Pacific Community
Communauté du Pacifique

RESCCUE

Initial Diagnosis of the Kadavu Province, Fiji

AGENCE FRANÇAISE DE DÉVELOPPEMENT

FONDS FRANÇAIS POUR L'ENVIRONNEMENT MONDIAL

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Front cover photo: Aquatic activity in Kadavu Province (©Ron Dahlquist)

Table of Contents

INTRODUCTION

The production of an initial diagnosis of Kadavu Province is a key part of the preliminary activities that will be undertaken by the operators at the early stage of project implementation. The overall goal of such a diagnosis is to allow for a precise characterization of Kadavu Province in relation to RESCCUE's objectives and program of activities. As such, the diagnosis also provides a **baseline**, against which the effectiveness and efficiency of the project can be evaluated. To this end the operator will update this initial "picture" with mid-term and end-of-project diagnoses.

The objectives of the initial diagnosis will determine the subsequent guidance with respect to diagnosis' contents. The **common framework** of RESCCUE allows the operator to carry out initial, mid-term and end-of-project diagnoses on the pilot sites in a coherent and consistent manner. As a guiding framework, it leaves room for adjustment to reflect each pilot site's specificities.

OBJECTIVES

The objectives of pilot sites' diagnoses are fourfold:

1. **Strategic:** the initial and mid-term diagnoses shall help refining the programme of activities on each pilot site, including in the identification of "low-hanging fruits" (i.e. quick and easy-to-implement activities that will generate concrete results and facilitate stakeholders' mobilization around the project);
2. **Monitoring and evaluation:** the initial diagnosis shall set the baseline for mid-term and final project and sub-project (i.e. pilot site) evaluations. To this end, mid-term and end-of-project updates of the pilot sites diagnoses will be undertaken by the operators in 2016 and 2018. These will reflect how and to what extent the project successfully changed the baseline situation;
3. **Communication:** the initial, mid-term and end-of-project diagnoses shall be useful tools for communication about project implementation on each pilot site;
4. **Capitalization/dissemination:** the initial diagnosis shall help to clarify the objectives of each pilot site within the wider, regional project: how is a specific pilot site contributing to the regional learning process? Is it testing, learning, replicating, or initiating country- or region-wide changes in coastal management[1]?

1. BASELINE OF KADAVU PROVINCE

1.1 Physical environment

The Kadavu main island, the fifth largest island in Fiji and small islands that surround it comprise of Kadavu province, one of the four provinces of Fiji's Eastern Division. It is located south of the

[1] See Billé R, Marre JBM (Eds). 2015. The RESCCUE approach. RESCCUE working paper, SPC, Noumea.

main island of Viti Levu and access by sea from Suva and to Vunisea government station, Kadavu's administrative centre, is covered by ferry in six hours on a calm sea. Vunisea can also be accessed by air service from Nausori airport (near Suva) in approximately 45 minutes and from Nadi, which is the only transport link to Kadavu not provided out of the Suva area within approximately 50 minutes.

According to Nunn & Omura (1999), the island is a string of ancient volcanic cones and craters that have given rise to its acid rock and tuffaceous sediments. The central ridge rises in some places to over 500m above sea level and most stream networks drain in the general direction of northwards or southwards, based on small stream catchments (Terry 1999). Most of the island's terrain is rolling through to steep and rugged with an indented coastline that supports a narrow strip of flat land for much of its length. This results in difficulties for the construction of proper road infrastructure. There are reefs all along the island's coastline, which allow larger ferries to anchor in only a limited number of places. Also, the mainland and small group of islands to the east (Ono district) form the large Astrolabe lagoon with the barrier reef surrounding it forming the Astrolabe reef, one of the world's longest barrier reef.

As a result of the rugged terrain and the lack of an overland road network, all but 2 of the 75 villages on the island are located on or within a short distance of the coast. The unsealed road system has been expanding very slowly and is affected by the rugged terrain. Thus internal transportation is sustained mostly by small boats with outboard engines, which cover the distances along the coast. Communication with the main island of Viti Levu is maintained by the inter-island shipping service, which operates out of Suva. This service provides connection mainly to the two jetties available on the northern side of Kadavu: Vunisea, the site of the government station, and Kavala on the east.

1.2 Demographic Information

Kadavu province's population amounted to 10,167 persons in 2007 (Fiji Bureau of Statistics 2012). Across Kadavu province, the age-sex population structure, which is shown below in Figure 1, shows a consistent pyramid similar to the national one. There are a large number at the base of the pyramid with the categories of 0-4, 5-9 and 10-14 years old and this indicates that there is high birth rate, high death rate and low life expectancy in Kadavu province. Even though comparatively few in number, it is clear that women in Kadavu province live longer than the men.

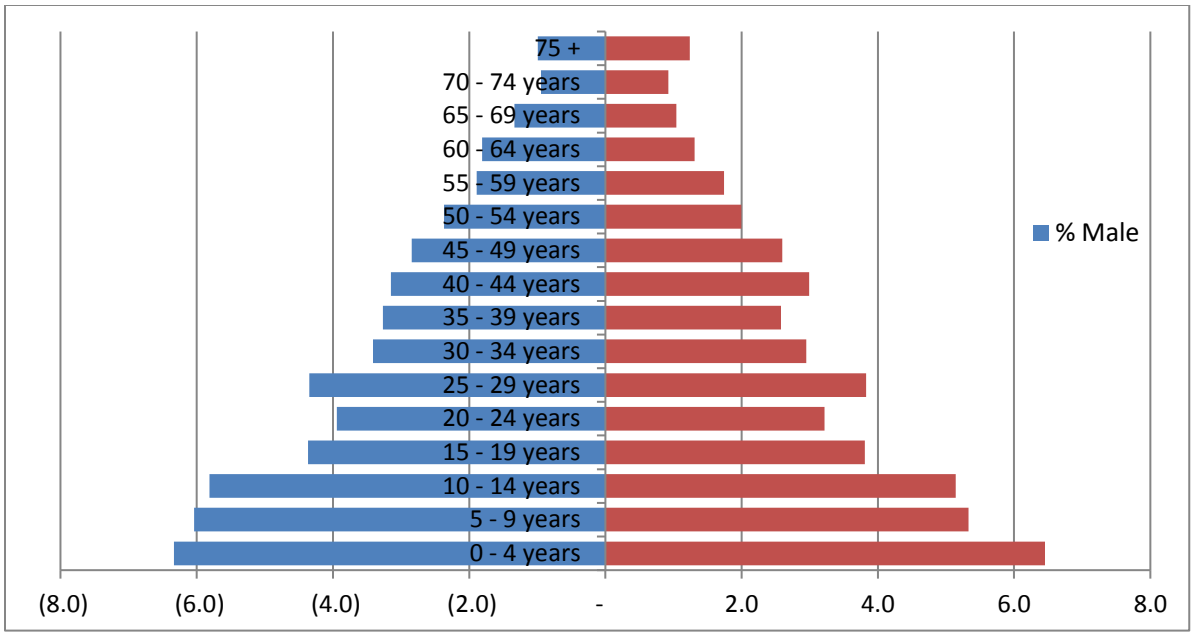

Figure 1 Kadavu province population pyramid

A number of demographic characteristics over a sixty-year period, 1946-2007, are presented in Table 1. The population increased during this period at a relatively slow and irregular pace and its share of the total population of the country declined to a mere 1.2 per cent by 2007. Two main processes are responsible for the slow rate of growth: fertility decline (which is typical all over Fiji) and out-migration from Kadavu to other provinces in Fiji. The latter process is typical of the outer islands as had already been recorded more than three decades ago (Bayliss-Smith et al. 1988). The balance of lifetime net-migration by the 2007 population census specifies a loss of 2875 people (Bureau of Statistics 2012). Of these, 627 are recent migrants who moved during the five years before the census.

Table 1 Demographic characteristics of Kadavu Province

Year	**1946**	**1956**	**1966**	**1976**	**1986**	**1996**	**2007**
Total Population	7229	7450	8631	8699	9805	9535	10167
% of Fiji's total population	2.8	2.2	1.8	1.5	1.4	1.2	1.2
Kadavu dependency ratio	1014	1058	1173	1049	949	992	900
Fiji dependency ratio	1039	1045	1023	825	754	672	699

Year	**1946**	**1956**	**1966**	**1976**	**1986**	**1996**	**2007**
Ethnic composition							
I Taukei	6971	7246	8426	8537	9630	9413	9964
Indians	20	17	3	7	46	48	49
Others	238	187	202	115	129	74	154

The loss of working age population to other areas of Fiji, as well as to overseas destinations, is also reflected in the dependency ratio (the ratio between the dependent population and the working age population), which is still much higher than the national average (a value of 900 compared with 699 for the whole of Fiji), suggesting that Kadavu retains relatively more of its younger and older age groups. The out-migration trend may express the population's dissatisfaction with living conditions and economic opportunities in the province. Table 1 also emphasizes the fact that the native Fijian population has always been the dominant component of the provincial population. Finally, the absence of any urban center on the island suggests that there are very limited local economic opportunities in the secondary and tertiary sectors, most of which are at the government station in Vunisea, the only non-village settlement and the core of public services on the island.

1.3 Literacy and education

The education and literacy level in Kadavu province is relatively high. A majority (96%) of the population have received some formal education. When broken down, over 33% had reached Year 8 or less. About 24% reached lower secondary (Form 3 – Form 4) and a quarter (25%) had reached upper secondary school form of education (Form 5 – Form 7). Only 4% have furthered their studies at a tertiary level based on the 2007 census.

