

A Proposal for Better Disaster Risk Management in My Country

DISASTER RISK REDUCTION PLAN FOR THE LAND SECTOR OF FIJI



KERESI TEKITEKI JANICE TUIMANONO

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STATEMENT OF CHALLENGE ON THE LAND SECTOR FIJI

1.0. Introduction

The relationship between land, ocean, atmosphere and living things such as human are interlinked that it is impossible to separate this linkage. The energy that flows within these elements is what governs life on earth; they (land, air, and ocean) are connected in many ways. Each component of the earth's system plays an important role in defining life, although due to excessive human activity it has disturbed the energy flow which has caused climate change, an existential threat because it is defining planet earths local and global climate to be unbearable for human life. Whilst each component plays an important role on the earths system Land is the utmost heterogeneous component. The different types of ecosystem are like puzzle pieces to make up a picture which in this case land and they uniquely contribute to earths system.

Change is an essential/natural part of the types of ecosystems that make up land, although changes that are influenced by deforestation, poor agriculture actions and human induced activities are changes forced towards the ecosystem which stresses the genetic diversity of a singular plant species in the wild. Due to stress on the background natural variation wind patterns are altered due to the topography of land, it also enhances global warming in a sense that land retains light rays that are supposed to be reflected back into the atmosphere. The stress on the system affects movement of elements (Figure 1) such as carbon, sulfur, nitrogen, phosphorus and others thus directly affecting the upkeep of life.

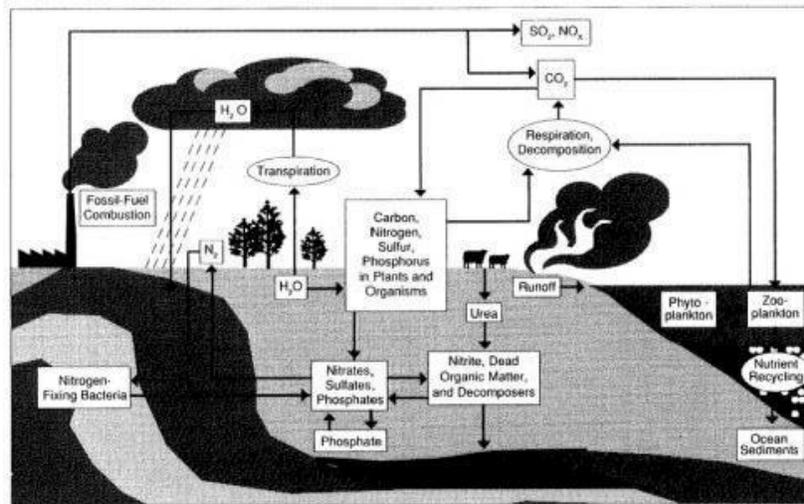


Figure 1: Biogeochemical Cycle

The primary production factor on Earth is Land; it is like a factory whereby all means of creation begins and the original source of extensive wealth. A country's success is based on the productivity of natural resources on their respective land, everything that a human kind has acquired both living and non-living can be traced back to land. Land does not only mean soil or the exterior part of the earth but it sums up

everything; nature, living and lifeless. Land provides the basic survival kit for human maintenance and welfare through supplements of food, water, services provided by the ecosystem, medicine and biodiversity.

The ecosystems are susceptible to the impacts brought by climate change and extreme weather variability in return affecting the land, therefore since climate change is heavily induced by human activity such as land use activity there is a need for sustainable management of land to contribute in the reduction of negative effects of various stressors. Land plays an important role in energy flow/interaction of water and atmosphere, thus assists as a source and a sink of greenhouse gases.

Pacific island countries are volcanic islands, thus although they are spread across a massive ocean they don't have large land masses like other countries in the Pacific Ocean such as; Australia and New Zealand. PICs are still developing countries and the agriculture sector is the backbone to its economy and this is directly linked to the health and maintenance of land sector. Fiji islands are made up for more than 300 islands and a total land area of 18,379km²; two main/largest islands are Viti Levu and Vanua Levu, and the topography of the land is mostly (more than two-thirds) steep and mountainous. They are the most developed and populated islands in Fiji and also where much productivity on land occurs, with the growing population and the increase in demand of consumption 'Fiji is facing a major shortage on land'(Overton, 1987).

