

**The Role of Social Capital in a Common Pool
Resource System in Coastal Areas:
A Case Study of Community-based Coastal
Resource Management in Fiji**

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STATEMENT OF ORIGINAL RESEARCH

This is to certify that this thesis is the original work of the author. It contains no material that has been published by another person, except where cited, and that the material has not been used, in part or in whole, for any other qualification.

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ABSTRACT

This thesis is a case study of how bonding and bridging social capital function in community-based coastal resource management (CBCRM) in Fiji. Fiji provides a suitable case for the study of the human dimensions of CBCRM as common pool resource (CPR) management, because first, the existence of customary marine tenure and second, the existence of Fijian community norms that affect on members' use of resources by constituting an area-specific institutional framework. This allows us to compare it to the recent CBCRM movement involving different stakeholders, including NGOs and government agencies who build bridging social capital with local communities. Using data collected from two districts of Viti Levu island in semi-structured interviews and an individual survey, I analyse how bonding and bridging social capital affect CBCRM. I am especially concerned with its impact on (1) villagers' understanding of the rules; and (2) their compliance with the rules.

My results suggest that strong bonds among village members help disseminate information and knowledge in the village. Regularly held village meetings and gatherings, such as for church groups, women's clubs, men's clubs and mother's clubs, contribute to information sharing and allow for the dissemination of information to all villagers. They are then able to make decisions and gain greater understanding of the process through which they are made. The kinship based village structure in Fiji contributes to the high degree of accountability to other villagers of the nominated fish wardens responsible for the monitoring of marine resources. The norms of sharing and exchange allow for the control of emotions, such as anger and hatred, toward rule breakers. As a result of these high levels of bonding social capital, the cost of rule enforcement in Fijian villages remains relatively low.

Increased cooperation between NGOs and local villages build 'weak ties', which then allows key actors in villages to gain access to new knowledge and information on coastal resource management. Furthermore, joining those NGOs from outside the village affects how villagers' perceive compliance with local resource use rules. If an NGO took an 'individual participation approach' and considered a village to be a group of individuals with

heterogeneous interests, a sense of ownership over the project was facilitated among villagers. However, if an NGO took a 'group approach,' treating a village as a group whose members share common interests and follow traditional decision making arrangements, the sense of ownership and responsibility among villagers in resource management became lower. My results suggest that this affected how villagers perceive compliance with local resource use rules, mainly because the management plan failed to incorporate the knowledge of local ecological conditions possessed by resource users.

I conclude that a credible commitment among the villagers is enhanced by connecting individuals and fostering collective interests that, in turn, lead to mutually reinforcing expectations. These encourage individuals to pursue their long term interests rather than only that of the immediate and short-term. In short, whether or not the interactive processes among the villagers are taken into account during project implementation can make the difference between whether communities build common understanding and mutual trust among interdependent individuals, or whether they end up stagnating in their cooperative arrangements.

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GLOSSARY

<i>koro</i>	a village
<i>mataqali</i>	sub-clan
<i>qoliqoli</i>	customary fishing rights areas
<i>roko tui</i>	Fijian provincial officer
<i>tabu</i>	taboo; implies a religious sanction or sacred. In the context of community-based coastal resource management in Fiji, it means a marine protected area where people are not allowed to catch any marine creatures.
<i>tikina</i>	a district
<i>tokatoka</i>	extended family
<i>turaga</i>	a chief
<i>turaga ni mataqali</i>	sub-clan head
<i>turaga ni yavusa</i>	clan head or chief
<i>turaga ni koro</i>	appointed village leader
<i>yavusa</i>	a clan
<i>yaqona</i>	also called <i>kava</i> . It is made from the dried and pulverised root of <i>Piper methysticum</i> plant. It has anaesthetic effects. Drinking <i>kava</i> used to be a ceremony limited to chief but now developed into a sort of entertainment for Fijians and the benefit of visitors.
<i>vakaturaga</i>	Fijian ideal behaviour including respect, deference, and humility, as well as compliance to the various traditional obligations and responsibilities
<i>vanua</i>	land or tribe
<i>vasu</i>	the mother's brothers' son, who has a right to take whatever he wants from his uncle's property

Sources: Capell (1991) and Ravuvu (1983)

CHAPTER 1

Introduction

1.1 Background

The past few decades have seen substantial investment directed at reducing pressures on coastal resources in the island states of the Pacific. Large amounts of money, time and effort have gone into a variety of coastal resource management activities aimed at solving problems related to the degradation of coastal resources. Simultaneously, the practice of coastal resource management has evolved. A large shift in thinking took place from a centralised or 'top-down' approach to what is commonly called community-based or 'bottom-up' resource management. The shift to a community-based approach to coastal resource management has been especially visible in the Pacific islands, where halting and reversing the degradation of the coastal environment by working with local communities is accepted as the norm in both government policy and international donors' strategies. Numerous governments, international donors, and non-governmental organisations (NGOs) suggest that the most appropriate approach in responding to the need for the proper management of coastal resources in the region is through community-based coastal resource management (CBCRM) (for example, King and Lambeth 2000; LMMA Network 2003).

This thesis analyses how social capital affects CBCRM in small, non-urbanised communities dependent on coastal fishing for their food supply and economic activities. Currently, little is known about the processes through which social capital in rural communities is translated into action regarding CBCRM. Fiji was chosen for this study because it offers the opportunity to study a case of CBCRM in which the central government claims jurisdiction over surrounding waters while the law recognises the customary fishing rights of local indigenous Fijians. In recent years, NGOs have intervened in rural communities and have affected their resource use.

From the perspective of theoretical generalisation, a large-N study where I would visit a large number of villages engaging in CBCRM and measure their bonding and bridging social capital would have been preferable, but it was impossible given time and funding constraints. I chose to take an in-depth look at two particular cases and compare them. I conducted a case study of two particular districts on Viti Levu island in the Republic of Fiji Islands, collecting my data using a mixed method. By analysing how these two districts attempt to solve the problem of collective action, I explore the possibilities for improving CBCRM. Although limiting theoretical generalisation, I focus on two cases to provide the reader with a close-up view of how individuals perceive CBCRM. Unless we can understand the perception and behaviour of *individuals*, we cannot understand why some communities follow rules in CBCRM and others do not.

1.2 Significance of the coastal environment

Given the geographic conditions, a large number of people in the Pacific islands depend heavily on coastal resources for their livelihoods. At the national level, the status of coastal

and marine resources affects the economic revenues of Pacific island countries especially through the tourism industry. First, the images of clear blue water and white sandy beaches largely contribute to attracting international tourists. In particular, tourism is a major industry in Fiji, being the main earner of foreign exchange. Based on statistics from the Reserve Bank of Fiji, Narayan and Prasad (Narayan and Prasad 2003: 6) estimated average yearly income from tourism between 1980-2001 of approximately US\$1.7 million¹. This is equivalent to 16 per cent of GDP. Approximately 40,000 people, or 13 per cent of the economically active population, are directly or indirectly employed in the tourist industry (Fiji Government 1997b). The Fijian Government has targeted annual earnings of approximately US\$570 million from tourism by 2007 (Fiji Government 2005: 22). However, the military coup d'état of December 2006 may have an unforeseen impact on this.

Although the contribution to the national economy may be small compared to tourism, small-scale fishing, normally conducted in the areas from the coast to the outer slope of the reef, is essential for the day-to-day life of large numbers of coastal dwellers in the Pacific islands (Gillett and Lightfoot 2001; King and Lambeth 2000; World Bank 1999). According to Dalzell (1993: 28), total coastal fisheries production in the region during the early 1990s was estimated to be about 105,000 tonnes per year, worth US\$244.5 million. Approximately 80 per cent of the coastal fisheries production was used for subsistence – an estimated US\$161 million. An economic study of fisheries in Fiji in 2001 estimated that the catches by subsistence fishing were worth \$23,546,700, while coastal commercial fishing and locally-based offshore fishing were worth \$10,263,557 and \$14,421,000

¹ In this thesis, all currency is calculated in US dollars (1 Fijian Dollars = 0.57 US Dollars).

respectively (Gillett and Lightfoot 2001). Furthermore, subsistence fisheries products such as fish and other marine resources have been found to provide 39 per cent of the total animal protein in the diet of Pacific Islanders, compared to the worldwide average of 16 per cent (World Bank 1999: 1). Due to the high nutritional value of local seafood relative to available imported food, many Pacific Island governments actively encourage their people to eat more fish and other marine products (for example, King and Lambeth 2000). In short, subsistence fishery is an important form of livelihood for coastal dwellers.

In Fiji, the subsistence and village level commercial fishery sector is rapidly expanding, and statistics show growth in production over the past two decades. In 1980, estimated production was 14,000 tonnes, and by 1992, this had expanded to 16,400 tonnes with a value of US\$34 million (Veitayaki 1995: 13). In 1996, the amount of production had increased further to 17,200 tonnes (Fiji Government 1996b: 9), and to 21,600 tonnes in 1999 (Gillett and Lightfoot 2001). The production reached up to 29,609 tonnes in 2005, while it decreased to 24,661 tonnes in 2006 (Fiji Government 2007a: 5).