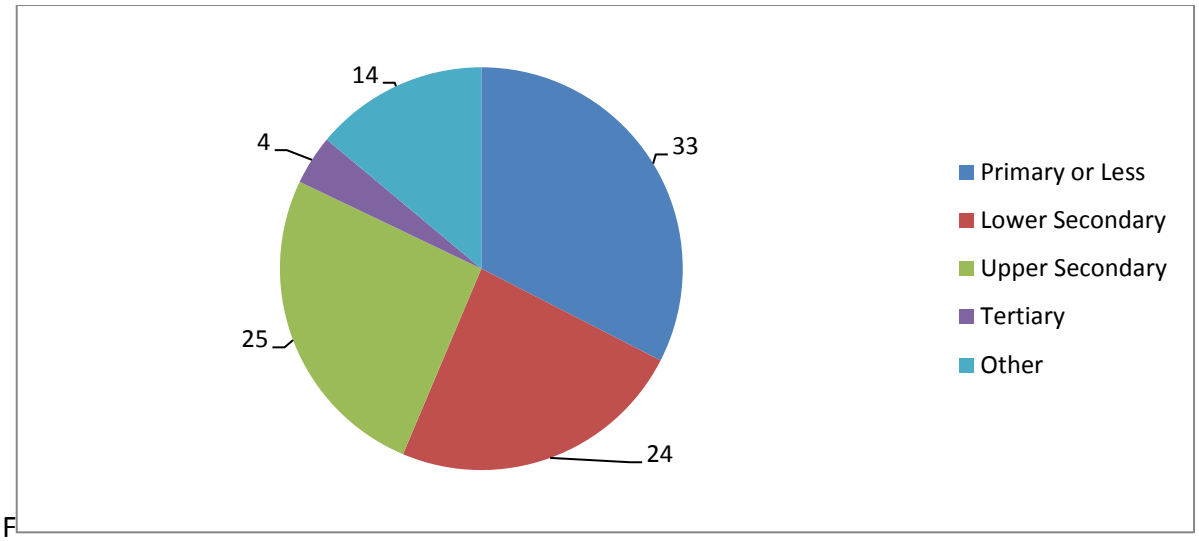

Figure 2 Education level attained in Kadavu province (Bureau of Statistics 2007)

1.4 Employment

Figure 3 shows the employment level for Kadavu province. Based on the 2007 census, for the total population about half (49%) of the population on Kadavu are not economically active. It can be clearly seen that subsistence only contributed over a quarter (28%) to the employment level for the entire province. At the end of the scale money derived work and sale was the least form of employment at 1%.

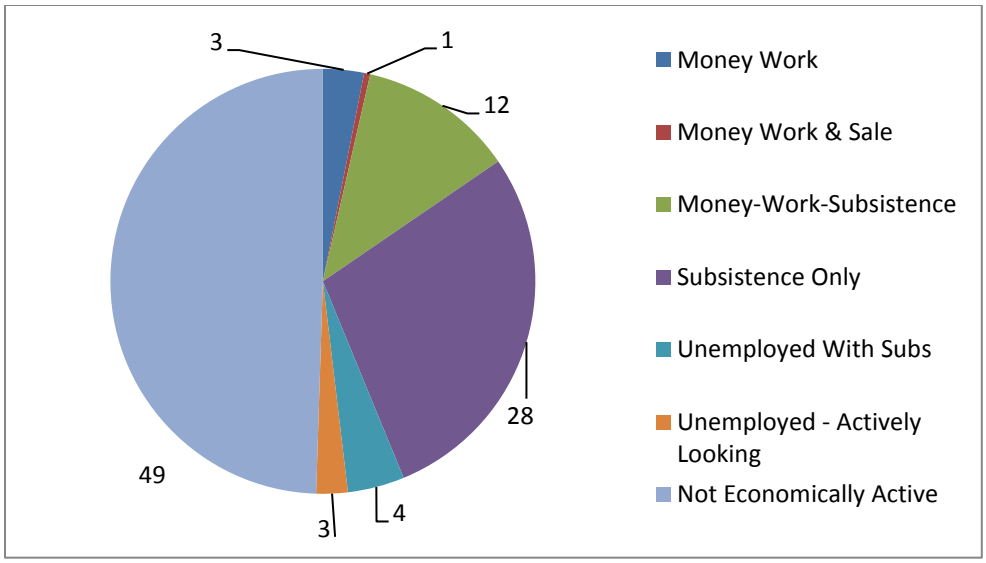

Figure 3 Employment level in Kadavu province (Bureau of Statistics 2007)

For the working age category (15-69), overall Kadavu province's labor force characteristics suggest a relatively high rate of participation. About 77 per cent of the age group 15 to 69 in Kadavu are economically active compared with a national rate of about 56 per cent (Bureau of Statistics 2012). Clearly, these figures represent a broad labor involvement in (semi) subsistence agriculture. More than 90 per cent of the province's labor force practices this form of agriculture, the majority of which is engaged in such activity without reward in the form of wages or salary. Similar trends may be found in other rural provinces in Fiji, while in the relatively more urbanized provinces subsistence production is mainly practiced as a form of urban agriculture, primarily for home consumption. Moreover, access to paid work in the province of Kadavu is limited and in most cases, apart from government jobs and, more recently, some tourism jobs, all other monetary sources are agriculture-based and either seasonal or part-time.

Kadavu has been involved in tourism for the last 27 years but mainly on a small scale and it has a small range of guest houses, budget backpackers and high-end resorts, with many of these places accessible only by boat. Papageno resort (25 beds) and Dive Kadavu resort (20 beds) make up 28% of the total beds available in Kadavu. In 2008 the two resorts received 36% of the total visitors to Kadavu (Kuilamu, 2012). Figures provided by the Sustainable Tourism Development Consortium (Table 2) show visitor arrivals to Kadavu had grown steadily from 664 in 2000 to 1,320 in 2008. In the same period tourism earnings for the island grew from $1M dollars in 2000 to $2.4 million in 2009. In 2009, eleven properties were operating on the island, 10 properties were operating, of which eight are foreign owned and two locally owned (Sustainable Tourism Development Consortium 2007).

Table 2 Visitor arrival and tourism earnings in Kadavu

Visitor arrivals and tourism earnings in Kadavu	Years								
	2000	2001	2002	2003	2004	2005	2006	2007	2008
Visitor arrival	664	785	898	972	1,137	1,230	1,238	1,218	1,320
Tourism earning (F$M)	1	1.2	1.5	1.7	1.9	2.1	2.2	2.1	2.4

1.5 Natural Resource Use and Dependence

The province of Kadavu was incorporated into Fiji's cash economy mainly through the selling of copra and food crops. The sale of food crops was of relative importance in the late 19th century when the island served as a port of call for the Pacific steamer lines from Sydney to San Francisco (Thomson 1889). Copra was an important cash earner for Kadavu for a long time, but in the 1980s its importance declined significantly (Sofer 2015). New crops such as vegetables were introduced on a commercial basis in the late 1930s and revived several times but have never been a considerable commercial success. It is kava (yaqona in Fijian), a species of the pepper family (*Piper methysticum*), which has developed into the role of a major cash crop. This plant is the source of the South Pacific kava that is the traditional beverage of Pacific islanders (Thomson 1999). This beverage is used frequently at various social gatherings as well as a pastime. Kava had been a cash crop in the 1930s, but its importance has significantly increased and it is now the paramount cash earner for Kadavu villagers (Sofer 2007; Sofer 2015). Kadavu is also a center for marijuana growing but the extent is unknown.

Kadavu villagers practice semi-subsistence agriculture where both subsistence and commercial production are evident, and maintain a strong foundation in subsistence diversity by growing a wide range of crops in their gardens (Kuhlken 1994, 2007). To provide a better context of farming practices in Kadavu a study by Sofer , 2015 compares the proportion of households growing major crops in the villages of Nalotu and Dravuwalu, over two different periods at an interval of more than 30 years (1982 and 2013) and this is presented in Table 3, this compared with a decline in interest for cassava in Dravuwalu. The most significant change is the appearance of modern vegetables, which have never had a notable commercial success (Sofer, 2015).

. For both periods the most common crops are traditional root crops grown under shifting cultivation methods, where the length of the cultivation period for a given field, before being left fallow (commonly three years in Kadavu), is often determined by the duration of yaqona

cultivation. In 2013 all households in both villages produced yaqona while in Nalotu all households also produced the traditional root crops, this compared with a decline in interest for cassava in Dravuwalu. The most significant change is the appearance of modern vegetables, which have never had a notable commercial success (Sofer, 2015).

Table 3 Percentage of households growing crops, 1982 & 2013

Crops	**Nalotu**		**Dravuwalu**	
	1982	**2013**	**1982**	**2013**
Yaqona (kava)	95	100	96	100
Cassava	95	100	92	46
Yams	95	100	31	25
Dalo	91	100	100	96
Modern vegetables	5	25	0	14

Source: Sofer, 2016

Subsistence fishing is an important aspect of the socioeconomics of villages in Kadavu and this is similar to other parts of Fiji and the Pacific, but has received relatively little attention as it does not contribute directly to the economy in terms of measurable cash flow (Anon. 1979). Inhabitants of specific village have exclusive rights to fish the reefs enclosed in their qoliqoli and fisher exchange and poaching is negligible in this well-defended sea ownership system. The numbers of resident fishers vary among qoliqoli I Kadavu and fish are caught almost exclusively for subsistence and provide the primary source of protein however, there is an absence of a scientific study to capture subsistence fisheries related data in Kadavu province.

The Great Astrolabe reef provides a small niche for the gamefishing industry in Kadavu. Many national have visited and world records been caught by the boats out of the resorts. Some of the popular catch and season are:

- Black Marlin can be caught from August to December with blue and striped marlin showing from March to August.
- Sailfish are caught all year round.
- Wahoo and dog tooth tuna are best from June to September but are caught all year round.
- Yellow fin tuna show in large numbers from June to August but some remain close to the reef throughout the year.
- Barracuda and Spanish mackerel (Walu) are present in large numbers from October through March but can be caught all year round.

2. ENVIRONMENT STATUS IN KADAVU

2.1 Current state of Ecosystem

Being located far from the nearest urban center, Suva city Kadavu boasts some remaining untouched and unique ecosystem. The world famous Great Astrolabe Reef (GAR) stretches 30km off the north east coast of Kadavu. It barrier reef has outstanding hard corals, caves, wrecks and a fantastic array of marine life due to its rich currents and it provides the majority of fisheries activities in Kadavu. GAR consists of two barrier reefs and a lagoon structure with several islands - including Ono Island - inside the lagoon. There are fringing reefs around all the islands and patchy reef bommies close by. The eastern windward barrier reef breaks up at just a few passages to the open sea. The western leeward barrier reef is broken up more by passages, channels and stretches of bommie complexes. Only one nautical mile north of the GAR lies the smaller “North Astrolabe Reef” (NAR). It is an atoll of 4 nautical miles diameter (Planetary Coral Reef Foundation, 2015).

Tuqiri (2010) noted higher mean abundance and biomass in lagoon and reef area two study sites in Kadavu (Naikorokoro and Namuana villages) compared to other study sites across Fiji and this is probably due to the findings by Kuster et al. (2005) in Lau Islands that the increase in outboard vessels appeared to have a social impact causing traditional shore based fishing activities of women to be less. During low tides women wade in this area to fish and glean for edible invertebrates such as bivalves, univalves, octopus and sea cucumbers. Now, men are taking the responsibility by spear dive in fore reefs and outer reefs.