Due to land ownership (table 1.1) in Fiji only 16% of the total area is suitable for agriculture thus we are already facing a scarcity of land for agriculture purposes. Fiji is already vulnerable to the impacts of climate change due to the extreme stress; sea level rise, increase in temperatures, coastal inundation and extreme weather variability which causes land degradation and landslides. Most of the population in Fiji relies on the productivity on land for their source for food, medicine and shelter, whilst other countries heavily depend on their employment for income; most Fijians rely on subsistence farming and selling whatever they plant for their personal income to buy other necessities. Native lands are owned by ITaukei through customary tenure, it cannot be sold although leases are granted by the Itaukei Land Trust Board (ITLTB), most land are leased as residential, transportation, agricultural, commercial and industrial purposes. Government also allows crown state to be leased under the major land use purposes mentioned above.

Table 1.1 Land Tenure

Native Land	82%
Crown State	8%
Freehold	9.5%

(Overton, 1987)

Climate Change impacts has brought about destruction on the land sector which is already very scarce in Fiji, in addition Fiji is more vulnerable to the impacts brought by climate change due to intensive land use changes and in return has contributed to the desertification and degradation of land. Also due to extreme weather variability and geological background, and poor planning of land use towards the land make up causes landslides and slope instability, which not only affects the land surface but affects every ecosystem and human lives. The cycle of life in Fiji revolves around land thus land management needs to be taken into consideration to decrease the impacts of

Land is the center of where everything grows, harnessed, stored etc. and the ecosystems defining the characteristics of land and its purpose. As mentioned, a country's wealth is determined by its natural resources, thus the 'Environment Management Act 2005' was established to aid in the sustainable usage and development of Fiji's natural resources and under these act lies many other key provision acts such as; litter decree act, factories act ,forest decree act, town planning act and many others. To add on, other legislations that assist custodians to protect land are 'National Environment Strategy', 'National Biodiversity Strategic Action Plan (NBSAP) 2007' and the 'National Climate Change Policy 2012'.

Improper land use and management greatly affect the health of the land, land use "is a dynamic process changing over time because of a number of factors, including increasing population, income changes, technologies, the general structure of the overall economy and political policies" (Leslie & Ratukalou, 2002), thus the 'National Rural Land Policy' was endorsed to be a standard criteria for the distribution and management of resources in the rural sector.

Fiji celebrated its first 'Desertification and Drought Day' on 17th June, 2021 with the slogan 'We build back better with healthy land', for many years we have always known to protect our land from those that want to acquire it but the main culprit that everybody should be standing together to work towards combating is Climate Change. Investing in measures and having a disaster risk resilience plan will insulate Fiji's economy from crises caused by climate change by being resilient.

2.0. Discussion

2.1. Risk Assessment Information

	Hazard Type	Risks Associated	Identity of the Risks			
			Frequency	Intensity	Cascading Risks	Climate Change influence
	Geological Hazards	Landslides (earthquake induced)	Rarely. The last recorded landslide was in Kadavu (2019), with no recorded loss of life or injuries.	5.3 Magnitude.	<ul style="list-style-type: none"> Tsunami Coastal and inland flooding 	Experts believe that because of its ability to shift enormous quantities of material about on the Earth's surface, global warming might impact geological hazards such as earthquakes. Melting glaciers and rising sea levels cause massive volumes of water to be distributed differently, releasing and increasing pressures through the ground.
		Volcanoes	Fiji has not experienced a volcano eruption in the last 10,000 years.	-	<ul style="list-style-type: none"> Tsunami Loss of biodiversity 	
PRI ORI T I ZED IMP ACT S	Meteorological Hazard	Tropical cyclones	Almost 4-6 tropical cyclones in the cyclone season (November to April)	Category 3-5	<ul style="list-style-type: none"> Inland flooding Coastal inundation Destructive winds 	With the earth's increase (and rising) in temperatures from excessive greenhouse gas in the atmosphere it induces climate change over a period of time. The increase in temperatures means heavier rainstorms and an ideal condition for tropical cyclones to form. Tropical cyclones are motivated by the inner force of the atmosphere close by and the difference of the low-pressure center. Due to this phenomenon tropical cyclones intensity and frequency will tend to increase. Fiji islands is spread and surrounded by a vast
		Tropical depressions	10 or more in a year.	34knots and more, depending on when it shifts	<ul style="list-style-type: none"> Landslides Flooding sedimentation 	