Data from the 1996 Fiji census² shows the significance of subsistence living (Table 1.1 and Figure 1.1). The census reported that 297,770 people (38.4 per cent) of the entire population are 'economically active'³, while the rest are either 'economically inactive' or are children under 15-years of age. Of this group, 61,191 people, or 20.5 per cent, are

² Although the latest national census of Fiji was conducted on 16 September 2007, the result was not available by the time this thesis was submitted.

³ Economically active is defined as 'all persons of either sex who furnish the supply of labour for production of goods and services defined by the United Nations System of National Accounts and Balances in the one week before the census night of 15 August 1996.' This includes people are in paid employment, engaged in subsistence activities, actively looking for a job, or unemployed.

involved only in subsistence activities⁴, such as farming and fishing for either their own or their household's consumption. Nearly six per cent (17,265 people) are unemployed. Although the rest (219,314 people or 73.6 per cent) are in paid employment, a substantial number – 29.7 per cent of them (88,562 people) engage in subsistence activities in addition to their paid job. For instance, as shown in Figure 1.1, 50.2 per cent of the economically active population are engaged in subsistence living either on a full-time or part-time basis.

In particular, this is common among the rural population of Indigenous Fijians compared to other ethnic groups in Fiji. Figure 1.2 shows that approximately 80,000 (83.7 per cent) of 95,683 Fijians living in rural areas produce food for themselves and/or their families. The high percentage of the rural population engaged in subsistence living suggests that the quality and availability of natural resources have a disproportionate impact on the Fijian population than other racial groups.

In the case of the villages of Verata district of Viti Levu, a species of shellfish *Anadara* spp., locally known as *kaikoso*, contributes up to 37 per cent of total income earned (an average of US\$70/fortnight) by each household and provides a consistent source of protein of 2,635kg, iron of 56kg over 10,505 kcal to a village population of 310 per year. (Tawake 2004: 97). These data show that natural resources, including marine products contribute substantially to the economy and health of rural villages. Furthermore, the geographic fact that Fiji is a nation of islands means that fishing plays a significant role in the lives and livelihoods of the people.

⁴ In the 1996 Census, the word 'subsistence' was used to indicate persons whose main activity during the reference period (one week before the census night of 15 August 1996) was farming or fishing for own or household consumption.

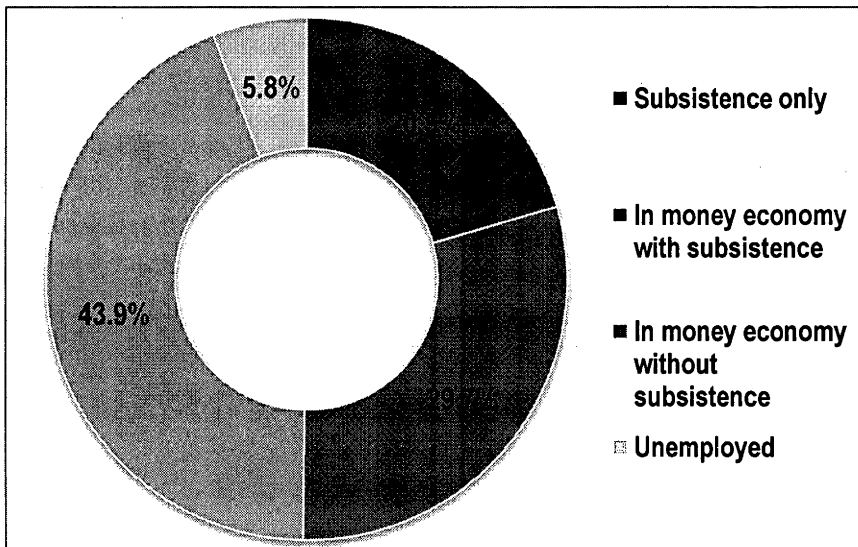
In addition to these economic benefits, it is well-known that the coastal environment and its resources are of cultural and ecological importance to the local population. In many areas of the South Pacific, a division of labour in fishing between men and women has evolved. Fishing with boats has primarily been the domain of men while women have concentrated on collecting a wide variety of species from the reef and inshore area. Some of these activities are communally implemented and a number of customs and traditions have developed as a result of the intimate relationship between coastal communities and the sea. Although the social value of such activities are difficult to quantify, Pacific Islanders claim that fishing plays an important role in the culture and identity of their communities (for example, Veitayaki 2000a). The ecological significance of coastal ecosystems, such as mangroves and other wetlands, coral reefs and lagoons, cannot be underestimated. They provide a key defence against erosion and deflect and absorb much of the energy of storms.

Table 1.1 General employment information on Fiji Islands, 1996

	Urban				Rural			
	Total	Fijian	Indo-Fijian	Others	Fijian	Indo-Fijian	Others	Others
Total population	775,077	161,335	168,035	30,125	415,582	170,783	12,559	
Population 15 years and over	500,913	105,114	116,627	20,442	258,730	111,670	7,751	
Economically Inactive	203,143	44,388	52,853	8,904	96,998	50,244	3,128	
Economically Active	297,770	60,726	63,774	11,538	161,732	95,683	4,623	
In the money economy	219,314	45,302	56,201	9,958	107,853	50,059	3,130	
Without subsistence	130,752	32,039	46,756	8,391	43,566	30,875	984	
With subsistence	88,562	13,263	9,445	1,567	64,287	19,184	2,146	
Subsistence only	61,191	9,499	3,846	738	47,108	37,100	1,168	
Unemployed	17,265	5,925	3,727	842	6,771	3,919	325	

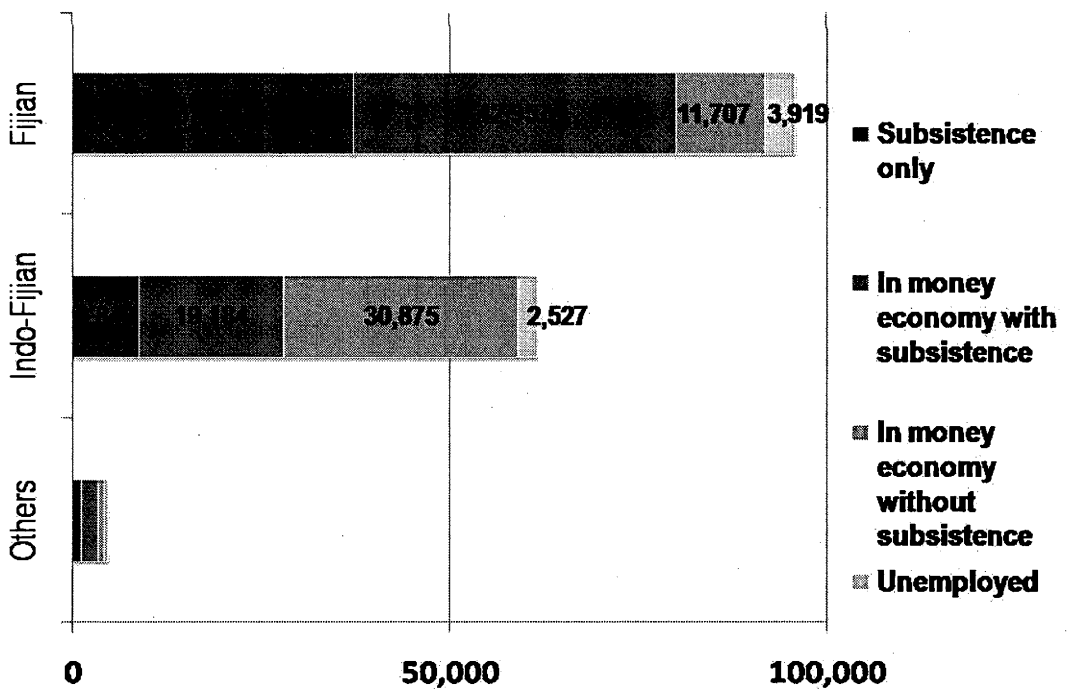
Source: Fiji Government (1996a)

Figure 1.1 Economic activities of people in Fiji



Source: Fiji Government (1996a)

Figure 1.2 Economic activities of rural population in Fiji



Source: Fiji Government (1996a)

1.3 Overview of the study

This study investigates the functions of social capital in CBCRM in Fiji where non-local organisations assist local residents in their management activities. It draws on the literature on social capital, defined as the norms and social networks that facilitate collective action among individuals. It is a set of values and relationships that exist in a society and that are developed through interactions with others. The important point of the social capital argument is that, by developing social capital, a group of people can build trust that affects the degree of their collaborative actions.

It is widely recognised that theories of common-pool resources (CPR) are particularly important in the study of the governance of natural resources and they explain why social capital is necessary in CBCRM. To avoid commons problems caused by the two key elements of subtractability and excludability⁵, long-lasting CPR use requires cooperation among users (Ostrom 1990). Users need to share norms and understand rules regarding resource use so as to maintain the institutions to some extent.