Tuiwawa *et al* 2010 describe the status of the terrestrial system in Nakasaleka district, the most northern tip of Kadavu island based on a rapid biodiversity assessment of the area as part of the Water and Nature Project (WANI)- IUCN project and some of the major findings include:

- Identification and mapping of six distinct forest/habitat types including the Secondary Forest, Grass/fallow Land, Lowland Rainforest (primary), Farmland, Cloud Forest and Mangrove Forest. Close to 70% of the overall vegetation is Secondary Forest with the Cloud Forest and Mangrove Forest being the smallest 3% and 2% respectively. Included in the secondary forest is the degraded forest or vegetation that is restricted close to human habitation.
- A total of 222 terrestrial fauna and flora species were recorded from the area with 28 undetermined species. Endemism is very low with 30% compared to the number of

indigenous species 116 (58%). Twenty-eight species were undetermined. Botanical collection of the area indicates the ill-representation of the district's flora with that currently known for the island and Fiji's archipelago being reinforced by the possibility of a new species of *Medinella* discovered during the collection.

- For the insect group, the preliminary finding suggests promising new findings in future biodiversity research for the area. For the diverse Coleoptera family (beetle family), 13 of the 59 families were identified in the survey including the rare Coleopteran families – Cerambycidae (long-horn bettles), Tenebrionidae (Darkling beetles) and Cleridae (Tiger beetles). The diversity of the beetle family attained from this project is a positive indication of a healthy forest system as beetles are known to be the main drivers of forest ecosystem functions - pollination, herbivory, decomposition and the recycling of nutrients. There were also new records of the endemic butterflies - *Papilio schmeltzi*. *P. schmeltzi, Euploea tulliolus forsteri*, *E. nemertes macleayi* and *E. boisduvalli* for the island, Kadavu.
- The avifauna (birds) of Kadavu stands relatively as the most well studied group. Evident were refuge of intact forest as indicated by the presence of four endemic species that included – the friendly ground dove, *Gallicolumba stairi*, and the collared petrel, *Pterodoma brevipes*. The absence and or establishment of some invasive or recently introduced exotic species suggest a healthy population of the native bird species across the district. Similarly the two large roosts of bats, *P. tonganus*, observed was a positive sign of seed dispersal in a terrestrial ecosystem. There was however, minimal observance of their occurrence and this raises concern to their conservation status, as it is currently listed a Globally Threatened species on the IUCN list.
- The rapid cultural site survey of the district revealed a rich history pertaining to traditional and cultural development that lined strongly to the identity of its people. There was evidence of destruction that were anthropogenically induced in the form of rearing livestock and natural processes thus the urgency to properly document these.

According to Watling, 2013 Kadavu is home to four endemic birds, namely the Kadavu Honeyeater *(Xanthotis provocator)*, Kadavu Fantail (*Rhipidura personata),* Kadavu Shining Parrot *(Prosopeia splendens)* and the Whistling Dove *(Ptlilinopus layardi).* In this regard, Kadavu has the highest number of endemic birds per land area in the world and this highlights the extent of responsibility for their protection and well-being.

2.2 Main Environmental Issues

Due to the lack of scientific studies to assess environmental threats in Kadavu, this diagnosis report mainly focus and highlight the main environmental threats currently experienced in Kadavu obtained from the recent ICM meeting (across the 9 districts in Kadavu (IAS, 2015). Like other larger islands in the Fiji archipelago, the pursuit for socioeconomic development has led to the degradation/destruction of natural resources on Kadavu.

2.2.1 Improper land-use methods

The use of slash and burn technique (fire) to clear land for agricultural activities is an issue of concern for the province. The increasing population on the island and high demand for agricultural produce (Kava & Dalo) from mainland Viti Levu has led to unsustainable methods of farming. Fire coupled with the use of pesticides and fertilizers for farming has led to decreased water quality on the island. The clearing of forest on the island has also exacerbated soil erosion and water pollution across the 9 districts (IAS, 2015).

2.2.2 Waste disposal

The absence of a proper waste disposal system on the island and lack of civic pride on the island has also been identified as a key environmental issue on the island. The growing litter problem along the coast lines of Kadavu have been stressed by the 9 districts during the recent ICM meeting (IAS, 2015).

2.2.3. Overfishing, Poaching and Illegal methods of fishing

Several major threats that were highlighted during the recent ICM meeting affecting the marine environment were highlighted at the ICM meeting. Apart from the land-based activities highlighted above that are inextricably linked to the marine environment, three common key issues highlighted by the 9 districts were:

i. Overfishing;
ii. Poaching; and
iii. Illegal methods of fishing.

The high demand for fish has led to overfishing and poaching from other villagers and some poachers are known to come all the way from Viti Levu on fiberglass boats and high powered outboard engine (Tuqiri, 2010). These activities are demoralizing current marine conservations efforts in the province. The use of *Derris* roots (traditional fish poison) is another growing concern highlighted by most districts (IAS, 2015).

2.2.4 Climate change effects

Changing weather patterns on Kadavu is an important environmental issue for the whole of Kadavu. Rising sea levels and extreme weather conditions have affected many coastal communities in the province. Increased tidal inundation has led to the construction of many seawalls along the coastlines. The prolonged El Nino (2015 to early 2016) event will most probably bring about punishing dry events that may affect many farmers (IAS, 2015). A common cyclone track from the northwest of Fiji often passes close to Kadavu (path between Viti Levu and Kadavu), which create significant storm surges for the whole Kadavu province.

3. GOVERNANCE

3.1 Government and policy

3.1.1 Central government

Central government is housed in Suva the capital city. The country is divided into four Divisions; Central (which includes Suva and all areas that are subsequently discussed in more detail in later sections of this report), Western, Eastern and Northern. Each of these divisions is headed by a Commissioner. Whilst the administrative importance of these divisions has historically waxed and waned, recent efforts by government have promoted planning, budgeting and resourcing at the divisional level. Within each division there are then a number of provinces. There are 14 Provinces in total in Fiji. Kadavu Province is part of the Eastern Division.

3.1.2 Provincial government

The functions of central government are decentralized at the provincial level. Each province has a Provincial Administration which is staffed by a number of largely government employees who have oversight of the functions of service provision to the population that reside in that province. The Kadavu Provincial Administrator is based in Vunisea, the main government station in Kadavu Island.

The Kadavu Provincial Office is headed by the Roko Tui[2] Kadavu. Most government functions are controlled at provincial level; though there are notable exceptions such as health care and educational provision which is decentralized to the divisional scale in the first instance. The Provincial Office's role is to look after affairs of the indigenous people in Kadavu.

3.1.3 City and municipal councils

In addition, there are twelve city (2) and municipal (10) councils that oversee the governance of urban areas. These councils comprise elected officials and are headed by a government appointed Special Administrator. Through the Ministry of Regional Development, rural areas are divided into Local Authorities that have advisory powers and provide a voice to all Fijians irrespective of racial background at the provincial scale. The local authorities also have mandate over the issuance of development licenses in the areas they control and also to foster businesses development. There is no municipal authority in Kadavu only a Provincial Administration system. Vunisea and Kavala are the two main business and government stations.

[2] Based on a decision in 2011 the Roko Tui is no longer necessarily a paramount chief; and is appointed by central government.

3.1.4 Indigenous I-Taukei

In parallel to the state run-government there is also a contemporary governance system linked to the indigenous iTaukei. The indigenous population iTaukei exist through family-units in a number of villages; with a number of villages comprising an iTaukei Tikina (district); and with a number of tikina comprising a province. Note however, there is a discrepancy between the iTaukei tikina district and the colonial definition of district which is used as an administrative unit for purposes including, in particular, the conduct of national census. Within each tikina there exists the Tikina Council which is comprised of village chief and village headman from the villages within that tikina. At the top of the Kadavu iTaukei administrative system within the province sits the Kadavu Provincial Council which is comprised of indigenous leaders with the paramount chief of the province as the head and the Roko Tui Kadavu as secretary, providing the link between the Provincial Council and the Provincial Office. The Provincial Council works with the Provincial Office to implement development programs and address development issues within Kadavu Province. Typically each rural iTaukei village will have a number of development committees comprised of community members and leaders. Each committee oversees a specific component of the development of that community. Committees typically include education, church, health, environment and village development. Depending on the communal ownership of assets there may also be, for example, a village carrier (vehicle) committee. In addition, women and youth normally have a committee. Committees report to the wider village meetings. Village meetings are held at least monthly; often every fortnight or weekly. Village meetings are chaired by the village chief with the village headman normally acting as secretary. The village headman is now paid by government to perform their role and acts as a conduit from village to Tikina meetings which in turn pass to the Provincial Council and Provincial Office. Similar governance processes to those in iTaukei villages exist in Indo-Fijian settlements- in which Advisory Councils convene meetings and oversee matters pertaining to development initiatives in the settlement.

The traditional governance system for communities within Kadavu Province consist of four major Vanua; Tavuki, Nakasaleka, Naceva and Nabukelevu, which was the basis for division of districts during the colonial era. This governance system is important as decisions regarding natural resources management and development are made in the various levels of the traditional governance system.

3.1.5 ICM policy and Practice

Fiji's Roadmap for Sustainable Socio-economic Development (FRSSD) 2014-2019 defines the implementation framework for Fiji and the National Climate Change Policy serves as an implementing tool for many of the strategies outlined in the Roadmap, such as:

- environmental protection, sustainable management and utilization of natural resources;
- strengthening institutional capacity for environmental management; and
- strengthening food security.

ICM work is one of those mandates that supports FRSSD in Fiji and is guided by the Fiji Environment Management Act, 2005. The establishment of the ICM Subcommittee was approved by the National Environment Council under the Fiji Environment Management Act in 2009. Since then, it has been meeting regularly and has produced a “Framework for the Establishment of ICM in Fiji”. Upon consultation with stakeholders, the ICMC determined that a more suitable first step would be to develop a framework for a national coastal plan "to review current coastal conditions in the context of tourism development, coral reef degradation, siltation and erosion, harvesting of marine resources, waste management, coastal reclamation and construction and natural disasters among others as well as assess the current legal and institutional governing framework so as to recommend proposals for action and policy towards sustainable coastal resource management for Fiji" (DoE 2011). One of the main recommendations from the Plan is to use the framework to build on experiences from bottom-up planning to develop provincial- level ICM plans that can be consolidated into a national document.