				to a tropical cyclone.		ocean, when the ocean temperature increases it results in a low-pressure area, thus the surrounding air shifts towards the low pressure area and because of the earth's rotation, this low pressure center is maintained, thus form tropical cyclones. Increase in global warming has projected an intensity of cyclones to increase by 2-11% by 2100.(Duan et al., 2018)
Hydrological Hazard	Floods;			Flash flooding and Rapid-onset floods	<ul style="list-style-type: none"> • Loss of land value. • Slope instability. • Increase erosion • Land degradation 	Climate change influences increased precipitation, allowing air's capacity to hold moisture, thus due to long-period of rainfall directly causing flooding and non-seismic landslides.
	Non-seismic Landslides	>10 Landslide occurrence during a single TC hit.		Destruction of infrastructure and loss of lives.	<ul style="list-style-type: none"> • Deformed land structure/topography. • 	Land surfaces are getting supersaturated from the high precipitation and run off which forces soils to lose their structure causing slopes to fail, which becomes disastrous if communities and households are exposed to it.
Human - induced Hazards	Land degradation		On-going	Progressively increasing	<ul style="list-style-type: none"> • Soil infertility • Soil erosion • Destruction of habitat and biodiversity 	Land use and land management plays a major role in land degradation and desertification in Fiji, and with climate change impacts on a rise in the pacific islands (most vulnerable) it only increases the negative factors on land through rainfall intensity, flood frequency, increase in temperature (heat stress) and sea-level rise.
	Land desertification		On-going	Progressively increasing	<ul style="list-style-type: none"> • Water sources dry up • Destruction of habitat and biodiversity • landslides 	

Meteorological hazards and hydrological hazards are closely linked with each other in Fiji (and the globe as well) because they are both induced by temperature and precipitation increase thus prompts most of the same risks such as tropical cyclones, tropical depressions, flooding, landslides etc. and over the years Fiji has experienced tropical cyclones from the month of November to April (cyclone seasons). Climate change has increased the intensity of these cyclones and depressions which brings along intensive and long rainfall causing flash floods, and coastal inundations. With increase in frequency of flooding and rainfall periods it has caused tremendous and destructive landslides and slope instability. Land productivity has been decreasing due to unsustainable land use, poor land management and improper agriculture methods, with the support of the climate change impacts of these hazards they are together progressively degrading land sector.