The literature on new institutionalism has reached a general consensus that building institutions that empower local communities is a prerequisite for long-lasting resource management. This is because institutions reduce uncertainty by providing structure to management (North 1990) and by clarifying those actions that are permitted and those actions that are prohibited (Oakerson and Walker 1997). Furthermore, institutions affect the way a community evolves over time because they affect people's choices by: (1)

⁵ Subtractability (or rivalry) means that the level of exploitation by one user adversely affects the ability of another user to exploit the resource.' Excludability (or control of access) refers to 'the physical nature of the resource is such that controlling access by potential users may be costly and, in the extreme, virtually impossible'. Feeny, David, Fikret Berkes, Bonnie J. MaCay, and James M. Acheson. 1990. "The tragedy of the commons: twenty-two years later." *Human Ecology* 18: 1-19.

influencing the availability of information and resources; (2) by shaping incentives; and (3) by establishing the basic rules of social transactions (Nicholson 1993). As CPR researchers have argued, a certain level of trust among resource users is necessary to sustain institutions. As a result, it follows that social capital plays a critical role in CPR management.

Despite the fact that existing CPR research has argued that social capital is important, little empirical work has focused on how social capital functions in CPR management. In particular, this thesis focuses on the two-dimensional nature of social capital, expressed by bonding and bridging capitals, to analyse a CBCRM case with external interventions. Bonding social capital, defined as ties among somewhat homogenous groups, represents social capital within the community, while bridging social capital, defined as ties across diverse social groups, corresponds to the concept of social capital between the community and external organisations.

The concept of a two-dimensional nature of social capital is helpful in explaining the CBCRM situation in Fiji. Fijians themselves characterise village life as a source of their identity and a symbol of unity. These strong ties - or strong bonding social capital - have been an important factor in enabling Fijians to cooperate in maintaining two institutions vital in conserving their resources. These are the system of customary fishing grounds or *qoliqoli*, and the traditional practice of marine management or *tabu*. However, due to some externally driven factors, especially the recent increasing interdependence with the world economy, Fijian village life has been changing rapidly. During my fieldwork I was told by numerous villagers that people in a village are becoming individualistic because of their demand for money. This is especially pronounced in places which are more exposed to commercial activities like tourism.

As a response to the problem of resource degradation caused by unsustainable methods of resource use, NGOs have promoted CBCRM projects in Fijian villages. The theory underlying these projects is that of CPR, promoting self-governance by the villagers. In doing so, the NGOs empower the community members by providing knowledge, skills and suggestions in order to revive the traditional resource use practices, specifically *tabu* (Veitayaki et al. 2001: 1). In short, the NGO projects aim to build bridging social capital in the context of CBCRM.

In order to improve the effectiveness of coastal resource management in the region, it is important to increase the understanding of how different types of social capital affect CBCRM. Through an analytical framework based on CPR theories and social capital, I analyse how social capital acts as a catalyst in CPR management and influences the durability of CBCRM with intervention from external organisations such as NGOs. Since the challenge of CPR management is to get people to collaborate to maintain institutions, one way to measure 'long-lasting CBCRM' is to examine:

- (1) if the resource users share a common understanding of the rules; and
- (2) if they follow these rules.

To assess how villagers share a common understanding of the rules of marine resource use, I conducted interviews of villagers. Although I intended to collect data measuring the behaviour of village residents regarding rule compliance, this was impossible because there was no actual record on infringements in the villages. As a result, by conducting an individual questionnaire survey, I collected data on the perceptions of respondents concerning whether or not they complied with the rules.

It has been pointed out by numerous scholars (for example, Bullen and Onyx 1998; Halpern 2005; Woolcock and Narayan 2000) that the measurement of social capital is inherently complex. For the purpose of this study, I follow previous studies that have attempted to measure social capital and socioeconomic outcomes across a number of rural villages in different developing countries (Grootaert *et al.* 2004; Narayan 1997; Narayan and Pritchett 1999). Forms of social capital are society-specific, diverse, and change over time. Therefore, the instruments for measurement must focus on a range of dimensions of social capital rather than the usual measure of just group membership (Narayan and Cassidy 1999).

The following measures employed for my study are based on Grootaert *et al.* (2004) who suggest that studies of social capital in developing nations should focus on people's subjective perceptions. The three most important perceptions associated with social capital are: first, trustworthiness of other people; second, the institutions that shape their lives; and third, the norms of cooperation and reciprocity that surround them. Questions from the Integrated Questionnaire for the Measurement of Social Capital (Grootaert *et al.* 2004) were modified to fit the local conditions of my study sites in Fiji. The interview guides and survey questionnaire can be found in Appendix A and Appendix B respectively.

Given that the concept is complex and that no consensus exists on a single measure, this study employs a combination of three different empirical indicators of bonding social capital. The first indicator was the number of social groups in a village. This was based on a qualitative assessment of the responses of interviewees in each village to the question asking, "What types of organisations or groups exist in this village?"

The second indicator was a measure of the norm of reciprocity among villagers regarding the use of coastal resource using two questions in the survey. First, respondents were asked, “Do you use borrowed fishing gear from other people?” Second, only for those who replied yes, a follow-up question was asked, “When you borrow, what are your obligations?” Those who answered that they had “no obligation” were considered to have a low sense of reciprocity while those who said that they would “give part of the fish catch” to the owner of the fishing gear were considered to have a high sense of reciprocity. This reciprocity was used as a measure for trust.

The third indicator for bonding social capital was the perception of the sense of solidarity among villagers. This was measured by the number of respondents who answered the question, “If there were a sudden decline in fish catch in village waters who do you think would act to deal with the situation?” The number of respondents who answered “the village working together” was treated as an indicator of the sense of solidarity and, therefore, bonding social capital, among villagers. Each of the three indicators was examined separately as an indicator of bonding social capital.

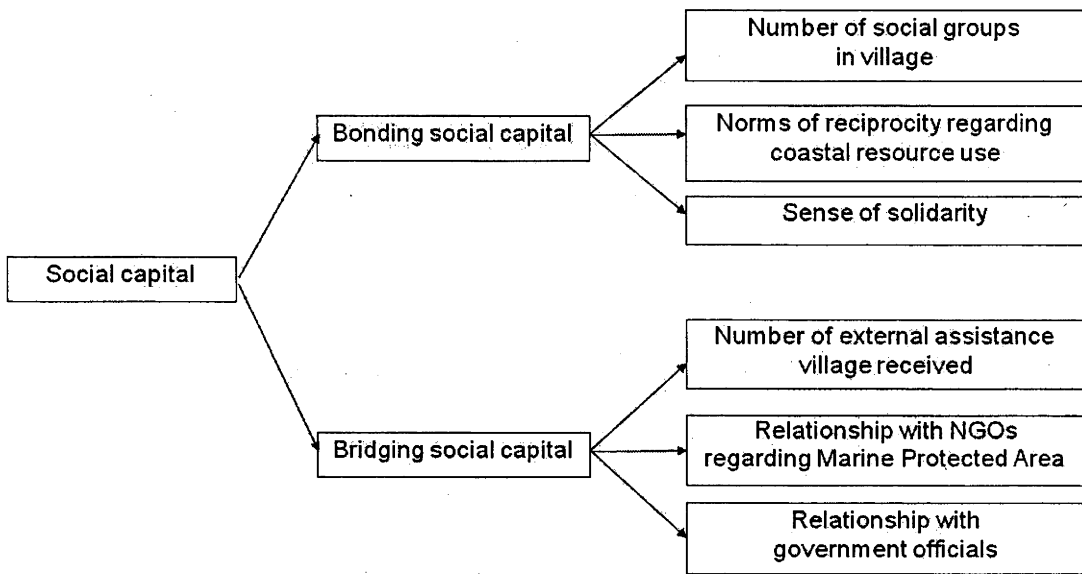
The following three measures were used as indicators for bridging social capital. The first indicator for bridging social capital was the number of external assistance development projects conducted in the village. A large number of projects were assumed to suggest that the villagers have relatively cooperative relations with external groups. This was measured using the in-depth interview question, “Is there any other organisation (e.g. NGO, donor, university) that has had or is having any project in your village in the past 10 years (e.g. health, education, infrastructure, conservation)”?

The second indicator for bridging social capital was the relationship between villagers and NGOs regarding marine protected area management. It was important to capture the sense among villagers that they felt that they could learn something about MPA management from groups outside the village. This was measured by the question in the survey asking, “How many times have you attended meeting/workshop/training regarding MPA management?” Since attendance at these meetings was voluntary, those respondents who attended were assumed to have been villagers who trusted outside organisations to improve their skills and knowledge.

The third indicator for bridging social capital was the relationship between villagers and government officials. This was measured using the in-depth interviews with villagers who were asked, “How does your village contact government agencies” and “what do you contact them for?” Responses that villagers frequently contacted government officials were assumed to suggest that they had a certain level of trust of outside agencies and were willing to work with them to resolve their problems.