The ICM concept is still in the early stage of implementation in Kadavu, however over the last decade, a growing number of Fijian villages have begun to carefully regulate the use of their marine areas through the establishment of locally-managed marine areas (LMMAs). To date there are over two hundred of these LMMAs in operation in Fiji. These LMMAs have partner support of NGOs, government agencies and academic institutes which fall under the umbrella of the FLMMA network which in turn is part of the regional LMMA network (http://www.lmmanetwork.org/).

As the number of locally managed sites has increased, there has been an increasing focus on the management of these sites at the provincial level. The southern island province of Kadavu has been leading the way in this regard. Since 1997, a total of 60 no-take zones as part of a iqoliqoli (customary fishing ground)-wide LMMA, one gazetted marine protected area and four forest reserves have been established. Each iqoliqoli in Kadavu is now under some form of management with many having at least one no-take zone within their boundaries. These management initiatives were established when the Kadavu Provincial Administration with support from the Institute of Applied Science of the University of the South Pacific (USP-IAS) through a decentralization process established the Kadavu Yaubula (living-wealth) Management Support Team (KYMST). This support team was trained to do community-based adaptive management training and have now done so in all of the communities in Kadavu.

According to Wendt, 2013 the pre-existing network included no-take zones that were initiated between the 2001 and 2009 period. The average age of the existing no-takes was 4.6 years. Across the network, only a single no-take zone had been in existence for nine years (initiated in 2001). To date, there are:

- 77 *tabu* areas including permanent and temporary MPAs plus settlements
- 58 villages have 55 permanent MPAs areas

- 5 settlements have 5 permanent MPAs areas
- 4 forest reserves
- Watershed management in 2 districts and awareness though-out the province
- 5 village nurseries

As this ground-swell of management has organically grown, so too has the location and underlying principles of the placement and content of the management interventions being undertaken. Accordingly, whilst many of these management interventions are having well-defined success of ensuring food security at the individual community level through community observation, they arguably lack the scientific study to provide figures and statistics.

3.2 Communities and other stakeholders

Due to its isolation from Fiji's urban centers, stakeholders in Kadavu are primarily indigenous focused except for the few businesses that operate in the province. Table 4 present a brief summary of a stakeholder analysis conducted to understand the key decision makers and key players regarding development and resource management in Kadavu province.

Table 4 Key stakeholders and drivers in Kadavu province

Category	**Stakeholder**	**Role**
Village	Village Council	Decision making body for village development
	Church	Spiritual growth of congregation
	Village traditional Council	Decision making body on social issues experience by the village
	Development Committee	Plan and implement village development projects
	Resource management Committee	Sustainable development and resource management at the community level
	Land owning unit (*mataqali)*	Decision making body for use of indigenous lands
District	District Council	Oversee and approve development needs of villages before being passed to Kadavu Provincial

Category	Stakeholder	Role
		Office
	Church (circuit)	Oversee the operation of village churches under its umbrella
	District (Vanua) traditional Council	Decision making body on social issues experience by the district
Province	Kadavu Provincial Administrator	Head of government administration at province level.
	Kadavu Provincial Office	Oversee development needs and social system conflicts of villages within the Kadavu province
	Kadavu Church Division	Oversee the operation of church circuit
	Government extension Offices (Fisheries, Agriculture and Forestry)	Implement government projects on the ground
	Kadavu Yaubula Management Support Team	Set-up to oversee conservation work in Kadavu province
	Kadavu Fishermen Association	Cooperative setting to look at the welfare and marketing strategies for Kadavu fishers

There are a total of 9 districts in Kadavu province comprising of 73 iTaukei villages and some settlements distributed throughout the main Kadavu island.

District	Villages

District	Villages
Tavuki	Tavuki, Baidamudamu, Nukunuku, Nagonedau, Solodamu, Natumua, Waisomo, Namuana, Namalata, Galoa, Cevai
Ravitaki	Wailevu, Mokoisa, Muani, Ravitaki, Solovola, Matanuku, Nasegai Nasegai
Sanima	Drue, Navuatu, Naikorokoro, Naivakarauniniu, Namara, Mataso
Nabukelevu	Daviqele, Dagai, Talaulia, Lomati, Nabukelevura, Qalira, Nasau, Kabariki, Levuka, Muaninuku, Tabuya
Yawe	Nalotu, Natokalau, Korovou, Yakita, Naqalotu, Tawava
Naceva	Soso, Vukavu, Kadavu, Jioma, Niudua, Nacomoto, Dravuwalu, Muanisolo, Vunisei, Daku, Yavitu
Yale	Rakiraki, Gasele, Nauciwai, Levuka, Naioti
Nakasaleka	Nakoronawa, Lomanikoro, Nakaunakoro, Nakaugasele, Kavala, Lawaki, Solotavui, Tiliva, Matasawalevu, Nukuvou, Vacalea
Ono	Vabea, Waisomo, Narikoso, Naqara, Nabouwalu, Buliya, Dravuni

Land ownership in Kadavu is similar to other parts of Fiji and can be categorized into three main types. These consist of freehold land, state land and native land. In Fiji, out of these types, about 9% of the land is under freehold tenure in fee simple, about 3% is state land, and the remaining 88% of the land is Native land, however, in Kadavu the majority (97%) still under native land ownership at the clan level.

Since 1940, almost all iTaukei land boundaries had been (very roughly) surveyed and recorded on iTaukei Lands Commission maps that covered 90% of the country. The Register of iTaukei Lands completed the system by cross referencing the name of the landowning unit from the VKB with a map reference and lot number. Mataqali were "legally entrenched" as the central proprietary unit, although there are also yavusa and tokatoka that are land owning unit.

3.3 Public Participation

The three main fora where all development, social and environmental issues including the Climate Change issues are discussed in the monthly village meetings, quarterly district meetings and bi-annual provincial meetings. The village meeting is chaired by the village headman. An elected district representative chairs the district meeting with the Provincial Office providing administrative and secretarial support. The provincial meetings are normally held at least twice a year. Most of the people who are interested in development issues as well as other issues related to Kadavu are present in these meetings. All stakeholders who are responsible in economic activities, resource management and conservation initiatives and governance aspects in Kadavu are present in the provincial meetings.

4. RESULTS OF THE BASELINE VULNERABILITY REDUCTION ASSESSMENT (VRA)

See full report in Annex 1.

The assessment was conducted in Matasawalevu, Galoa and Nabukelevu-i-ra villages and also with a team representing the Kadavu Yaubula Management Support Team (KYMST). The three sites represented the three geographical setting of the province. Matasawalevu is located towards the eastern tip of Kadavu Island with very limited land and boat access. The resource use pattern in this village is similar to other villages within this section of Kadavu with small scale fisheries and agriculture dominating livelihood practices. Nabukelevu-i-ra is located on the western region of the main island with easy land and boat access. Large scale agriculture in the Kadavu context is predominant in this village together with artisanal fisheries and also in villages within this section of the island. Galoa Island is located in the middle section of Kadavu island group and can only be access by a ten minutes boat ride from Vunisea, Kadavu's main business center and government station. Market access in this region of the island is easy compared to the eastern and western regions of Kadavu Island.

The assessment with the KYMST provided more broad information of climate change vulnerability issues in Kadavu Province. The two Assistant Roko Tui, Fisheries extension officer and Agriculture extension Officer were part of this focus group. Given their knowledge of Kadavu from frequent site visits for the majority of the villages and also from issues raised through District and Provincial Council meetings or merely from villagers visiting these

government offices, the information that they supplied were valuable in prioritizing sites for RESCCUE's activities.

Focus group interview technique was applied for the collection of the Kadavu VRA data. For each village, the focus group discussions were conducted in small groups of 4-10 individuals, mainly a representation of all age group. This was done so that all the different views and perceptions within a village are captured. Before all the VRA exercise start, each team briefed the focus group about climate change and its impacts. This was followed by a group exercise whereby major events that have affected the village in the past were recorded and presented. The exercise was conducted so that the group has a clear understanding of the impacts of climate change and observed trends in the severity and frequency of the impacts.

- What happens when there are extremely high wave incidences? How do these affect you and your community, including the ecosystems on which you rely?
- What would happen if these waves were twice as high? How do these affect you and your community, including the ecosystems on which you rely?
- What stands in the way of adapting to increasing high waves (e.g. king tides)? To what extent do you or your community have the means manage these extreme events?
- How confident are you that the improvements in coastal management delivered by the project will continue after it ends?

VRA Findings

Sea level Rise	
Indicator 1	*What happens when there are extremely high wave incidences?* *How do these affect you and your community, including the ecosystems on which you rely?*
Villages	**Score** **1 = Very serious; 2 Serious; 3 = Moderate; 4 = Not so bad; 5 No problem**
Galoa	**2**
Nabukelevu-i-ra	**3**
Matasawalevu	**2**
KYMST	**3**
Indicator 2	What would happen if these waves were twice as high? How do these affect you and your community, including the ecosystems on which you rely?
Villages	**Score** **1 = Very serious; 2 Serious; 3 = Moderate; 4 = Not so bad; 5 No problem**
Galoa	**1**
Nabukelevu-i-ra	**2**
Matasawalevu	**1**
KYMST	**2**
Indicator 3	**What stands in the way of adapting to increasing high waves (e.g. king tides)? To what extent do you or your community have the means manage these extreme events?**
Villages	**Score** **1 = No capability; 2 Low capability; 3 = Manageable; 4 = Capable; 5 Very capable**
Galoa	**3**
Nabukelevu-i-ra	**4**
Matasawalevu	**2**
KYMST	**4**
Indicator 4	**How confident are you that the improvements in coastal management delivered by the project will continue after it ends?**
Villages	**Score**

Sea level Rise	
	1 = Not confident; 2 Low confident; 3 = Moderate; 4 = Quite confident; 5 Very confident
Galoa	**5**
Nabukelevu-i-ra	**5**
Matasawalevu	**4**

Flood	
Indicator 1	**What happens when there are frequent flooding events? How do these affect you and your community, including the ecosystems on which you rely?**
Villages	**Score** **1 = Very serious; 2 Serious; 3 = Moderate; 4 = Not so bad; 5 No problem**
Galoa	**2**
Nabukelevu-i-ra	**5**
Matasawalevu	**1**
KYMST	**3**
Indicator 2	**What would happen if these flooding events occur much more frequent (e.g. 4 > times a month)? How would this affect you and your community, including the ecosystems on which you rely?**
Villages	**Score** **1 = Very serious; 2 Serious; 3 = Moderate; 4 = Not so bad; 5 No problem**
Galoa	**1**
Nabukelevu-i-ra	**4**
Matasawalevu	**1**
KYMST	**2**
Indicator 3	**What would happen if these flooding events occur much more frequent (e.g. 4 > times a month)? How would this affect you and your community, including the ecosystems on which you rely?**
Villages	**Score** **1 = No capability; 2 Low capability; 3 = Manageable; 4 = Capable; 5 Very capable**
Galoa	**4**
Nabukelevu-i-ra	**5**
Matasawalevu	**1**
KYMST	**4**
Indicator 4	**What stands in the way of adapting to flood**