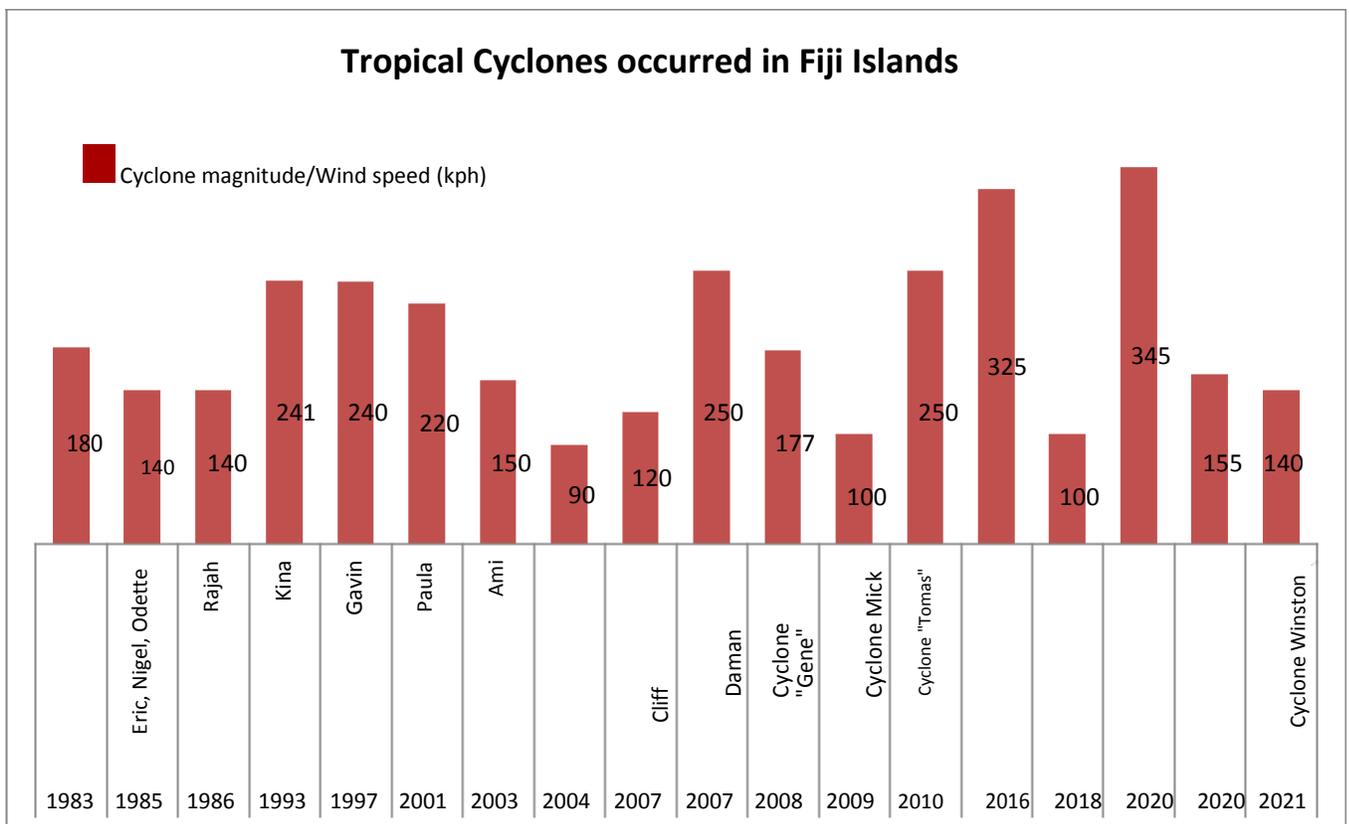


Figure 2: Tropical cyclones that had a massive impact in Fiji and how strong it was (indicated in kph). Derived from emdat

Every cyclone that ravaged the Fiji Islands (Figure 2) brought along flooding after its impact. Fiji experienced TC Yasa (Category 5) late last year (especially in Vanua Levu); it caused flash and riverine flooding in low-lying areas in Fiji and also coastal inundation. There were massive amount of damage on infrastructure on roads, bridges and building due to landslide and slope failure. All the damages sustained by TC Yasa were \$500million due to infrastructure damage; roads, bridges, building etc., also 6184 houses

were partially damaged and the total completely destroyed houses was 2141(Talei, 2021). The topography and land surface on the main roads in Vanua Levu was completely deformed due to landslides and landslips. Not only was the land surface disturbed it directly affected the health of the land (degraded). Failed material from slopes takes time to regain its health in terms of minerals washed away by excess water saturated in the soils.

The strongest tropical cyclone experienced in Fiji was Cyclone Winston, till to date land rehabilitation is still undertaken in the western side of Viti Levu due to the amount of bare land that was caused by TC Winston. Overlying these issues are previous cyclones that also played a role in it and land use; careless burning, deforestation, overgrazing and extension of sugarcane and extra crops onto marginal land. Flooding also played a major impact on soil erosion and riverbank erosion; with the continuous flooding over the years land lose their value to the surrounding biodiversity thus environmental health is sabotaged. According to the information currently available, meteorological and hydrological threats are assessed as high. This implies that in the next ten years, there is a greater than 20% possibility of potentially degraded land.

In 2003 Tropical cyclone Ami passed through Fiji and caused extensive damage on the land sector by triggering coastal inundation, coastal erosion, riverbank erosion and soil erosion, all of which intensified land degradation, “torrential rain led to many valley slopes failing in landslides, and on the low lying floodplains huge quantities of sediment deposited by swollen rivers ruined many sugar cane farms”(Terry et al., 2004). It was said that TC Ami had caused record-breaking flooding of all major rivers in Vanua Levu, which caused many damages on the farms, thus land itself.

Tropical cyclones that occurred in the year 1997; TC Gavin and TC June, the northern and western parts of the Fiji islands were tremendously affected. The last cyclone that Fiji had experienced since 1997 was tropical cyclone Kina and that was in the year 1993. In the past years Fiji would experience cyclones after a time, although after the year 2010 till to date Fiji has experienced back to back cyclone which is indicating that climate change is increasing at a considerable rate. Land had been slowly degrading due to the extensive land use and improper ways of developing land, but with every passing meteorological and hydrological hazard that have pass through Fiji it has significantly increased the progress rate of land degradation and if not mitigated or any disaster risk resilience plan is in place there is high possibility that land degradation will reach a certain point that it will be irreversible.

2.2. Vulnerability Factors

2.2.1. Geographical /Topography and Exposure

Fiji, for example, has approximately 300 islands distributed around the Pacific Ocean (inside Fiji's EEZ), and all of our islands and most PICs have a greater shoreline to land ratio and higher ocean to atmosphere interphase, making us even more vulnerable to sea level rise. These characteristics, such as location (the path of tropical cyclones and the plate tectonics border), cannot be changed to suit one's needs. The geography of Fiji is extremely vulnerable to landslides and other forms of mass movement. This is owing to the fact that most of Fiji's land is made up of clay soils, primarily humic latosols atop red/orange clay regolith created by deep weathering on the island's volcanic bedrocks. Although such tropical clays can normally hold steep slopes without failing, landslides can occur when triggered (by extensive rainfall).

