Fiji (2017-2036) Updated Fiji National Building Code Fiji Housing Policy (2012)	Fiji Low Emission Development Strategy (2018-2050) Rural Land Use Policy (2006)	Reviewed National Energy Policy (2014) Fiji Low Emission Development Strategy (2018-2050)

Table 2. Synergies between the national policies, plans and frameworks by sector

5. Issues in Implementation of the DRR and Climate Policy

Due to the fragmented coordination mechanisms, implementation of disaster and climate risk policies or projects is slow and budget allocations are made on ad-hoc basis (Ministry of Finance, 2015). This is not only an issue in Fiji but common among the Pacific Island nations. Most of the countries lack resources to develop and maintain adaptation initiatives, especially in the remote communities in the peripheral regions, and the limited financial and human capacity is further obstructing the development (Janif, et al., 2016).

The government of Fiji has identified barriers to implementing climate adaptation actions. Lack of capacity, information, knowledge and technology have been identified as the most immediate concerns to be addressed to enhance access to SADD data, to identify awareness of the impacts of climate change to vulnerable groups and to improve access to information for stakeholders (Government of Fiji A, 2018). At the national level, institutional barriers such as integration of climate risks into development planning is not adequate, and the local governments and sub-national development are not yet facilitated to undertake tasks to enhance adaptation at the local level (Government of Fiji A, 2018). Finally, adaptation budgets could be increased, and poverty-alleviation should be in the centre of adaptation planning to reduce the number of highly exposed and vulnerable.

6. Stakeholder Analysis

Stakeholders have had a significant role in improving disaster finance in Fiji. 90% of all Official Development Assistance (ODA) has come through donations, and the EU, World Bank and ADB among others have supported the process to move away from project-reliant budgeting to guarantee flexibility when funding activities especially in the areas of climate change and disaster risk management, expenses of which tend to fluctuate rapidly (Ministry of Finance, 2015). Participation of private sector to DRM and CR is also enhanced with various initiatives, such as tax holidays for undertaking activities in renewable energy projects and 150% tax deductions for voluntary donations towards the Disaster Relief Fund - minimum of FJ$ 10,000 - (Ministry of Finance, 2015).

For example, Australia is actively involved in supporting the disaster management activities in Fiji, including humanitarian aid and the public health sector. AUSAID have provided support for capacity building and training exercises in the past, and helped to coordinate and provide response assistance in the case Fiji cannot meet its domestic needs (IFRC, 2005). However, the number of different humanitarian agencies has sometimes resulted in coordination issues, especially during the phases of response. The Cyclone Winston in 2016 highlighted some challenges in terms of stakeholder coordination and communication during response. Some of the organizations did not have previous presence in Fiji, not being familiar with cluster approaches and did not manage their operations effectively in relation to others (Kitabatake, 2017).

Fiji Women's Rights Movement has also attempted to influence the re-evaluation process of the NDM Act (1998) and Plan (1995) by submitting suggestions to guarantee the achievement of Fiji's commitments to the United Nations Convention on the Elimination of All Forms of Discrimination against Women (CEDAW), the SFDRR, Fiji's National Gender Policy (2014) and Women's Plan of Action (2010-2019) (FWRM, 2018).

7. Future Priorities

7.1 Challenges

The Cyclone Winston in 2016 revealed that there are differing degrees of coordination between disaster stakeholders in humanitarian response and long-term development, because each department and division within the administrative regions have their own plans without comprehensive oversight to harmonize the initiatives and activities (Winterford & Gero, 2018). When the Cyclone Winston took place, long-term development agenda was replaced by the immediate response phase and the rebuilding was not interlinked to any established development priorities nor was it guided by the learnings gained from the disaster (Winterford & Gero, 2018). Community resilience has also not been in the focus of rehabilitation initiatives – rather, infrastructure and housing have been in the development focus since the event. Thus, harmonizing sub-national level initiatives with that of the central government's, and guaranteeing the availability of budget for climate adaptation and risk reduction remains a challenge.

The lack of sustainable development approaches is also a persisting issue, especially in the tourism sector. The interlinkages between disasters, tourism activities and their impact to local communities at the sub-national levels requires thorough research and resources to identify measurement indicators. This is to successfully estimate the damages to the communities and environment, and further to better understand how community attitudes are affected by tourism (Fiji Bureau of Statistics, 2016).