Flood	
	management? To what extent do you or your community have the means manage these extreme events?
Villages	**Score** **1 = Not confident; 2 Low confident; 3 = Moderate; 4 = Quite confident; 5 Very confident**
Galoa	**4**
Nabukelevu-i-ra	**5**
Matasawalevu	**4**
KYMST	**4**

Drought	
Indicator 1	**What happens when there are extremely drought events?** **How do these affect you and your community, including the ecosystems on which you rely?**
Villages	**Score** **1 = Very serious; 2 Serious; 3 = Moderate; 4 = Not so bad; 5 No problem**
Galoa	**2**
Nabukelevu-i-ra	**2**
Matasawalevu	**2**
KYMST	**2**
Indicator 2	**What would happen if drought goes for a longer period (e.g. 6> months)?** **How would this affect you and your community, including the ecosystems on which you rely?**
Villages	**Score** **1 = Very serious; 2 Serious; 3 = Moderate; 4 = Not so bad; 5 No problem**
Galoa	**2**
Nabukelevu-i-ra	**2**
Matasawalevu	**1**

Drought	
KYMST	**2**
Indicator 3	**What stands in the way of adapting to long period of drought? To what extent do you or your community have the means manage these extreme events?**
Villages	**Score 1 = No capability; 2 Low capability; 3 = Manageable; 4 = Capable; 5 Very capable**
Galoa	**4**
Nabukelevu-i-ra	**5**
Matasawalevu	**3**
KYMST	**4**
Indicator 4	**How confident are you that the improvements in water management delivered by the project will continue after it ends?**
Villages	**Score 1 = Not confident; 2 Low confident; 3 = Moderate; 4 = Quite confident; 5 Very confident**
Galoa	**5**
Nabukelevu-i-ra	**5**
Matasawalevu	**4**
KYMST	**5**

Cyclone	
Indicator 1	**What happens when there are extreme tropical cyclone incidences? How do these affect you and your community, including the ecosystems on which you rely?**
Villages	**Score 1 = Very serious; 2 Serious; 3 = Moderate; 4 = Not so bad; 5 No problem**
Galoa	**2**
Nabukelevu-i-ra	**1**

Cyclone	
Matasawalevu	**2**
KYMST	**2**
Indicator 2	**What would happen if these tropical cyclones were as twice strong? How would this affect you and your community, including the ecosystems on which you rely?**
Villages	**Score 1 = Very serious; 2 Serious; 3 = Moderate; 4 = Not so bad; 5 No problem**
Galoa	**1**
Nabukelevu-i-ra	**1**
Matasawalevu	**1**
KYMST	**1**
Indicator 3	**What stands in the way of adapting to increasing intensity of tropical cyclones? To what extent do you or your community have the means manage these extreme events?**
Villages	**Score 1 = No capability; 2 Low capability; 3 = Manageable; 4 = Capable; 5 Very capable**
Galoa	**3**
Nabukelevu-i-ra	**4**
Matasawalevu	**4**
KYMST	**3**
Indicator 4	**How confident are you that the improvements in tropical cyclone disaster management delivered by the project will continue after it ends?**
Villages	**Score 1 = Not confident; 2 Low confident; 3 = Moderate; 4 = Quite confident; 5 Very confident**
Galoa	**4**
Nabukelevu-i-ra	**5**
Matasawalevu	**4**
KYMST	**4**

Ocean Acidification	
Indicator 1	**What happens when there are continuous coral bleaching? How do these affect you and your community, including the ecosystems on which you rely?**
Villages	**Score 1 = Very serious; 2 Serious; 3 = Moderate; 4 = Not so bad; 5 No problem**
Galoa	**2**
Nabukelevu-i-ra	**3**
Matasawalevu	**2**
KYMST	**2**
Indicator 2	**What would happen if these coral bleaching affects 50%> of your iqoliqoli reef? How would this affect you and your community, including the ecosystems on which you rely??**
Villages	**Score 1 = Very serious; 2 Serious; 3 = Moderate; 4 = Not so bad; 5 No problem**
Galoa	**1**
Nabukelevu-i-ra	**1**
Matasawalevu	**1**
KYMST	**1**
Indicator 3	**What stands in the way of adapting to coral bleaching? To what extent do you or your community have the means manage these extreme events?**
Villages	**Score 1 = No capability; 2 Low capability; 3 = Manageable; 4 = Capable; 5 Very capable**
Galoa	**3**
Nabukelevu-i-ra	**2**
Matasawalevu	**3**
KYMST	**3**
Indicator 4	**How confident are you that the improvements in coral reef management delivered by the project will continue after it ends?**

Ocean Acidification	
Villages	**Score** **1 = Not confident; 2 Low confident; 3 = Moderate; 4 = Quite confident; 5 Very confident**
Galoa	**4**
Nabukelevu-i-ra	**3**
Matasawalevu	**4**
KYMST	**5**

5. BRIEF HISTORY OF INTERVENTIONS

At the moment, there is no formal ICM setup in Kadavu Province, even though IAS has just started with the introduction of ICM as a concept for sustainable natural resource development through the district workshops conducted in August, 2015. The workshop aimed to revise community resource management action plans developed through the LMMA project with emphasis on incorporating ICM strategies and concepts in the new resource action plans. This section will basically describe LMMA environmental work in Kadavu, which is the platform from which the proposed ICM work will build on.

In response to the environmental issues faced by Kadavu Province, the people of Kadavu with assistance from the Institute of Applied Sciences (IAS) of the University of the South Pacific (USP) and other Fiji Locally Managed Marine Area (FLMMA) Network partners set out on a collaborative effort to restore Kadavu's living wealth in the mid-2000. It started with a series of environmental awareness workshops leading to the development and implementation of village natural resource management plans. Each management plan amongst other resource restoration and threat reduction activities include:

- setting up of Marine Protected Areas (MPAs) areas and locally managed marine areas,
- protection of the remaining native and virgin forest areas left on their land,
- small-scale replanting of mangroves and trees in a few villages namely, Daku, Naivakarauniniu and Vunisei
- guidelines for sustainable farming and fishing practices,
- and partnering with tourist operators to create eco-tourism activities to generate income.

The encouraging outcomes of these pilot initiatives led to the setting up of the Kadavu Yaubula Management Support Team (KYMST) in 2003. The main function of the KYMST was to take the lead in scaling up the village-level resource management approach to the 70 villages in the province and to assist in sustaining the resource management activities in established sites. The KYMST also attend and frequently update village, district and provincial council meetings on the marine resources and resource management activities planned and implemented within the village, district and province. As a framework for coordination, the Roko Tui Kadavu and the

Provincial Administrator (PA) lead the team and the Fisheries Extension Office would house and coordinate the operations of the team. The core of this support team is made up of trained community members and fish wardens.

Overseas volunteers (Peace Corps) and the various government extension officers within the province, provincial and district office administrators, the Fisheries Research Section in Lami and the FLMMA network partners provides technical advice and additional manpower to carry out the KYMST's main function and expected roles.

In 2005, KYMST with the help of the Coral Cay Conservation (CCC) was able to complete 25km of reef surveys in 125,000 square meters of Kadavu's waters. Results show substantial spillover, an increase in the number of fish and invertebrates from MPAs to the adjacent managed marine areas, within each fishing ground (Wendt 213).

The progress of KYMST has had some mixed results over the last 8 years. The challenge of sustaining the initiative given the frequent turnover of key officials, funding needs and apparent mismatch and disconnect between village and provincial level efforts has overshadowed the KYMST's scaling-up success. Since KYMST's establishment in 2003, the number of MPAs has increased from thirteen to seventy seven (including settlements, and temporary and permanent), five of which have gained full membership to the LMMA network.

However, there are problems of not having enough resources, sustainable funding and better communication in operationalizing the role of the KYMST. These issues were further compounded by the frequent turnover rate of KYMST people engaged in its establishment and development. In the process KYMST became dormant and communication in between sites and with partners been subsequently halted. As a result, the threats such as opening of MPAs areas and disregard for sustainable practices have been reported to re-occur over the last 3 years. Thus there is an urgent need to improve the KYMST coordination at the provincial and district level and empower district and village level natural resource officers in improving the sustainable management of the natural resources at the community level. There have also been frequent changes in Rokos, with some not enthusiastic for KYMST work as the original Roko.

In 2007, Mount Nabukelevu in the district of Nabukelevu, Kadavu was identified by Birdlife International as an Important Bird Area (IBA FJ12) as it supports four species and eight subspecies endemic to Kadavu. Birdlife International then implemented a project aimed to build awareness and participation of local leaders and community members in the protection and recovery plans for threatened species.

An IAS postgraduate student in 2010- 2013 undertook a research project to map the inshore habitats of Kadavu and discuss development of a network of marine protected areas (MPAs) using the MARXAN tool (Wendt 2013).

In 2010-2012, IAS implemented an IUCN's Water and Nature Initiative (WANI) funded project focused on good governance, payments for ecosystem services, and learning and leadership, with the aim to improve the quality and sustainability of water resources in Kadavu province.

Three LMMA sites in Nakasaleka district, Kadavu province provided the location for work to begin on up-scaling the participatory model to include ridge-to-reef management. This bottom-up model provided a cost-effective and integrated sustainable water resource management approach that can be replicated to other sites in Fiji, and the Pacific.

In 2013- 2015, an SPC project titled "Building Climate Resilience and Coastal Resource Governance Capacity in Kadavu, Fiji Islands" extended the work to the districts of Sanima and Ravitaki. The district of Ravitaki was the focal point of an expansion to its seaweed farming initiative as an alternative income generation activity; however several lessons were identified from trying to initiate new seaward farming sites in the district, its planning and implementation, governance and management. Sanima district was focused more on a catchment management approach where land-based adaptation activities were earmarked for this site. One of the main land-based activities in Sanima was to add value to their virgin coconut oil making project in the village of Namara.