2.2.2. Land ownership

One of the reasons that Fiji cannot fully expand its agriculture sector that can meet the demands of its economy is because of land tenure ownership, most land arable for agriculture purposes are owned by ITaukei. Therefore, with the only limited amount of land for agriculture purposes and development in Fiji, the need for full land utilization is mandatory to keep up the with the consumption rate in Fiji. This way land is sometimes over used and pushed to its capabilities, thus damaging land and its make up (ecosystem).

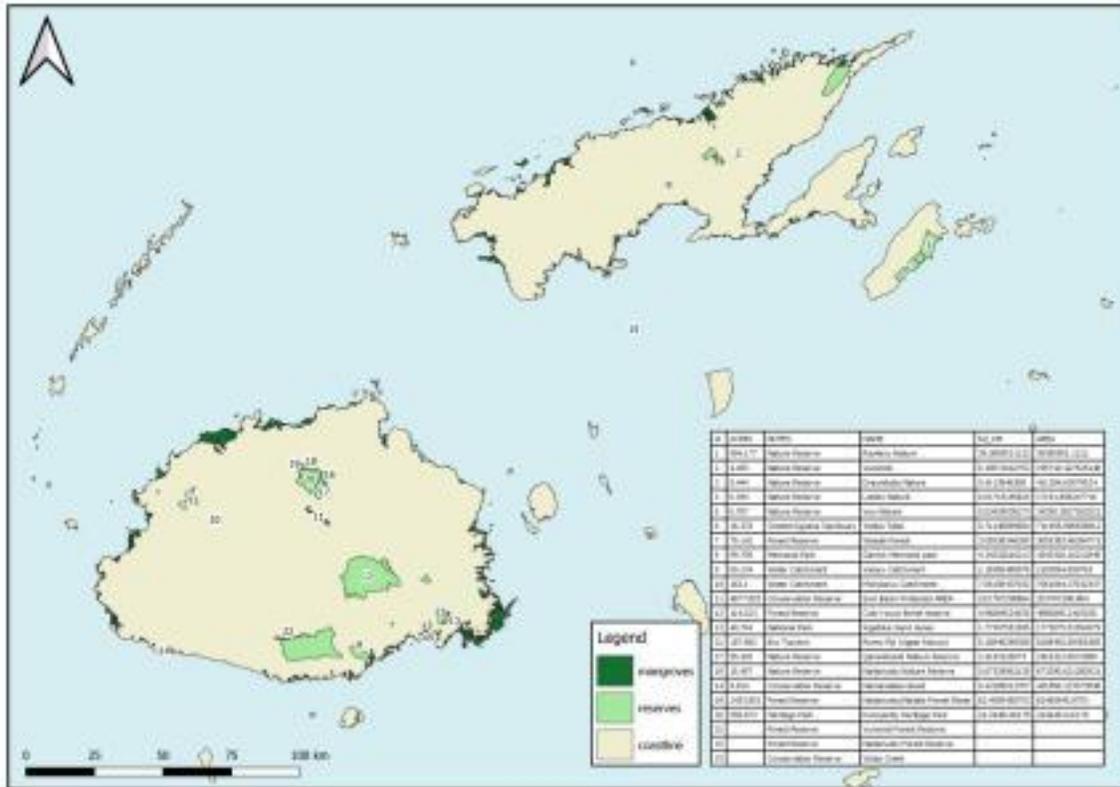
2.2.3. Land use and Agriculture methods vs. Growth Population

The interaction of human activities and the natural environment on Earth is reflected in land cover and land use patterns. Land scarcity and conversion of natural lands to agriculture and other uses result from human population growth along with competitive land use. In most cases because land are sometimes not very productive in terms of its health to produce abundant crops at a certain period, forced mechanisms are introduced to increase the rate of production and in the long run this would greatly affect land. With every difficult obstacle that comes along with developing land to produce food, people still find other means to stress the land to produce and it's basically a cycle of torture for the land sector. In the future, land will reverse the stress on the communities because it would not be able to provide, thus can be an existential threat to both the humans and the ecosystem.

2.2.4. Protected areas

Fiji has quite a number of protected areas (figure 3) such as; nature reserve, memorial parks, forest reserve, eco-tourism, crested iguana sanctuary , conservation reserve and heritage park. Along with these protected areas are mangrove reserves which are not allowed to be removed. Although Fiji has set up these protected areas to act as guidance over its ecosystem, it is scattered throughout Fiji and most of it

are very small in size (area) which makes them vulnerable to what's surrounding them i.e. climate change impacts. Biodiversity and land are interconnected, meaning if there is a decline of biodiversity it is due to land (habitat) degradation and if land is misused and over utilized there will be an existential threat on the ecosystems.