The indicators framework is shown in Figure 1.3.

Figure 1.3 Social capital indicator framework in this study



To analyse how the two types of social capital affect CBCRM as CPR management, I pose the following research question:

What are the different roles of bonding and bridging social capital in CBCRM?

Through an analysis of data collected in the field and analysed from the social capital perspective, I will conclude this thesis with a discussion of how non-local organisations could assist more effectively in the development of durable CPR institutions.

1.4 Limitations of the study

This study acknowledges the complexity of the coastal environment and its management. As Orbach (1995: 50) argues, in addition to understanding the non-human components, policymaking regarding coastal resource management should involve all interrelated components of 'cultural ecology' of the coastal environment and its resources. These are:

- (1) the human constituencies of the coastal environment itself, including the people who live on, use, or otherwise are concerned in their beliefs or behaviours with the coastal environment; and
- (2) the policy makers, managers and other authority whose decisions and actions affect the behaviour of the coastal constituencies defined in (1).

In other words, coastal management systems can be thought of as a system of relationships among people. Thus, it is important to take integrated approaches which consider social, economic and political concerns among all the actors.

Nevertheless, in this study I pay special attention to the stakeholders who directly use the coastal resources and who are directly involved in decision making, focusing on institutional aspects of coastal resource management. Indeed, although many factors may influence CBCRM management, this study is concerned specifically with the role and influence of social capital in CBCRM institutions in Fiji. The rationale for directing attention toward these two types of social interactions, bonding social capital and bridging social capital, comes from recent developments within institutional choice theory, upon which much of community-based resource management is based. However, few empirical studies have been conducted to date emphasising the two-dimensional nature of social

capital in the context of community-based resource management. In this study, I will use these concepts to explain human actions in the context of rural, non-urbanised villages in Fiji.

Furthermore, I also acknowledge the complexity of human constituencies in the Fijian coastal environment. Fiji is a country of people with diverse racial origins. Different ethnic groups are concerned with the uses of local coastal resources. However, my focus is on indigenous Fijians living in rural, non-urbanised villages for two primary reasons. The first reason is related to existing Fijian institutions. The Fisheries Act officially recognises the customary fishing rights of indigenous Fijians who are considered 'resource owners.' Therefore, as explained earlier, decisions made by indigenous leaders and their community have a direct effect on coastal resource management in Fiji. Even the national government does not have full control over the resources.

The second reason for focusing on indigenous Fijians in rural areas is the nature of existing CBCRM projects in Fiji. Since I am interested in how non-local, external organisations, particularly NGOs, assist CBCRM, I selected only districts where NGOs have worked on CBCRM. Until now, no CBCRM project in Fiji has focused on non-indigenous Fijians. In addition, the social situation constrained my ability to conduct my fieldwork. Generally speaking, indigenous Fijians and other ethnic groups live in separate geographic regions, in part due to the race-based policies of the British colonial government. The colonial government introduced Indians as labour for sugarcane plantations, while indigenous Fijians were encouraged to maintain their cultural practices. As experienced by other post-colonial nations, this division has led to a complex political and social situation in Fiji even after independence in 1970. This is an unavoidable facet of

Fijian life and has resulted in mistrust, fear, dislike, and sometimes even hatred between different racial and cultural groups (Ewins 1998: 70). This fact is the major reason behind a major limitation in my study - I was able to interview only one Indo-Fijian fisher. Given the relations between the ethnic groups, it was impossible for me to extend my data collection to the Indo-Fijian population while spending the majority of my time in indigenous Fijian villages.

From this point forward, I will use the term 'Fijians' only when referring to 'indigenous Fijians', the descendants of Fiji's original settlers. Other ethnic groups referred to are Indo-Fijian or Indian, Chinese, and Europeans. While I understand that there is debate on the question of what terminology should be used for Fijian citizens of various ethnic backgrounds, I follow the convention of the Fiji Government in its publications (for example, Fiji Today 2005-2006⁶). These conventions are also followed by most citizens in their day-to-day conversations.

The greatest weakness of my study has to do with the issue of generalisability. Despite the growing interest in and awareness of its importance, there are only a few datasets that measure social capital. The most well-known is the Social Capital Community Benchmark Survey 2000⁷, designed at Harvard University and conducted in the United States. However, despite the existence of this dataset and a few others conducted throughout Europe no data exists in the context of CBCRM as CPR management. What is more, many of the indicators used in developed countries will not be applicable to developing countries. As a result, I spent a large amount of time collecting my own data.

⁶ <http://www.fiji.gov.fj/uploads/FijiToday2005-06.pdf>

⁷ http://www.ropercenter.uconn.edu/data_acces/data/datasets/social_capital_community_survey.html

Although it does not have the same level of generalisability as a large-N study, the case study approach does allow for descriptive inference and greater understanding of the processes through which social capital operates at the individual level of analysis – albeit in only two particular districts. While future researchers may be able to design valid indicators for social capital that allow for comparison between many cases, for now, that data simply does not exist. However, if one of our primary goals is to increase our understanding of CPR in local communities – especially in terms of how these communities perceive CPR themselves - then my case study does offer the reader a rich depth of detail regarding individual actions and individual perceptions that would be absent in a large-N study.

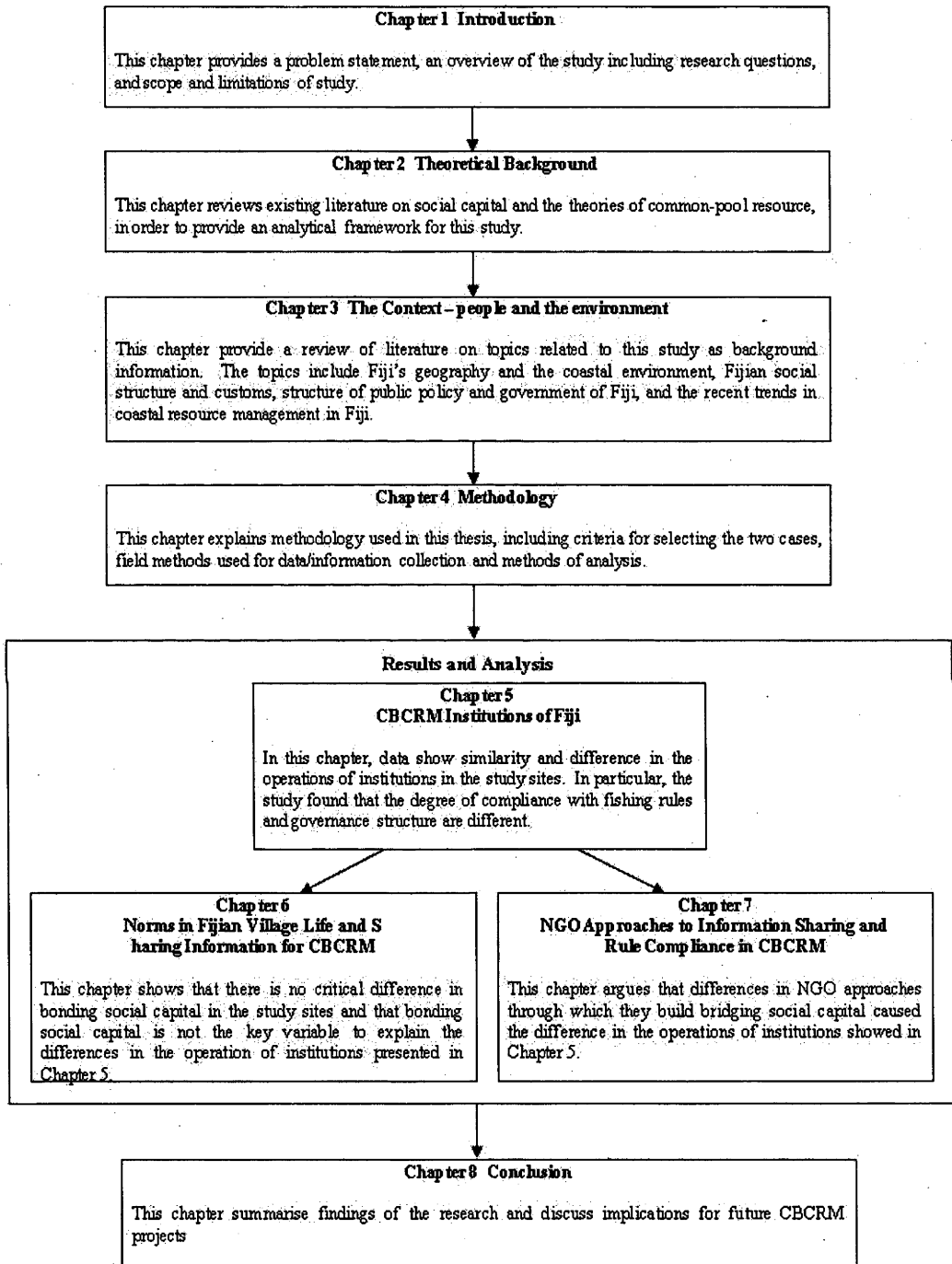
1.5 Plan of this thesis

The organisation of this thesis is presented in Figure 1.4. Chapter 2 reviews the existing theoretical literature in order to develop an analytical framework. It begins with a set of assumptions and definitions necessary for this study, followed by a discussion of institutions, particularly different types of property rights regimes. Although several types of property regimes exist, this study draws extensively from the CPR theory (for example, Berkes 1989; Ostrom 1990) that explains community-based resource management, avoiding overexploitation by promoting collective action among resource users. The chapter takes a closer look at the theoretical puzzle involving the relationship between social capital and CPR management. In particular, the focus is on the two-dimensional nature of social capital, which is especially relevant to CPR management involving multiple stakeholders. The difficulty in operationalising social capital is also discussed.