6. RESCCUE KADAVU LOGFRAME

The Kadavu logframe aims at:

- Providing the Fiji consortium operators and SPC RESCCUE Secretariat a synthetic view of what RESCCUE aims to achieve in Kadavu; and
- a project management tool for the RESCCUE team and the operators to monitor and evaluate the various outcome, deliverable and the impact of RESCCUE at the local and provincial and national level.

Annex 2 provides the entire logframe for Kadavu. The logframe provides guidance to the project implementation and management process. In addition, it ensures that the regional and national outcome and output are aligned and achieved accordingly.

7. OPPORTUNITIES AND PITFALLS FOR RESCCUE

7.1 Synthetic summary of first part

Given the location and isolation of Kadavu province from the nearest main urban, Suva and Fiji's largest island, Viti Levu, its natural resources and ecosystem are vulnerable due to anthropogenic and natural activities. The shift from the subsistence to an economic based community, coupled with the inaccessibility of environmental awareness information man-made activities have contributed to the vulnerability of Kadavu's ecosystem. Kadavu is located south of the main island of Viti Levu and apart from access by sea, it can also be accessed by air service from Nausori airport (near Suva) in approximately 45 minutes or around one hour from Nadi.

The indigenous ITaukei make up the majority of the population in Kadavu that is about 98% of the total population. Analysis of the population data suggests that there is high birth rate, high death rate and low life expectancy in Kadavu province and this is similar to the national trend. Out-migration in Kadavu is becoming an issue for the province and is also reflected in the dependency ratio, which is still much higher than the national average and this may be due the population's dissatisfaction with living conditions and economic opportunities in the province.

However, economic opportunities still exist in the form of farming, fishing and other primary sources of income. Full time employment is only available to only a few who work for the government and the few tourism operators in the province. All other monetary sources are agriculture-based and either seasonal or part-time. Farming for kava (yaqona in Fijian), a species of the pepper family (*Piper methysticum*) and taro have developed into the role of major cash crops. Subsistence fishing is also an important aspect of the socioeconomics of villages in Kadavu.

Being located far from the nearest urban center, Suva city Kadavu boasts some remaining untouched and unique ecosystem. Its barrier reef has outstanding hard corals, caves, wrecks and a fantastic array of marine life due to its rich currents and it provides the majority of fisheries activities in Kadavu. For the terrestrial ecosystem, Kadavu's forest cover is still in good condition as compared to other similar island system such as Taveuni. However, the pursuit for socioeconomic development has led to the degradation/destruction of natural resources on Kadavu and major environmental threats include improper land-use methods, improper waste disposal, fishing related issues (overfishing, poaching and illegal methods of fishing) and climate change effects.

Given past experiences on natural resource management in Kadavu province starting with the LMMA concept, relevant stakeholders still realize the need to compliment past experiences with innovative concepts to ensure the sustainability of this island system. The integrated coastal management concept through the RESCCUE project is anticipated to address this gap in Kadavu province since it will ensure the management of the entire island ecosystem and most importantly, harmonizing community's effort with national government policies and mandates.

Also, the RESCCUE project will focus on maximizing benefits of ecosystem services though the implementation of economic and climate change adaptation tools at the community and provincial level.

7.2 Opportunities and pitfalls for RESCCUE implementation

Some of the factors that exist in Kadavu province which can be tapped to ensure the successful implementation of the RESCCUE project include the following:

7.2.1 Opportunities

I. Based on the socioeconomic and biophysical information, the current status of Kadavu province, RESCCUE project could enable communities and other stakeholders to establish or develop improvement in ecosystem services strategies with conservation as its primary goal. Conservation initiatives such as the LMMA enhance community resilience and adaptive capacity to the impacts of climate change. With a healthier marine ecosystem through the establishment of locally managed marine areas, the local community main source of protein is secured. Moreover, the coastal environment where all of the villages are situated are protected as well.

II. Identify and implement when feasible possible financial instruments that could be considered to assist current LMMA initiatives. An example would be to engage resort owners in Kadavu in finding out best approach for establishing a PES.

III. Apply the Ecosystem Service Review (ESR) Framework
The Ecosystem Services Review for Impact Assessment (ESR for IA) framework provides practical instructions to environmental and social practitioners on how to incorporate ecosystem services throughout environmental and social impact assessment. In terms of RESCCUE it is the impact of ICM and CCA initiatives that will improve decision and planning processes in managing the resources sustainably at local, provincial and national levels.

IV. Identify means to incorporate current community based initiatives such as the Fishermen Association with ICM activities in addressing sustainable commercial fishing. The RESCCUE project, whose ultimate goal is to increase the climate change resilience of Pacific-island ecosystems, in this case Kadavu province, aims at maintaining and strengthening the services those ecosystems provide communities by building local communities' governance and disaster management capabilities, is in line with the province's vision as stated in the Kadavu Strategic Development Plan.

V. Support from government, the private sector, NGOs and communities
- The implementation of past environmental projects in Kadavu province have seen the willingness and interest of all stakeholders to ensure the sustainability

of the island group's natural resources and the local population (Institute of Applied Sciences 2003, 2012, 2014). Future similar initiative such as the RESCCUE project will be mostly supported by Kadavu province stakeholders since the concepts are similar to past successful projects. The idea of participating in the RESCCUE project was unanimously endorsed at the Kadavu Provincial Council meeting in late 2014.

VI. Existence of community-based structures
- The KYMST LMMA and Kadavu Organic Island work are two of the best examples which the RESCCUE project can be incorporated into to ensure harmonious entry into the province. Build on existing efforts rather than creating a new operation standard has been proven by international organizations to contribute to project implementation success (Rotary International 2012).

VII. Increase environment awareness at Province to village Level
- As highlighted in the previous section, the resource management work started in Kadavu in early 2000 with a series of awareness programs and this has resulted in the locals and government extension officers being aware of their roles and responsibilities to ensure the sustainability of the island-based system. Transforming these knowledge to ensure the continuous provision of ecosystem services and benefits, as outlined in the vision of the RESCCUE project compliments the communities efforts.

7.2.2 Low hanging fruits

I. Ecosystem restoration- Previous work such as WANI and LMMA projects implemented by IAS were well received by the communities in Kadavu and the locals were very supportive of these initiatives. The RESCCUE project can complement these efforts due to people's support and receptive of the concepts.

II. Improvement of fisheries and costal management- All the environment management work in Kadavu originated from the LMMA work which focused more on the protection and management of marine resources. RESCCUE project can build on existing success to further improve operation and management of MPAs and other management strategies.

7.2.3 Pitfalls

The high key personnel turnover at the provincial (Roko, PA etc.) and community (village headman, chief etc.) can be an opportunity or a pitfall for the project. In the context of pitfall, some key personnel for past projects are sometimes replaced without providing a good transition for the replacement and this usually lead to the loss of project work momentum.

Socio-political issues in all levels of the project starting from project management, provincial and community level might affect the whole project implementation if the precautionary approach is not adopted. Due to the intertwined and close relationship of social structures, institutional relationship and environmental issues in Fiji an understanding of the local context is important to ensure the successful implementation of the RESCCUE project.

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ANNEX 1 KADAVU CLIMATE CHANGE VULNERABILITY REDUCTION ASSESSMENT REPORT

Introduction

The Institute of Applied Science of the University of the South Pacific IAS has been assigned by SPC through its RESCCUE project to be the main implementer of the project. The Restoration of Ecosystem Services and Adaptation to Climate Change (RESCCUE) project is funded by the French Development Agency and the French Global Environment Facility, facilitated through the Department of Environment Fiji and coordinated by The Pacific Community (SPC) in Noumea. The goals of the project in Fiji are to improve community resilience to climate change through integrated coastal management in the two provinces of Kadavu and Ra, informed by a wide range of economic analyses, and to develop economic and financial mechanisms to support coastal management in the long term.

Specific objectives at Fiji sites level are:

- Strengthen **integrated coastal management and adaptation to climate change**;
- Strengthen the **use of economic analysis** for integrated coastal management;
- Ensure **economic and financial sustainability** of integrated coastal management;
- Facilitate **learning, dissemination and replication** of experiences gained from Ra and Kadavu.

As part and/or complement to the ICM plan and activities, and in coherence with the Republic of Fiji National Climate Change Policy, IAS will (i) synthetize existing knowledge about current and projected local climate change impacts ; (ii) clarify and improve the contribution of identified ICM activities in Kadavu Province to climate change adaptation ; (iii) identify and implement, in collaboration with local authorities and actors, other activities contributing effectively to climate change adaptation. In particular, the operator will seek effective collaboration with the SPC/GIZ CCCPIR and other climate change related projects in Fiji, and make proposals to implement joint activities.

Based on the above assigned tasks, IAS conducted the Kadavu Climate Change Vulnerability Reduction Assessment (Kadavu VRA) during 20-24 November, 2015. The purpose of the assessment is to improve understanding of the impact of climate change

on local communities in Kadavu province and identify adaptation strategies that can be implemented by the project to reduce these impacts. This assessment represents the ongoing efforts to document the complicated impact of climate related environmental change on Kadavu communities that depend on natural resources for their livelihood and wellbeing.

The VRA methodology incorporated in this assessment is based on a framework of "enabling factors" for Community-Based Adaptation (CBA). The VRA is designed to feed into and strengthen planning processes by providing vital, context specific information about the impacts of climate change and local vulnerability. The process of gathering, analysing and validating this information promotes invaluable dialogue within communities, and between communities and other stakeholders.

This assessment has integrated current and projections of climate impacts in a comprehensive fashion to construct an overall analysis of the communities' vulnerability and adaptation needs. Along with the results of this assessment, this report includes recommendations enriched by options generated by one of the key stakeholders, government extensions based in Kadavu.

Method

The assessment was conducted in Matasawalevu, Galoa and Nabukelevu-i-ra villages and also with a team representing the Kadavu Yaubula Management Support Team (KYMST). The three sites represented the three geographical setting of the province. Matasawalevu is located towards the eastern tip of Kadavu Island with very limited land and boat access. The resource use pattern in this village is similar to other villages within this section of Kadavu with small scale fisheries and agriculture dominating livelihood practices. Nabukelevu-i-ra is located on the western region of the main island with easy land and boat access. Large scale agriculture in the Kadavu context is predominant in this village together with artisanal fisheries and also in villages within this section of the island. Galoa Island is located in the middle section of Kadavu island group and can only be access by a ten minutes boat ride from Vunisea, Kadavu's main business center and government station. Market access in this region of the island is easy compared to the eastern and western regions of Kadavu Island.