Disaster Figure 3: Fiji's protected areas (Adapted from QGIS)

STATEMENT OF PROPOSED SOLUTION

2.3. Risk Reduction Plan

The measures listed in the table below are selected from the list above based on ; available funding, the measures to be implementable at community level, should be inclusive for the vulnerable groups, and should not develop a conflict between landowners and outsiders (government, private and public sectors, and NGO's). In the DDR plan the power of decision making should always lean towards respective communities, this way communities will take a stand in protecting their own. Pushing measures against their own will would cause an eruption of conflict and stubbornness thus won't successfully follow through these DDR measures.

DRR PLAN -measures	Why Prioritized & Linkages to Resilience
<p>1. Develop Green infrastructure</p>	<p>Green infrastructure may be a new term in this era, but many decades ago our ancestors in Fiji have been in the process of this development. We relied on their basic traditional knowledge of how to protect, restore, or replicate the natural water cycle and till to this day we still have villages and communities that still practice these methods. Although due to modernization and the growing population, people opted for faster production and in return had to sacrifice some of their traditional ways.</p> <p>This is prioritized because we already have basic and traditional knowledge on this measure, we just need to build on it and pass this knowledge to future generation. Restoring the traditional ways of green infrastructure will enable the fast transition of land when impacted by disasters. Elders and woman play and effective role by identifying methods that protect and restore the natural water cycle.</p>
<p>2. Biodiversity Conservation</p>	<p>Effective solutions requires understanding the causes of biodiversity decline, through identifying the decline factors, one would able to formulate the causes of land degradation. Land health is the reflection of its surrounding biodiversity. In Fiji there are still traditional roles that women play in a community and having knowledge on the biodiversity within its area/community, because their role is looking after the family and their health they have the capability to nurture the environment and assist in regaining its biodiversity.</p>

<p>3. Forest and Landscape restoration</p>	<p>This DRR measure is included in the plan because Forest and landscape restoration can produce a definite result in aiding Fiji's national determined contributions. The measures of restoring landscape and forest stock mitigate and adapt against land degradation and improve the ecosystem services, thus addressing and minimizing the risks brought by impacts of climate change towards land sector.</p> <p>Responding to those factors that are influenced by a particular system and activities that increase the vulnerability of land degradation, through forest and landscape restoration contributes to the resilience of land sector. Reducing the risk factors associated with effects of climate change on land can ensure the fast recovery of it, thus resilience.</p>
<p>4. Capacity building and Development Play</p>	<p>Capacity building is concerned with enhancing a community's ability to try new things and enhance what it already does. Simply said, capacity development improves communities' performance and increases its ability to function in a quickly changing environment while remaining relevant.</p>
<p>5. Landslide Hazard Map (landslide prone areas)</p>	<p>Landslide is one of the most recognized hazards in Fiji and which greatly affects the economy. The data collected from identifying the controlling factors of landslides have given an insight and awareness to respond to and prepare for landslide hazards. In some communities, people still practice land use types that harm the land because in Fiji we heavily rely on subsistence farming, therefore through these awareness; farmers, communities and the agriculture sector are able differentiate which land use types harm the land and also those that protect land sector from degradation, soil erosion, desertification etc. Changing the practices that trigger landslides and harm the land enhances the resilience of the land sector.</p> <p>Rapid landslide mapping using remote sensing and geographical information system (GIS), minimizes the risks by aiding planners to sustainable develop land. For instance, construction of new development can trigger landslides by certain activities such as building of roads or reclamation of land, etc. because these activities interfere with the natural drainage pattern of water. Thus, during long period of rainfall (brought by tropical depression and cyclones), the water is forced to follow a different path and in the process may saturate slopes or soils, triggering the landslides. Minimizing the risk factors brought by new development and improper planning can allow a resilient land sector.</p>