Chapter 3 provides the background on CBCRM in Fiji. I describe the physical and socioeconomic conditions of the country by reviewing the existing literature in Fijian Studies. First, I describe Fiji's elements of geography and natural environment relevant to the study. Although Fiji's ecosystems vary, this study is limited to its coastal region. Second, I explain the general structure of Fijian society so as to understand the norms upon which the culture is organised. For the purpose of this study, among numerous existing institutions in Fiji, customary marine tenure and the norms of reciprocity are the most relevant. Third, the discussion goes into issues related to the coastal environment and its management, including concepts and definitions, as well as threats. The emphasis is on recent MPAs commonly used as a conservation tool in Fijian CBCRM. Fourth, I describe the public policy structure of Fiji specific to jurisdiction over concerns regarding CBCRM. Fifth, I give an overview of recent trends in coastal resource management in Fiji.

Chapter 4 explains the research methods, citing the criteria for selecting the two cases, field methods used for data collection and methods of analysis. My data includes both qualitative and quantitative types and I employed several different methods of collection. A mixed method is appropriate for this study, because both quantitative and qualitative aspects of social capital are necessary to produce a comprehensive picture of the structure and perceptions of different dimensions of social capital.

Figure 1.4 Organisation of thesis



In the two study sites, Cuvu and Wai districts, I conducted semi-structured interviews, direct observation, and participant observation to obtain in-depth qualitative information. Individual surveys were implemented to collect quantitative data. I also collected and reviewed documents to acquire baseline information that is both quantitative and qualitative. Triangulation allows the researcher to combine the data and information collected through multiple methods and sources. Critical issues regarding methods, such as the validity and reliability of the methods, as well as ethical consideration, are also discussed.

In Chapters 5, 6 and 7, I discuss my findings and provide an analysis of the data and information collected. Chapter 5 explores CBCRM institutions in Fiji that constrain villages' behaviour regarding their resource use and management. The two indicators used to measure long-lasting CBCRM are (1) if the resource users share a common understanding of the rules; and (2) if they follow these rules. My data show that the villagers in both districts have similar levels of understanding of fishing rules, while their perceptions of the level of rule compliance in their own districts differ. Following this analysis, the chapter also examines existing institutional arrangements related to CBCRM, comparing governance structures of the two districts.

The next two chapters explore possible reasons for the differences between the two districts regarding rule compliance, by focusing on bonding and bridging social capital respectively. Chapter 6 aims to analyse issues related to bonding social capital. Despite the suggestion of past literature that trust among resource users is the key in CPR management, I argue that current bonding social capital in the two districts cannot explain the variations in the operation of institutions presented in Chapter 5. In fact, my data show

that there is no critical difference in bonding social capital in the two districts. Following this analysis, I present how bonding social capital is affecting CBCRM activities in the two districts. I argue that bonding social capital is not the key variable to the sustainability of CBCRM institutions in Fiji. However, it is important in understanding that ties among villagers that have been fostered over generations as part of their social system and how they are relevant to CBCRM activities. I also discuss the reasons for the consensus among villagers that their ties as a community have weakened.

Chapter 7 analyses the functions of bridging social capital in CBCRM. In this chapter, I argue that bridging social capital is critical in CBCRM in Fiji and present how bridging social capital, particularly the one added by NGOs, caused the differences in the operation of institutions presented in Chapter 5. The chapter begins with discussion of different types of ties between the villages and external groups. These include access to external assistance, their relationship with NGOs regarding CBCRM and their relationship with government officials. My field research found that the relationship with NGOs differed between the two districts while there was no major difference in other types and levels of bridging social capital. In short, I argue that a type of bonding social capital developed by the presence of the NGOs explains the difference in the operation of CBCRM institutions. I discuss the history of NGO interventions in the two districts to compare the procedures they follow in conducting their projects. It is interesting to note that although both NGOs similarly emphasise their projects to be community-based, my survey and interview data show that their approach and activities were different, especially regarding the process of management planning. The difference in the NGO approaches could be the reason for the difference in the degree of rule compliance shown in Chapter 5.

Chapter 8, the concluding chapter, summarises the findings of this study and their implications.

CHAPTER 2

Theoretical Framework

2.1 Introduction

In this chapter, I discuss the theoretical framework to be used in the analysis that follows. The framework is derived from two streams of theoretical literature - that of social capital and that of common-pool resource (CPR) regimes.

Social capital is a set of values and relationships that exist in a society and can be developed through repeated interactions with others. These interactions facilitate cooperation among individuals because people build trust through common norms and social networks. CPR theory has been applied to the management of natural resources, including coastal resources. These resources are commonly used by a defined set of individuals who create institutional arrangements and management regimes that help them use the resource over long periods of time. Examples of CPR regimes include collectively managed forests, irrigation systems, fisheries and land for grazing. Previous research on the mechanisms of collective action has found that shared norms of reciprocity and common values are critical to overcoming the strong temptations to pursue short-term self-interest. We assume that social capital is a critical variable in encouraging collective action among individuals – a requirement of CPR management.

While the identification of social norms and values as significant for collective action is plausible, an important question still remains unanswered. Regardless of the form it takes, is long-lasting natural resource management at the community level stimulated by more social capital? In order to address this gap in the literature and to contribute to building a framework for the analysis of CPR management, this thesis introduces the two-dimensional nature of social capital, defined as bonding and bridging social capital, to identify and examine social relations within a resource user group, and to identify the effects of interactions between the resource user group, external actors and institutions. In order to analyse the role of the two dimensions of social capital in CPR management, the rest of this thesis intends to answer the research question posed in the previous chapter.

What are the different roles of bonding and bridging social capital in CBCRM?

This chapter provides the theoretical background by outlining a set of assumptions and definitions to be used in this study. It then defines the concept of social capital in order to explain why some communities are able to overcome collective action problems while others are not. Through a review of the literature, I explain my operational definition of social capital. The discussion then proceeds to the CPR theory that explains community-based resource management. After a detailed explanation of the CPR theory as well as a review of existing literature on social capital and CPR management, the discussion proceeds to my theoretical question involving how different types of social capital function in CBCRM and the relationship between social capital and CPR management. This is particularly relevant to CPR management involving multiple stakeholders because different

interactions among the stakeholders are expressed as different types of social capital. The measurement issue is dealt with when I review the debates concerning the difficulty in operationalising the concept of social capital

2.2 Assumptions and definitions

2.2.1 Appropriators as a rational actor

This study is about deliberate human intervention in the coastal environment. All human actions ultimately have different levels of consequences on the quality and quantity of natural resources, and environmental degradation is one of the first indications of unsustainable social and economic systems. Management of natural resources is thus at the frontline of the struggle for more sustainable and equitable development of coastal areas. So as to explore and explain how people can manage coastal resources more effectively, it is necessary to make a set of assumptions and definitions about the primary actors, as well as the resources that they depend upon.

In this study, it is assumed that individuals are bounded rational actors⁸. People make intentional rational decisions, that is, they are goal-oriented and adaptive. However, they do sometimes fail and end up with choices that are not rational in substance because of the limits of human cognitive and emotional architecture (Jones 1999). In other words, even though individuals try their best when making decisions, a group of people sometimes have to face the unintended and unwanted consequences of their actions.

⁸ Bounded rationality has been a key component since the 1950s in public administration and public policy studies and it is defined as 'a school of thought about decision making that developed from dissatisfaction with the "comprehensively rational" economic and decision theory models of choice.' Feeny, David, Susan Hanna, and Arthur F. McEvoy. 1996. "Questioning the assumption of the "tragedy of the commons" model of fisheries." *Land Economics* 72: 187-205.

In any particular resource management situation, those individuals who withdraw resource units from a resource system, also known as appropriators (Plott and Meyer 1975), are assumed to be rational actors. Examples of appropriators include fishers, herders, and irrigators. Given the complexity of uncertain situations, their decisions and actions are dependent on perceived costs and benefits, primarily based on their values and previous information (Ostrom 1990: 33).