The assessment with the KYMST provided more broad information of climate change vulnerability issues in Kadavu Province. The two Assistant Roko Tui, Fisheries extension officer and Agriculture extension Officer were part of this focus group. Given their knowledge of Kadavu from frequent site visits for the majority of the villages and also from issues raised through District and Provincial Council meetings or merely from

villagers visiting these government offices, the information that they supplied were valuable in prioritizing sites for RESCCUE's activities.

Focus group interview technique was applied for the collection of the Kadavu VRA data. For each village, the focus group discussions were conducted in small groups of 4-10 individuals, mainly a representation of all age group. This was done so that all the different views and perceptions within a village are captured. Before all the VRA exercise start, each team briefed the focus group about climate change and its impacts. This was followed by a group exercise whereby major events that have affected the village in the past were recorded and presented. The exercise was conducted so that the group has a clear understanding of the impacts of climate change and observed trends in the severity and frequency of the impacts.

VRA Findings

Sea level Rise

Villages	Indicator 1- What happens when sea level rise.	Effects on community & environment	Score
Galoa	- Erosion of coastal areas (evident when rocks are uncovered). - Coastal plants importance for livelihood such as coconut trees and those that have medicinal value, are constantly washed away - Disappearance of the common marine food such as land-crabs (lairo), bivalves (kaikoso, kai takadiri). - Inundation becomes obvious and affects low-lying farming areas.	- Community members have to swim across the flooded roads -Rubbish and debris are washed out (which is an advantage) - Invertebrates (sulua) are washed ashore daily	2
Nabukelevu-i-ra	It has been observed that coconut trees are gradually washed out to sea due to coastal erosion.	The absence of the annually harvested edible seaworm (Balolo *Eunice viridis*).	3
Matasawalevu	The village gets flooded.	- Coconut trees don't bear productively while other fruit trees die off - Reduction in mangrove cover and increased in coastal erosion - Coastal plants are washed out.	2
KYMST	- Erosion of coastal areas. - Coastal plants important for livelihood such as coconut trees and those that have medicinal value, are constantly washed away - Inundation becomes obvious and affects low-lying farming areas.	- Reduction in village size - Coconut trees don't bear productively while other fruit trees die off - Reduction in mangrove cover and increased in coastal erosion - Coastal plants are washed out.	3
Villages	**Indicator 2- What would happen if the**	**Effect on community& environment**	

	impact is twice as high		
Galoa	- Coastal plants die off - The village will be underwater	-The whole village will have to be relocated	1
Nabukelevu-i-ra	It can cause inundation to the school and some coastal settlements	Some homes will have to be relocated to a higher elevation.	2
Matasawalevu	- Houses will have to be relocated - It would mean that a number of houses at the lower end of the village will be inundated.	- the natural environment will be damaged - House relocation would require a lot of effort - its highly likely that the area where the village hall and dispensary is located will be eroded.	1
KYMST	- It can cause inundation to farming areas - Worsen coastal erosion	Many villages in Kadavu are located close to the shoreline, and this will affect house structure Affect food security	2
Villages	**Indicator 3- Barriers to adaptation activities**	**Means to manage the event**	
Galoa	- Laziness - People are resorting to mangroves for firewood (it's usually fetched from the bush)	The community are keen to put into practice their adaptation plan	3
Nabukelevu-i-ra	We don't see any hindrance in adapting to such extreme events.	Qualified academics who are members of the village are constantly giving sound advice to the village committee on how to manage these events.	4
Matasawalevu	- Non-cooperation of community members - Community members do not implement what they have learnt (from past workshops)	- Mangrove seedlings - The effort to implement if they were well informed of their roles.	2
KYMST	The problem is very relevant to most villages	Relocation	4

	in Kadavu and we do not don't see any hindrance in implementing adaptation activities.	Planting of coastal trees Seawall	
Villages	**Indicator 4: Sustainability after RESCCUE**		
Galoa	There is high capability to plant more coastal trees such as Dilo (*Calophyllum* sp),Dabi (*Xylocarpus* sp) and the coastal almond Tavola (*Terminallia* sp)		5
Nabukelevu-i-ra	There is reassurance of this in the village from its Headman, the Committee and Clan leader.		5
Matasawalevu	There is capability to plant coastal vegetation		4
KYMST	Adaptation strategies are part of the government policies and this assures the active role of the relevant government department to ensure sustainability		5

General Observations

- Changes not so obvious in Nabukelevu-i-ra
- King tides is usually observed between November to February
- Huge waves are seasonal (only seen when rain coincides with high tide)
- Reforestation of coastal plants
- Cultivate fruit plants at higher grounds
- Plant more mangroves
- Most houses are built at low lying areas and need to be relocated if situation gets worse
- Seawalls are preventing water flow into mangrove habitats in Matasawalevu
- The current mangrove cover and health in Galoa are reassuring that it can combat effects of sea level rise.

- It will be important to inform and advice the community of the significance of adaptation preparation for natural disasters.
- It's very important to encourage the villagers of the need for adaptation and adaptive approach is used in all phases of implementation.
- Other villages in Kadavu that affected by sea level rise include Solodamu, Levuka I Yale, Levuka Nabukelevu, Wailevu, Nasegai, Tabuya, Muaninuku, Dravuwalu, Daku, Gasele, Rakiraki, Navotu, Drue, Tavuki, Mokoisa, Waisomo, Vabea, Naqara, Buliya and Dravuki

Flood

Villages	**Indicator 1- What happens when there is a flood?**	**Effects on community & environment**	**Score**
Galoa	-Debris are washed into the village - Erosion occurs	- The debris is a high risk to the villagers especially the children - Farms are destroyed; water sources are contaminated. - Destroys bivalves and other marine lives. - It tampers important habitats	2
Nabukelevu-i-ra	There hasn't been such an event.	The village and its households have not been affected.	5
Matasawalevu	- Water level increase - Water level rises when it coincides with high tide - Erosion of farms (Leleisiga) - Farms are damaged	- There's a lot of mud along the coast - The muddy walkway at low tide gets more soggy - It's a constraint to using engine powered boats	1
KYMST	This event is not very common across Kadavu since there are only a few small to medium sized rivers running close to villages.	- Destruction of houses and infrastructure within the affected vllages	3

Villages	**Indicator 1- What happens when there is a flood?**	**Effects on community & environment**	**Score**
Villages	**Indicator 2- What would happen if the frequency increases**	**Effect on community& environment**	
Galoa	- More houses will be destroyed - Health risk increases - Root crops will rot faster	- More are prone to sickness - Villagers will be forced to resort to processed food	1
Nabukelevu-i-ra	Possibly, the small water pools and road may get flooded but it is not seen as a high risk.	No effect.	4
Matasawalevu	- Increased sedimentation - High marine life mortality in mangrove and reef habitats	- Constraints to our daily movement - Fishing (gleaning) will be harder - It will be a barrier to school children in terms of transportation	1
KYMST	- More houses in the affected villages will be destroyed - Health risk increases - Increased sedimentation	- More are prone to sickness - Villagers will be forced to resort to processed food - Constraints to our daily movement - Top soil washed away and affect farming areas	2
Villages	**Indicator 3- Barriers to adaptation activities**	**Means to manage the event**	
Galoa	- Weather - The changing weather pattern is unfavorable - Laxity - Lack of Awareness	The community are keen to put into practice the adaptation plan	4
Nabukelevu-i-ra	We don’t see any hindrance to the issue.	- Villagers are cooperative when it comes to planning adaptation programs. - The clan leaders are on the right track	5

Villages	Indicator 1- What happens when there is a flood?	Effects on community & environment	Score
		by drafting vulnerability reduction plans.	
Matasawalevu	- Non cooperation - Removal of trees close stream banks	- The mangrove cover and health is looking sufficient to combat flooding	1
KYMST	- For those who are affected this issue has been highlighted in past village or district council meeting, therefore villagers will cooperate	- Relocation - River diversion system - River retaining wall - Dreadging	4
Villages	**Indicator 4: Sustainability after RESCCUE**		
Galoa			4
Nabukelevu-i-ra	Leaders of the clan, village committee and headman are very reassuring of the village's capability to continue improving water management to prevent our families from such an event in the future.	This issue has no effect to the village, thus the village are very confident in their leadership to continue giving the best adaptive management plans to keep the village safe.	1
Matasawalevu			4
KYMST	Government department are looking into addressing the concerns of the affected villages and assures the government to take an active role in the project sustainability.		4

General Observations

- There is no river or stream around Nabukelevu-i-ra, therefore flooding is not an issue. The water is sourced from a reservoir about five miles away.
- Drains are not deep enough in Matasawalevu to ensure the
- There are enough forest cover along the stream and river banks

- Plant more mangroves
- Plant more trees along the stream banks
- Complete the concrete footpath for ease of movement I Matasawalevu
- Have an ongoing tree planting program in Kadavu for villages badly affected by this issue
- The issue of flooding affects a few villages in Kadavu and this include Nakoronawa, Lomanikoro, Nakaugasele, Nakaunakoro, Tabuya and Muaninuku
- Set a devotion program to pray about climate change

Drought

Villages	**Indicator 1- What happens when there is a drought?**	**Effects on community & environment**	**Score**
Galoa	- Water source for drinking and washing dry out. - The weather is a lot warmer than normal	- Crops for sustenance and income are affected - More trees die	2
Nabukelevu-i-ra	- It affects the kava, taro and vegetable farms - It also dries out the *Tilapia* fish farm	Financial aspects to meet educational needs, church and community demands are greatly affected.	2
Matasawalevu	- Cracks are noticed on the ground - Rivers and streams dry out - Vegetables and root crops wither, die.	- Lack of food - Farmland are prone to uncontrollable fire	2
KYMST	- Affects farm produce - Water source for drinking and washing dry out. - The weather is a lot warmer than normal	- Crops for sustenance and income are affected - More sickness - Affects food security - Farmland are prone to uncontrollable fire	2
Villages	**Indicator 2- What would happen if the frequency increases**	**Effect on community& environment**	