<p>6. Improving monitoring, verification systems and baseline data</p>	<p>Fiji has baseline data on the land sector and also respective ministries and agencies are taking the lead role in monitoring and verifying methods that are used to develop land or any activity conducted on land, although there are still more room for improvement as Fiji still tackles the problems of land degradation. Monitoring and the development of verification system will aid in identifying land uses that are successfully restoring land or those that need to be replaced. A DDR measure will not be successful if there aren't any monitoring indicators in place to check on the progress of it. Through this measure one would be able to assist in the restoration of land much faster against the impacts of climate change.</p>
<p>7. Improving wastewater treatment and restoring River channels</p>	<p>Waste water treatment is prioritized in this DRR plan because;</p> <ul style="list-style-type: none"> • <i>Wastewater treatment protects humans and ecosystem</i> - Wastewater treatment facilities help to purify the water and eliminate situations like what is currently seen in developing countries. Unclean water poses significant health risks. Wastewater treatment also protects the ecosystem. Fish and aquatic life require fresh water. • <i>The natural water treatment process is overloaded</i> - While Mother Nature does her best to naturally process wastewater, there is too much for her to handle. Because the global population is so large and growing, so is wastewater. Nature can't keep up with naturally processing the excessive amounts of wastewater. And, as the population grows, so does the amounts of wastewater. • <i>Discharge purified water back into the environment</i> - Wastewater facilities mimic the natural process of purifying water and send it back into the environment therefore the importance of waste water treatment is vital. <p>With these points being noted, wastewater treatment is very important to humans and including our ecosystems thus improvement of waste water is critical especially for small developing countries and their respective land sector.</p> <p>Shangri-La Fiji has developed programs to help the community in terms of their waste, and one of the projects is called 'The Laselase beautification Project'. The woman's committee, which pushes for safe trash disposal in the community, is leading the charge. Thus woman can play an active role in spearheading this measure in their own community.</p>

8. Mainstreaming and coordinating policies between different ministries

Climate change affects all the sectors in Fiji, and also if the land sector is vulnerable all sectors are bound to reap the repercussions of disasters brought on the land sector, which is why it should be taken into consideration in every ministry and development projects conducted in Fiji. With every ministry working objectively on the matter that concerns the land sector, it will assure the successful resiliency of every other sector in a changing climate world.

SUPPORTING INFORMATION AND ANALYSIS OF SOLUTIONS TO ADDRESS THE LAND SECTOR OF FIJI

3.0. Development and Implementation of DDR Plan

3.1. Stakeholders; Roles and Responsibilities

Step-wise action plan	The roles of stakeholders to meet the targets of the action plan.	Stakeholders that should coordinate (or provide necessary information that is warranted) the step wise action plan.
<p>Step 1; Community or Client Signaling</p>	<p>To obtain information from the public or community, to log their concerns on land degraded areas and landslide prone areas.</p> <p>Collection of information to be conducted anytime the client or members of the community may feel that they are most vulnerable to landslide or if they have already been impacted by the hazard even though there were adaptation methods.</p> <p>Also commercial and subsistence farmers to annually report on the production rate and causes to which increased or decreased the production. Through this, land health can be determined.</p>	<ul style="list-style-type: none"> • Provincial Office-DO, Roko Tui • Infrastructure • Health • Agriculture, • Ministry of Women Children and Poverty Alleviation (MWCPA) • Ministry of Housing & Community Development (MHCD) • iTaukei Affairs • Ministry of Lands (Remote Sensing) • NDMO • USP • SPC • EFL <p><u>N.B</u> <i>Divisional Commissioner's Office should head this role.</i></p>
<p>Step 2: Projection and Assessments</p>	<p>To analyze the variability of climatic conditions in Fiji, identification of improper land use and agriculture methods, and mapping of landslide hazards; vulnerable and risk zones.</p> <p>Collation of important data to better understand causes of land management and landslide risks areas, such as;</p> <ul style="list-style-type: none"> • Soil classification • Geology of an area • Weather data e.g. rainfall data • Seismic data • Aerial maps • Topography data • Vegetation maps <p>Identify and analyze the causes of decline of biodiversity in a specific area, to identify the initial cause of land degradation.</p>	<ul style="list-style-type: none"> • Department of Town and Country Planning (DTCP), • NDMO • Ministry of Infrastructure and Meteorological Services (MIMS), • iTaukei Affairs (TAB, MTA, TLTB, TTFB, CATD) • iTaukei Lands and Trust Board (TLTB), • Ministry of Agriculture (MOA), Ministry of Forestry (MoFo) • Ministry of Fisheries (MoFis), • Ministry of Education and Heritage & Arts (MEHA) • Ministry of Lands and Mineral Resources
<p>Step 3: Collated data to be evaluated and analyzed</p>	<p>All data that are collated by various technical teams (stakeholders) to be evaluated and analyzed to formulate scenarios to forecast landslide risk areas and identify replacement</p>	<ul style="list-style-type: none"> • WAF • MWCPA • DTCP • MIMS • MRD