2.2.2 Resources

Resource systems are considered stock variables that, under favourable conditions, are capable of producing a maximum quantity of a resource without harming the stock itself (for example, fishing ground, groundwater basins, and grazing areas). This assumption underlies the concept of 'maximum sustainable yield' which determines the limits of sustainability in resource use. Resource units are what individuals use from resource systems, such as the tons of fish harvested from a fishing ground, the cubic meters of water withdrawn from a groundwater basin or the tons of fodder consumed by animals from a grazing area (Ostrom 1990: 30).

2.2.3 Institutions

In order to understand how appropriators use and manage natural resources, the concept of institution is important. In his classic definition, Douglass North (1990) states that institutions are 'the rules of the game in a society or, more informally, are the humanly devised constraints that shape human interactions'(p.3). Meanwhile, rules refer to the prescriptions that create authorisations and 'rights' are the product of 'rules' (Schlager and Ostrom 1992: 250). While state legislation is a kind of institution, institutions can also be

informal: norms are similar to rules but are considered the informal standard among a group of specific individuals. It is important to note that institutions are different from 'organisations' which are 'groups of individuals bound together by some purpose to achieve objectives' (North 1990: 5).

For the purpose of this study, I use the term "norm" to mean expectations about what others will do. In other words, norms in this study are shared beliefs and shared information that individuals, as rational actors, use to make decisions. This reduces uncertainty in a collective action dilemma as it gives a strong basis for anticipating the choices likely to be made by others.

Institutional theorists and resource management practitioners agree that building institutions that empower local communities is necessary for long-lasting resource management. Previous theoretical studies have given two major explanations for the importance of institutions in resource management at the community level. First, according to North (1990), institutions reduce uncertainty because they provide structure to management, which shapes the interactions among participants of resource management by specifying who has authority over what so as to eliminate unnecessary negotiations. Second, Oakerson and Walker (1997) argue that institutions clarify people's actions by giving information on what is permitted and what is prohibited. Furthermore, Nicholson (1993: 4) argues that institutions affect human choice by influencing the availability of information and resources, by shaping incentives, and by establishing the basic rules of social transactions. In short, institutional innovation contributes to resource management by providing more efficient ways of organising management activity.

2.2.4 Property rights

For scholars who have tried to explain how and why community-level natural resource management works, the institution of property rights is a particularly significant category. Property rights are the rules-in-use that define the range of privileges that individuals hold to specified goods or services (Libecap 1989). In economic terms, optimality requires that resource use continues until the marginal benefit of resource use equals the marginal cost. Costs and benefits include those that are private and external. One important factor in determining this optimal condition is the nature of the property rights regime for managing the resource (Bromley 1991), because property is ‘a secure claim on a future benefit stream (Bromley 1992: 11).’ Thus, property rights define who has access, how much they can harvest, who manages, and how rights are transferred (Ostrom 1992: 293).

If the appropriators do not have secured rights to the resources, they will lack incentives to invest in long term resource management because they are not assured of receiving the benefits (Ostrom 1992). When new management practices for the sustainable use of resources are introduced, especially when they do not bring immediate benefits, appropriators want to be assured of some kind of guarantee of ownership long enough for them to reap the benefits of their investment. A property rights regime contributes to sustainable resource use by reducing uncertainty. Owners are guaranteed access to the resource they wish to extract, allowing them to calculate whether the costs of long-term management are worth the benefits (Ostrom 1992). However, while important, determining property rights alone may not be a sufficient condition to avoid the overexploitation of a resource. Therefore, some scholars argue that social capital plays a critical role in CBCRM.

2.3 Social capital

A large number of scholars have studied social capital both theoretically and empirically (for example, Coleman 1988; Fukuyama 1995; Putnam 2000; Putnam *et al.* 1993; Woolcock 1998). A number of government and international agencies (for example, the World Bank, the British Government and the Australian Government) also use the term 'social capital' in their projects and documents (for example, Côté and Healy 2001; Halpern 2005). As the frequency of usage increases, there is often confusion over just what is meant by 'social capital'. Therefore, to provide an operational definition of the term for the purpose of this study, the following section provides a review of the literature on social capital.

2.3.1 What is social capital?

The term social capital has increasingly gained popularity among academics and practitioners because both view it as a useful concept in delivering desirable outcomes in social and economic development. At the same time, as discussed below, numerous authors have criticised the concept of social capital for its ambiguity and debate continues regarding its precise definition. However, a limited consensus does exist that, at the minimum, it refers to 'trust, concern for one's associates, a willingness to live by the norms of one's community and to punish those who do not' (Bowles and Gintis 2002: 1). People can accumulate social capital when they interact with others in a variety of occasions, such as what occurs within families, neighbourhoods, workplaces, local associations and a range of informal and formal meeting places. To risk simplifying what is an extensive and rich

literature, fundamentally, social capital is relational and embedded in the structure of people's relationships with others (Narayan 1999: 6).

In the following section, I provide some examples to provide the basis for understanding how social capital is understood in this study. Most people belong to a series of different social networks and organisations. Starting with a close relationship between family and relatives based on kinship, they grow up within a neighbourhood. They may belong to a specific religious or ethnic community. When starting kindergarten or school, people make friends and learn from different teachers. People go to work and socialise with colleagues, bosses and subordinates. They may belong to a club that keeps them in touch with people who have similar interests. They may also join a professional association that allows them to exchange information with similar professionals outside of their own work context. After work, they may play a sport with a particular club or join other groups whose members share common interests, such as photography, chess, or music. Some people may also join a political party or citizen group working for a specific political purpose, such as women's rights or environmental protection. These day-to-day social networks, including many of the social customs, norms and bonds that define them, are held together by social capital.

The significance of social capital is that it benefits the individuals who are in these social networks as well as those communities that they belong to. The utility of social capital for both the individual and the group is explained with the example of the New York wholesale diamond market:

'In the process of negotiating a sale, a merchant will hand over to another merchant a bag of stones for the latter to examine in private at his leisure, with no

formal insurance that the latter will not substitute one or more inferior stones or a paste replica. The merchandise may be worth thousands, or hundreds of thousands, of dollars. Such free exchange of stones for inspection is important to the functioning of this market. In its absence, the market would operate in a much more cumbersome, much less efficient fashion. ... It is essentially a closed community. Observation of the wholesale diamond market indicates that these close ties, through family, community, and religious affiliation, provide the insurance that is necessary to facilitate the transactions in the market. If any of this community defected through substituting other stones or through stealing stones in his temporary possession, he would lose family, religious and community ties. The strength of these ties makes possible transactions in which trustworthiness is taken for granted and trade can occur with ease' (Coleman 1988: S98-9).

Although the practice above may seem risky to outsiders given the high value of the diamonds and the incentive for an individual to take more than their share, Coleman (1988) nonetheless concludes that the market is successful and efficient mainly due to the high levels of trust that exist among the merchants.

2.3.2 Comparison of existing definitions

Different definitions of social capital have emerged from both within academia and from national and international organisations (Table 2.1). One way to define social capital is to conceptualise it as 'resources', such as information, ideas and support, which individuals are able to obtain from their relationships with other people. James Coleman (1988), who was responsible for popularising the term 'social capital', saw it as the component of human capital that allows members of a given society to trust one another and cooperate in the formation of new groups and associations. He offers the following definition:

'Social capital is defined by its function. It is not a single entity but a variety of different entities, with two elements in common: they all consist of some aspect

of social structures, and they facilitate certain actions of actors – whether persons or corporate actors – within that structure. Like other forms of capital, social capital is productive, making possible the achievement of certain ends that in its absence would not be possible’ (Coleman 1988: S96).

Similar to Coleman, Pierre Bourdieu and Loïc J.D. Wacquant (1992) and Nan Lin (2001) argue that social capital consists of resources embedded in social relations and social structures, which can be accessed and used only through human relationships. Bourdieu and Wacquant (1992: 119) argue that economic orthodoxy was artificially limiting itself to the study of a narrow band of ‘practices’ that were socially recognised as ‘economic’, and in so doing was missing the fact that ‘capital presents itself under three fundamental species (each with its own subtypes), namely economic capital, cultural capital, and social capital.’ Therefore, in this way, Bourdieu and Wacquant define social capital as:

‘...the sum of the resources, actual or virtual, that accrue to an individual or a group by virtue of possessing a durable network of more or less institutionalised relationships of mutual acquaintance and recognition. Acknowledging that capital can take a variety of forms is indispensable to explain the structure and dynamics of differentiated societies’ (1992: 119).