The country is also experiencing a resilience gap, especially among younger populations who lack traditional knowledge for enhancing disaster preparedness. Mainstreaming disaster and climate risk reduction with the support of traditional practices could be beneficial to guarantee that no aspect of island resilience is overlooked – the ties between local communities and households, and their contextual knowledge can be an incredible strength in remote regions. Increasing their reliance on external aid and disaster relief support without enhancing local capacities will only increase vulnerabilities rather than safeguard the communities.

7.2 Priority Issues

One of the keys to implement effective an sustainable adaptation strategies to climate change has been identified to be the involvement of the sub-national level, especially the local leaders in rural and peripheral communities, and empowering them to facilitate action in the localities (such as environmental planning and adaptation initiatives) (Janif, et al., 2016). This would also solve the issues related to remoteness and lack of local capacities, because community leaders and elders already have influence within their

respective communities – they could further benefit from capacity building trainings in reducing disaster and climate risks. Lack of experienced staff with knowledge of practical implementation is currently limiting the effective implementation of risk reduction activities. Localization of DRR is becoming increasingly important across Asia and the Pacific and involving local communities and sub-national level authorities in the official architecture of DRR and CR must be done in a manner which empowers them to take action not only in disaster response, but also in preparedness and recovery activities.

To fix the fragmented development landscape of Fiji where the regional differences for development differ greatly, mainstreaming and harmonizing development across urban and rural planning in consideration of disaster risk reduction, climate resilience, community based risk reduction and the global agreements on disaster resilient development should be in the focus of the government (Winterford & Gero, 2018). Furthermore, humanitarian response and development should be coordinated to integrate learnings into future development to "build back better" more resilient societies. Currently, most of the population reside along coastal zones and rivers, being disproportionately exposed to hazards (Government of Fiji A, 2018). Enhanced land use planning in vulnerable sections, in consideration to low-income populations should become a future priority. Furthermore, the risks of droughts and landslides have been highlighted during country consultations as high-priority issues for the next decade to be addressed in the newly-developed disaster risk management agenda.

There are other opportunities for improvement which have been identified by the Ministry of Finance in their report and institutional review on public expenditure. They highlight the importance of harmonizing institutional arrangements for strategic coherence, the strengthening of public finance management, integrating CCA and DRM into all plans and policies, tracking climate and disaster expenditure, as well as building the capacity at all levels (Ministry of Finance, 2015).

However, managing disaster financing and prioritization of activities is also largely reliant on the availability of disaster-related information and data. To effectively identify and manage the identification of priority needs, detailed data about the specific impacts of disasters and climate change must be made available to planners at all levels, including the private sector. It should also cover various vulnerable industries – including tourism and agriculture – as well as specific vulnerable demographics to assess the level of risk and the needs required to improve resilience of systems. Yet, collection of data (especially SADD) is difficult due to lack of local technical capacity and skills required (and as mandated by the SFDRR) to manage complex data in a comprehensive and systematic manner. Focusing on sub-national level data collection and management in a publicly available disaster information systems should be focused on, not only by the government, but also by donors and stakeholders to support resilient and sustainable development.

Also, the role of private sector in DRR and CCA has been consistently highlighted here and in other country status reports due to the fact that it is often a major source of funding and a driver of investments to infrastructure and facilities. However, to manage trade-offs between growth and sustainability, and to minimize the environmental and societal impacts, environmental impact assessments should be rapidly enforced and monitored across the country. EIAs have been established in many countries, including Fiji, but their monitoring is often a challenge and limited due to low technical capacity and lack of knowledge of the private sector entities conducting operations. Thus, their involvement in the planning and monitoring processes through an updated mechanism, which considers

the societal and environmental impacts of development at the local levels, is important to guarantee the actualization of the SDG agenda.

Finally, managing vulnerabilities through systematic poverty reduction, social protection and welfare services is increasingly necessary in a context where livelihoods and lives of people are dependent on the environment and systems highly vulnerable to the impacts of climate change. Significant numbers of poor and those vulnerable to poverty are scattered across the country, and while their resilience can be high due to traditional practices and strengths arising from strong social cohesion, minimizing the potential impacts of hazards and climate by preventative and protective mechanisms should not be overlooked. Provision of healthcare services, insurances and other risk transfer options could be explored further and improving the living standards of many inhabiting non-engineered structured in coastal regions must be focused on to guarantee that displacement and forced migration can be avoided in the future. In this context, it is important to consider the gendered aspects of vulnerability. Due to social normative practices and traditions, women's access to employment and education may be limited, thus indicating that sometimes, women and girls are more likely to be living in poverty. Thus, poverty reduction initiatives should consider intersectional dimensions of marginalization which affect the population to a diversely varying degree.

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