Galoa	- Effort for survival would also increase - Fruit trees such as citrus plants and mangoes wont bear fruits productively - Harvest seasons will be altered. - Increased in health risk from flies - Marine catch will be depleted - Annually harvested seaworm (Balolo) will disappear. - Farms will be destructed	- The duration and distance to fetch for water and food would be longer - Villagers will be forced to resort to processed food - Health risks will need to be closely monitored - We will then realize the need to improve our spiritual life with God - There will be a boost from the leaders to live conservatively. (good management)	2
Nabukelevu-i-ra	It will seriously affect our daily livelihood	The general health of the family will be disrupted and agricultural livelihood will be wipe out.	2
Matasawalevu	- Damages the environment - More health issues, more people will get sick - People will struggle to find alternative means of survival - Children will suffer the most if the effects are not addressed properly	- Life will get tougher - Increase in forest destruction - Increase in bush fires	1
KYMST	- Effort for survival would also increase - Harvest seasons will be altered. - Farms will be destructed	- The duration and distance to fetch for water and food would be longer - Villagers will be forced to resort to processed food - Health risks will need to be closely monitored - Increase in other social issues	2
Villages	**Indicator 3- Barriers to adaptation activities**	**Means to manage the event**	

Galoa	-Lack of Awareness on the effects of a drought.	-The community will require a workshop on natural resource management -Farming experience and knowledge will ensure that we have enough food during such an event. -Biological indicator- an overwhelming abundance of “Jivikea” (Convicted surgeonfish *A.triostegus*) is an alarm of a dry spell.	4
Nabukelevu-i-ra	Lack of awareness to villagers on adaptation means during excess events such as droughts	- Villagers are cooperative when it comes to planning adaptation programs. - The clan leaders are on the right track by drafting vulnerability reduction plans.	5
Matasawalevu	- Non cooperation - Village disaster-adaptation plans are not adhered to	- The villagers are experienced farmers	3
KYMST	Lack of awareness to villagers on adaptation means during excess events such as droughts	-The community will require a workshop on natural resource management -Farming experience and knowledge will ensure that we have enough food during such an event.	4
Villages	**Indicator 4: Sustainability after RESCCUE**		
Galoa	We are very keen in taking over the implementation of the adaptation plan as it is very crucial for our survival during such an event.		5
Nabukelevu-i-ra	Leaders of the clan, village committee and headman are very reassuring of the village’s capability to continue improving water management to prevent our families from such an event in the future.		5

Matasawalevu	- In realizing that our survival depends on our ability to implement the plan, we are therefore confident that we will put the plan into practice		4
KYMST	The Agriculture department through have set-up a climate change adaptation unit which promote any agriculture adaptation activities, Kadavu Fisheries and Provincial Office also.	Intercropping Traditional farming method Alternative livelihood option	5

General Observations

- Plan to be drawn up to manage the impacts such as water usage).
- Encourage the farming of drought-resistant root crops such as the Pacific wild yam (Tivoli)and cocoyam (dalonitana)
- Plant more trees around watersheds
- Introduce water tanks with a higher volume for each house.
- Reforestation program
- Avoid the habit of wild burning, especially for the district of Tavuki
- Farming is intensive in the district of Ravitaki and Nabukelevu compared to other districts in Kadavu and there a need for forest restoration initiatives in these two district.

Cyclone

Villages	**Indicator 1- What happens when there is a cyclone?**	**Effects on community & environment**	**Score**
Galoa	-Food sources are depleted that in turn affects individuals and the community as a whole. -it causes panic and anxiety -it alters the physical village setting	- the effect will be devastating for our vegetable and root crop farms	2
Nabukelevu-i-ra	Cyclones damage the dwellings and plantations.	Our general social life (family) and food from the farm are affected.	1
Matasawalevu	- Rooftops are blown off - Farms are damaged - Deracinates the whole house - Primary food supply are affected - Kills animals	- People are left homeless - And they struggle to find food	2
KYMST	- Rooftops are blown off - Farms are damaged -Food sources are depleted that in turn affects individuals and the community as a whole.	- People are left homeless - And they struggle to find food	2
Villages	**Indicator 2- What would happen if the frequency increases**	**Effect on community& environment**	
Galoa	- Nothing will be left of the ecosystem - It will destroy the coral reefs - Farms will be demolished	- It will wipe out the community	1
Nabukelevu-i-ra	It would affect social life as villagers will struggle to meet family needs as well as community obligations.	More conflict and disagreement	1

Matasawalevu	- All houses will be demolished - Fruits and vegetables will be damaged - It could be fatal if we are not ready	- People will really struggle to find food - The reefs will be damaged and will take longer to recover	1
KYMST	- All houses will be demolished - Fruits and vegetables will be damaged - Nothing will be left of the ecosystem - It will destroy the coral reefs - Farms will be demolished	It would affect social life as villagers will struggle to meet family needs as well as community obligations More conflict and disagreement	1
Villages	**Indicator 3- Barriers to adaptation activities**	**Means to manage the event**	
Galoa	- Loss of traditional knowledge - Slow reaction to implement adaptive plans - Lack of awareness as there is no adaptive management plan available (we request for such workshops)	The knowledge and experience amongst the members will ensure that there will be enough food during such events e.g. planting the cyclone-resistant crops	3
Nabukelevu-i-ra	We don't see any hindrance.	- The village has an adaptation plan ready for implementation when such an event occurs. - The collective communal work (*solesolevaki*) is an ongoing traditional mean that helps improve livelihood (e.g. farms) in the village when natural disasters happen.	4
Matasawalevu	- No team work - The village does not have any natural disaster adaptation plan Loss of traditional knowledge	- Farming knowledge and experience - The community have the capability	4
KYMST	- Loss of traditional knowledge - Absence of disaster preparedness plan - Lack of awareness as there is no adaptive	The knowledge and experience amongst the members will ensure that there will be enough food during such events e.g.	3

	management plan available (we request for such workshops)	planting the cyclone-resistant crops	
Villages	**Indicator 4: Sustainability after RESCCUE**		
Galoa	We have the ability to limit cyclone impacts and have the potential to implement adaptive plans as it is crucial for our survival.	There is reassurance from the community members that we will continue with the plan even after RESCCUE term.	4
Nabukelevu-i-ra	Leaders of the clan, village committee and headman are very reassuring of the village's capability to continue implementing the vulnerability reduction adaptation plan to prevent our families from the risks of such an event in the future.	Very confident in village leadership in making the right decision to prepare the villages in overcoming this problem	5
Matasawalevu	- We should start assessing our capability as such event decides our survival for the future for we depend on our fishing grounds and land.		4
KYMST	The government together with the community have been working together in past events to improve cyclone responses	Construct engineer certified houses Plant wild yams, food during natural disaster	5

General Observations

- Plant a lot of cyclone-resistant foods such as the Pacific wild yam, Cocoyam and Sweet potato (kumala)
- It will work when villagers discuss more about cyclones and climate change and plan means of managing impacts of such events.
- Our ability will be successful if we work together as a community and love and care for each other.

Ocean Acidification

It was presented to the focus group that coral reefs are highly sensitive to small changes in ocean temperatures. The heat stresses the algae that nourish the corals and provide their vibrant colors. The algae then leave, and the corals eventually starve, an event known as bleaching. Also, a more acidic ocean affects the normal calcium balance, meaning creatures with calcified shells, such as shellfish and coral, may not have enough calcium to grow.

Villages	**Indicator 1- What happens when there is coral bleaching ?**	**Effects on community & environment**	**Score**
Galoa	- Destruction of the reef system and an importance protein source for the villagers	- Fish catch decreases which then affects our meals -our income is decreased	2
Nabukelevu-i-ra	Some common marine life such as invertebrates and fish disappear.	It reduces our family meals of fish and invertebrates.	3
Matasawalevu	- Destruction of the reef system and an importance protein source for the villagers	- Fish catch decreases which then affects our meals -our income is decreased	2
KYMST	- Destruction of the reef system and an importance protein source for the villagers	- Fish catch decreases which then affects our meals -our income is decreased	2
Villages	**Indicator 2- What would happen if it affects 50% of corals in *I qoliqoli* affected?**	**Effect on community& environment**	
Galoa	- It will drastically decrease the marine life that we depend on.	- The impact of sea rise will be extreme and collapse of most fisheries.	1
Nabukelevu-i-ra	- It will drastically decrease the marine life that we depend on.	- The impact of sea rise will be extreme and collapse of most fisheries.	1

Villages	Indicator 1- What happens when there is coral bleaching ?	Effects on community & environment	Score
Matasawalevu	- It will drastically decrease the marine life that we depend on.	- The impact of sea rise will be extreme and collapse of most fisheries.	1
KYMST	- It will drastically decrease the marine life that we depend on.	- The impact of sea rise will be extreme and collapse of most fisheries.	1
Villages	**Indicator 3- Barriers to adaptation activities**	**Means to manage the event**	
Galoa	- Peoples persistence in using fertilizers in farms - Dumping of garbage to sea - Destruction of corals by fishers	- There are plans to introduce coral planting	3
Nabukelevu-i-ra	The lack of awareness of the ridge to reef connectivity is a constraint.	The village Fisheries committee as well as qualified experts in this field has been providing information and advice accordingly for the reduction of the impact of climate change.	2
Matasawalevu	- Dumping of garbage to sea - Destruction of corals by fishers	The village Fisheries committee as well as qualified experts in this field has been providing information and advice accordingly for the reduction of the impact of climate change.	3
KYMST	- The lack of awareness of the ridge to reef connectivity is a constraint - Peoples persistence in using fertilizers in farms - Dumping of garbage to sea - Destruction of corals by fishers		3

Villages	Indicator 1- What happens when there is coral bleaching ?	Effects on community & environment	Score
Villages	**Indicator 4: Sustainability after RESCCUE**		
Galoa	We need to form a village level YMST team to ensure natural environment management.	The anticipation and keen-ness exists amongst villagers but someone has to lead.	4
Nabukelevu-i-ra	The fisheries committee is keeping a look out by continuously updating and advising the community on the significance of managing the coral reef well.		3
Matasawalevu	We need to form a village level YMST team to ensure natural environment management.	The anticipation and keen-ness exists amongst villagers but someone has to lead.	4
KYMST	Kymst AND Kadavu Fisheries are overseeing coral reef conservation in Kadavu	More MPAS Ban on destructive practices	5

General Observations

- An adaptation plan will need to be prepared for the whole of Kadavu since this impact affect all the villages within the province

4.0 Proposed Adaptation Activities

The priorities mentioned by the local communities should be balanced with the capacity of RESCCUE to address these issues as well as the project funding resources. If the community feels that coastal resource management will be key in CBA, then the appropriate entity should be identified within the ICM and the broader YMST network that have the technical and financial resources that can meet the needs of the community. It is also critical that the local adaptive capacity is strengthened in the context of current and future climate change negative impacts variability. In other words, it is important that development project that enhances the resilience of the community as well as the supporting institutions should be considered.