For Nan Lin (2001), social capital is ‘capital captured through social relations’ (p.19), focusing on two different levels: that of the individual and that of the group. At the individual level, one accesses and uses resources embedded in social networks to gain returns in his/her particular actions, such as finding a job⁹ (Lin 2001: 21). While some economists question how social capital can be considered ‘capital’ (for example, Arrow 1999: 4; Solow 1999: 6), Lin (2001: 25) defends social capital stating that, when an

⁹ Putnam’s view of social capital is broader than that of Lin. According to Lin, social capital is the expectation among actors that other actors in the same network will reciprocate in any exchange of goods or services. Although Putnam’s definition includes this aspect of social capital, it also includes the wider, unintended positive consequences on the entire society of having such social capital. For Putnam, higher levels of social capital in a society tend to be associated with higher levels of economic growth.

individual is aware of the presence of resources they possess or can access in their social ties and networks with others, the individual can capitalise on these resources in order to obtain benefits for themselves. This function of social capital reinforces an argument of Francis Fukuyama (1999), often regarded as one of the first to give prominence to the concept, that social capital is a private good as people cooperate in order to achieve their selfish ends. However, Lin (2001) also states that 'aggregation of individual returns also benefits the collective' (p.21). Contrary to the individual level, certain groups can develop and more or less maintain social capital at the group level, as a collective good to enhance the life chances of group members (Lin 2001: 22). This function of social capital focuses more on the 'public good nature' of social capital and this view is shared by Coleman (1988; 1990), Bourdieu and Wacquant (1992) as well as Putnam (1993; 1995).

Putnam is largely responsible for popularising the concept of social capital over the last fifteen years. In the book 'Making Democracy Work' (Putnam *et al.* 1993), the authors linked the differences in performance outcomes of 20 regional governments in Italy to the number of horizontal civic associations. They concluded that associationism, trust, and cooperation facilitate successful regional government which then results in economic prosperity. Social capital in this perspective is used as a conceptual term to characterise the various ways in which members of a given community relate to one another. The definition of social capital in Putnam's work is:

a feature of social organisation, such as trust, norms, and networks, that can improve the efficiency of society by facilitating coordinated action (Putnam *et al.* 1993: 167).

Putnam (2000; 1993) argues that a range of social problems, such as crime, health and the environment are linked to a community's endowment of social capital. This is explained by people's cooperation facilitated by a repeated game of Prisoner's Dilemma, as well as networks that convey information of individuals' intentions and behaviour to others within the network. Putnam's concept is based on two presumptions: first, that social networks and norms are empirically associated; and second, that they have important economic consequences. As discussed above, the latter is what Lin (2001) emphasises as the function of social capital at the group level.

Michael Woolcock also has produced a number of papers on social capital. His view supports that of Coleman and Putnam. He offers a general definition of social capital as:

'...the information, trust, and norms of reciprocity inhering in one's social networks' (Woolcock 1998: 153).

Woolcock (1998) makes a point different from others in that he attempts to develop a theoretical framework to explain how different societies could be characterised by the relative prevalence of different kinds of social capital. He argued that a range of development outcomes flows from different types and combinations of social capital determined by community capacity and state functioning.

In addition to a large number of academics, many national and international bodies have shown their interest in social capital and have made efforts to conceptualise the term. Although those organisations consider its potential in achieving their policy goals, a major challenge is to set out an operational definition. For example, the Australian Bureau of Statistics and the Office for National Statistics of the United Kingdom have adopted a

definition developed by the Organisation for Economic Co-operation and Development (OECD):

‘networks, together with shared norms, values and understandings which facilitate cooperation within or among groups’ (Côté and Healy 2001: 41).

The World Bank suggests a more expansive and broader definition:

‘social capital refers to the institutions, relationships, and norms that shape the quality and quantity of a society’s social interaction’ (World Bank, Website)¹⁰.

The interesting point is that the World Bank and other researchers (for example, Ahn and Ostrom 2001) include ‘institutions’ as a form or component of social capital. This seems to add further confusion to the debate over what social capital actually is. As discussed in the earlier part of this chapter (Section 2.2.3), North (1990) considers institutions as ‘formal’ and ‘informal’ rules of the game in a society. This is a broadly accepted definition. Although Halpern (2005: 12) states that community norms can be codified into neighbourhood codes or contracts, other prominent studies reviewed above have seen social capital as a resource that comes from informal human relationships. Therefore, the use of the term ‘institution’ in the definition of social capital can result in too broad a meaning, in which social capital may end up meaning all things to all people.

¹⁰ <http://www1.worldbank.org/prem/poverty/scapital/whatsc.htm>

Table 2.1 Different definitions of social capital

Author	Definition
Coleman 1988 (p.S96)	'form of capital that makes possible the achievement of certain ends that in its absence would not be possible'
Bourdieu and Wacquant 1992 (p.119)	'the sum of the resources that accrue to an individual or a group by virtue of possessing a durable network of more or less institutionalised relationships of mutual acquaintance and recognition'
Nan Lin 2001	'capital captured through social relations'(p.19) 'the resources embedded in social networks accessed and used by actors for actions' (p.24)
Woolcock 1998 (p.153)	'the information, trust, and norms of reciprocity inhering in one's social networks' seemingly obvious opportunities for mutually beneficial collective action are squandered'
Putnam 2000 (p.19)	'connections among individuals – social networks, and the norms of reciprocity and trustworthiness that arise from them'
OECD: Côté and Healy 2001 (p.41)	'networks, together with shared norms, values and understandings which facilitate cooperation within or among groups'
World Bank, Website	'the institutions, relationships and norms that shape the quality and quantity of a society's social interaction.'

2.3.3 Operational definition of social capital for this study

As shown in the literature review above, different definitions of social capital have emerged in the last two decades. The term reflects a way of conceptualising how informal cultural, structural, and institutional aspects of groups in a society interact and affect economic and political outcomes. People can overcome the strong temptation to only pursue their own short-term self-interest because building social capital helps them develop trust among themselves. As Rudd states, a social capital framework is useful to conceptually explore

'...the effects of institutional structure on sustainability and to articulate the links between social interaction, collective action and social vision' (2000: p. 132).

Thus, the concept of social capital is useful in the analytical framework for community-based resource management because collective efforts of individuals are critical in

achieving group conservation goals. For the purpose of this study, social capital is defined as:

a set of values, such as the norms of reciprocity, and social relations embedded in the social structure of society that enable people to act collectively and to achieve their desired goals.

For the purpose of this study, the strength of these values and norms are measured empirically using questions in the survey and semi-structured interviews.

2.3.4 The two-dimensions of social capital

For the purpose of this study, the two most important types of social capital are ‘bonding’ and ‘bridging’ (Table 2.2). While attributing the coining of this distinction to Gittel and Vidal (1998), Putnam describes these two types thus:

‘Some forms of capital are, by choice or necessity, inward looking and tend to reinforce exclusive identities and homogenous groups. Examples of bonding social capital include ethnic fraternal organisations, church-based women’s reading groups and fashionable country clubs. Other networks are outward looking and encompass people across diverse social cleavages. Examples of bridging social capital include the civil rights movement, many youth service groups and ecumenical religious organisations’ (2000: 22-3).

Bonding social capital cements somewhat homogenous groups, whereas bridging social capital creates bonds of connectedness that are formed across diverse social groups.

This distinction somewhat repeats the earlier sociological research done by Mark Granovetter (1973: 1378) regarding the role played by ‘weak’ ties and ‘strong’ ties. Granovetter’s challenge was, using a labour market study, to present the linkage of small, face-to-face groups with one another and with larger, more amorphous ones. According to

him, ‘weak ties’ such as those that occur between acquaintances and various contacts are extremely useful in obtaining information, opportunities and jobs. On the other hand, ‘strong ties’ such as those that occur between family and close friends provide a more intense, multi-stranded form of support, and as such play a greater role in emotional well-being. In other words, different types of social networks, characterised by different forms of interpersonal ties, have different roles, and weak ties are indispensable to the opportunities of individuals and to their integration into communities (Granovetter 1973: 1378).’ To use Putnam’s terminology, we can interpret Granovetter’s argument to imply that bonding and bridging social capital have different roles. Bridging social capital is particularly significant for people’s economic activities.

Table 2.2 The two-dimensions of social capital

	Definition	Functions	Examples
Bonding social capital	Social ties which cement somewhat homogenous groups	As ‘strong ties,’ it reinforces ethnic identities and homogenous groups. It helps rationalisation of rules and norms within a group so as to encourage the members to conform.	Social relationships within family, close friends, ethnic fraternal group, church-based group.
Bridging social capital	Social ties which create bonds of connectedness across diverse groups	As ‘weak ties,’ it provides a group with information, opportunities, and technology from the external world. It facilitates information flows by enhancing transparency so as to reduce transaction costs.	Friends of friends, business associates, acquaintances, youth service groups, ecumenical religious organisation.

Other scholars have also contributed to the theoretical arguments regarding types of social capital. Michael Woolcock (1998) attempted to develop a theoretical framework in order to show how different societies could be characterised by the relative prevalence of different types of social capital. He argues that these different types of relations within and

between social groups at different levels of society shape the prospects for sustainable equitable growth and participatory governance by solving collective action problems. While recognising his contribution to the development of the theoretical argument for social capital, Halpern (2005: 20) criticises Woolcock as his work created some confusion over the use of different terms for similar conceptual distinctions. For instance, Woolcock called bonding social capital 'integration' and bridging social capital a 'linkage.' Focusing on state-society relationships, Woolcock (1998; 2001; 2000) also highlights the presence of power and uses the concept of 'linking social capital' to describe the extent to which an individual's or community's networks are characterised by linkage between those with very unequal power and resources. In sum, linking social capital is a kind of bridging social capital but vertical bridge across asymmetrical power and resources.