	<p>or additional methods to improve land and prevent land degradation. Stakeholders to work objectively to take into account every parameter that cause landslide or instability of slopes.</p> <p><i>Outcome:</i></p> <ul style="list-style-type: none"> • Landslide inventory • Hazardous map • Proper agriculture methods • Sustainable land use methods • Soil erosion inventory 	<ul style="list-style-type: none"> • MoFor. • MoA, • MoFis. • MoLMR, • iTA, • iTLTB, • MOE, • NDMO, • MHCD, • MoIT, • CCICD • GIZ, • SPC
Step 4: Comprehensive Risk and Vulnerability assessments	Allocating indicators to assess risk and vulnerability.	<ul style="list-style-type: none"> • MRD • NDMO • FRA • WAF • DTCP • MHCD • Ministry of Agriculture • Ministry of Forestry
Step 5: Mitigation and Adaptation Methods	<ul style="list-style-type: none"> • To formulate mitigations and adaptation methods that best suits the hazardous (landslide) site/area to avoid unnecessary cost. • To identify other means of sustainable land use and agriculture methods to prevent and reverse land degradation 	<ul style="list-style-type: none"> • MRD • NDMO • FRA • WAF • DTCP • MHCD • Ministry of Agriculture
Step 6: Community/Client Consultations	<p>Carry out public consultations to educate the public about the;</p> <ul style="list-style-type: none"> • landslide prone areas • What causes these landslides • Impacts and fatality that are caused by landslides. • Causes of improper agriculture methods • What causes non sustainable land management • Land degraded areas and the risks that come along with it • Mitigation and adaptation methods (traditional or man-made methods) 	<p>Community level</p> <ul style="list-style-type: none"> • development committee & • Provincial & District Offices <p>National level-</p> <ul style="list-style-type: none"> • Ministry of Information (FPIC), • MWCPA, • DTCP, • MRD, • iTA, • iTLTB, • NDMO, • MHCD, • MoIT, • CCICD, • GIZ, • SPC • Church organizations

Step 7: Deployment of Funds	Financially support the implantation of mitigations and adaption methods.	<ul style="list-style-type: none"> • Ministry of Economy’s Strategic and Budget Planning Unit. • GIZ • UNCCD • PCRIC
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3.2. Resources and Insurance

Resourcing options are indicated in the table above although the DRR plan is leaning towards Pacific Catastrophe Risk Insurance Company.

PCRIC provides funding tools to assist Pacific Island countries in maintaining their development advantages. The PCRIC's initiatives can offer rapid disaster response funding by combining and relocating natural disaster risk into international insurance markets, leveraging the multiplier impact of insurance given to many nations. As a consequence of this system, several PCRIF member states have received disaster response insurance reimbursements that are multiples of the premiums they paid.

PCRIC organization focuses on supporting the disaster risk management and provides combination of risk mechanisms for the pacific islands to strengthen the regional resilience. With the support from this organization the implementation of the DDR plan on land sector in Fiji will benefit from “PCRIC’s resources strengthened by a well-established and impactful technical assistance programme”(Strategic Plan 2021-2025, 2021), technical expertise and catastrophe risk management strategies and infrastructure work hand in hand and are required to assist minimize hazards

In addition to offering catastrophe risk finance and risk pooling via insurance, PCRIC's strategy for complementing technical assistance focuses on creating and sharing expertise in the region as a method of delivering and returning value to the community.

4.0. Conclusion

The land sector regulates or is the engine for forestry, agriculture, and land usage for infrastructural development. Lands that are subsequently utilized for living reasons (residential use), for building schools (institutional use), or for commercial, industrial, forestry, and other land uses are areas where agriculture does not prosper. Because every other sector revolves on or is a result of this one, the land sector's resilience is critical. Before climate change became an issue, most countries were suffering from the effects of land degradation, which has long been a worldwide concern. Climate change is promoting land degradation owing to rising temperatures (global warming) caused by excessive carbon emissions in the atmosphere and a decrease in carbon sinks.

Land has a high value for climate change adaptation and mitigation; reducing or replacing land use types that contribute to climate change can reduce greenhouse gas emissions while also improving human and biophysical resilience. The transformation of the land sector via resilience can help to achieve the Paris Agreement's ambitious objective of a future with a global temperature of 1.5 degrees Celsius. The implementation of the disaster risk resilience plan will not only achieve the resiliency of the Land sector in Fiji but also contribute to the Paris agreement goals, sustainable development goals (SDG 17) and the Sendai framework.

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