Fedderke *et al.* (1999: 716) introduced two different functional roles (but not as kinds or forms) of social capital: transparency and rationalisation, in order to answer the question whether more social capital increases economic growth. Although such distinctions, dimensions and rival conceptions or definitions of social capital create confusion, their cross-cutting distinction between the two functions of social capital help us understand the roles of bonding and bridging social capital.

The definition of transparency in Fedderke *et al.* (1999: 719) is 'the comprehensibility of the rules, norms and values of an institution or society to its members.' Since this function of social capital facilitates the flow of information and generally reduces transaction costs, a society with more bridging social capital would be seen as having more transparency, as information would flow more smoothly between groups. This would improve the certainty of outcomes for individuals due to the increased predictability in

others' actions, and thus possibly increase the likelihood of cooperation between the members of the group. Rationalisation of social capital, on the other hand, refers to 'the degree to which it is embodied in formally codified rule, norms, and values (Fedderke *et al.* 1999: 722). If a community has more rationalised social capital, such rules, norms or values will be procedural rather than substantive. In other words, those communities with rigid rules are considered as more rationalised than those with behaviour that is more situationally flexible and driven by outcome-oriented rules.

The two functions of social capital, transparency and rationalisation, are not independent of one another. The more universal the rules, the more widely accessible to interpretation they become. As a result, the performance of those acting under such rules becomes progressively more transparent and the rules and practices themselves become more open to understanding by individuals in the society (Fedderke *et al.* 1999: 729). This indicates that indefinite increases in social capital in any one dimension may be neither desirable nor feasible (Fedderke *et al.* 1999). In short, bonding and bridging social capital are related to each other and are indivisible. Therefore, there is simply limited potential for continued development of social capital in any one dimension, such as bonding or bridging.

2.4 Community-based coastal resource management

In spite of the significance of coastal resources to Pacific Islanders, no consensus exists regarding the long-term sustainability of their use. A number of previous studies have revealed that coastal ecosystems in the Pacific islands are under increasing threat from various sources (Huber and McGregor 2002; UNEP 1999; World Bank 1999), including both land-based and ocean-based human activities. According to a World Bank cross-national comparison (World Bank 1999), communities of island nations in the Pacific

islands are pessimistic about the conditions of their coastal resources. At 21 out of 31 sites in Fiji and four other island nations, locals perceived that they expected resources to continue declining into the future (World Bank 1999: viii). Given the importance of coastal resources in the region, efforts for proper management of coastal resources is necessary for improving regional sustainability.

In order to address different problems in coastal ecosystems, it is useful to categorise the causes, or drivers, of change in coastal resources, according to their types. This study employs categories used in the Millennium Ecosystem Assessment lead by the United Nations. These categories help to explain the role of actors, including social and political organisations, at different levels so as to develop strategies in response to a specific problem. The Conceptual Framework for the Millennium Ecosystem Assessment defines a *driver* as 'any natural or human-induced factor that directly or indirectly causes a change in an ecosystem' (MEA 2005: 87). The drivers of ecosystem change are divided into two different types: *direct* or *indirect* and *endogenous* or *exogenous*. According to the Millennium Ecosystem Assessment, a direct driver 'unequivocally influences ecosystem processes' and is measurable. An indirect driver 'operates more diffusely, often by altering one or more direct drivers.' Whether a driver is endogenous or exogenous depends on the degree of control at a given level. For instance, although endogenous drivers at the local level are under the control of a decision maker in the community, exogenous drivers are not.

Table 2.3 summarises the key drivers that are thought to cause changes in coastal ecosystems in Fiji. It shows that strategies to resolve coastal environmental problems in a country can be implemented at different levels, depending on the nature of the problem to be solved. An interesting point to note is that decisions made by local-level Fijian

traditional authorities are an exogenous driver to changes in resources at the national-level, therefore affecting the government's resource management policy. Customary marine tenure allows the local level authority to have *de jure* and *de facto* decision-making power over their coastal resources. This unique power relation was noted by the Millennium Ecosystem Assessment group in Papua New Guinea (PNG) in their report on PNG's coastal resources (Filer *et al.* 2004), as customary marine tenure is found not only in Fiji, but also in many Pacific island nations. Although numerous exogenous drivers to change exist in ecosystems at the community-level, management efforts at higher levels are still necessary to improve the quality of the coastal environment. However, the fact that the local authority has independent decision-making power explains Johannes' (2002: 318) observation that CBCRM may be more widespread in Oceania today than in any other tropical region of the world. Although colonial administrations changed many of those systems, the recent CBCRM initiatives promoted by donors and government agencies in the Pacific islands build upon their management activities based on customary marine tenure, combining scientific knowledge and modern technologies.

Table 2.3 Key drivers of change in coastal ecosystems in Fiji

	Endogenous drivers		Exogenous drivers	
	Direct drivers	Indirect drivers	Direct drivers	Indirect drivers
National level	<p>Intentionally introduced non-native species</p> <p>Pollution of the marine environment caused by industry and agriculture</p> <p>Habitat loss and degradation caused by large scale development</p> <p>Commercial (industrial) marine resource harvesting</p> <p>Reef and beach mining</p>	<p>Development policies</p> <p>Weak capacity of management and coordination among government agencies</p>	<p>Climate change</p> <p>Accidentally introduced exotic species and disease</p> <p>Decisions relevant to resource use made by local traditional authority regarding their customary land and fishing grounds</p>	<p>International market prices of products produced in coastal area</p> <p>Global policy of environment and natural resource management</p>
Local or community level	<p>Intensification of local marine resource harvesting</p> <p>Use of destructive harvesting methods</p> <p>Waste disposal from local households</p> <p>Forest clearance of uncultivated land</p>	<p>Natural population growth and domestic migration</p> <p>Lack of environmental knowledge and awareness in community</p> <p>Change in values and practices related to indigenous resource management regimes</p> <p>Change in local, customary governance</p> <p>Changes in local land use in coastal area</p>	<p>Commercial (industrial) marine resource harvesting</p> <p>Pollution of the marine environment caused by industry and agriculture</p> <p>Habitat loss and degradation caused by large scale development</p> <p>Intentionally introduced non-native species</p>	<p>Local market prices of marine products</p> <p>Prices of imported food and fuel</p> <p>Insufficient government support in resource management at local level</p>

Compiled by the Author based on Filer *et al.* 2004; Huber & McGregor 2002; LMMA 2003; World Bank 1999; Zann 1994

Apart from the widespread concept of customary marine tenure in the Pacific islands, the existing literature also suggests two justifications for recent worldwide recognition of community-based resource management. First, the community-based approach has emerged largely due to dissatisfaction with the performance of centralised management policy in providing appropriate management resources and sufficient incentives to local resource users managing resources on a sustainable basis (Adams 1998; Crean 1999; Huber and McGregor 2002; Jentoft *et al.* 1998). In particular, according to Adams (1998: 129), attempts by governments to manage resources using 'Western models' in the wake of the decolonisation of Pacific island nations resulted in *de facto* open-access situations in which overexploitation easily occurred.

Second, there is increasing recognition that organised civil society plays an important role in overcoming economic problems, including the internalisation of ecological externalities, the provision of local public goods, and access to credit by the poor. Molinas (1998: 413) argues that neither the market nor the state can reliably solve these problems. As a result, much work has been done to support community-based resource management with a focus on local level economic development and environmental conservation. In this context, participatory resource management is often seen as a viable solution to the problems of rural poverty and resource degradation.

Other literature also cites the potential benefits for government from a community-based resource management approach. Clark (1995: 310) argues that local fishers are the real day-to-day managers of fishery resources when they are assigned to organise themselves and implement their management activities. Kellerher (1999) sees the involvement of the local community as an efficient measure to reduce the costs of

enforcement in coastal management. For example, King and Fa'asili (1998) observed that increased local control over the resources encouraged local people to comply with the rules to a higher degree in community-owned village fish reserves in Samoa. According to Kellerher (1999: 30), the reduction of resource-use conflicts due to better understanding and knowledge among stakeholders is a likely benefit from local community involvement.

Supported by the above positive perspectives, a number of government agencies, NGOs, international donors and other organisation have promoted CBCRM initiatives in the South Pacific. However, the outcomes of these projects are mixed. Baines *et al.* (2002: 1) clearly state that the South Pacific Biodiversity Conservation Programme, managed by the South Pacific Regional Environment Programme from 1992 to 2001 with an emphasis on the involvement of community into biodiversity conservation, failed to develop a process that would lead to the protection of biological resources. In their assessment of a number of conservation projects in the South Pacific focusing on marine protected areas, Huber and McGregor (2002: 21-2) argue that projects using the community-approach have not fully demonstrated long-term sustainability.

As the existing literature does recognise the importance and strong potential of promoting resource management at the local level, efforts to better understand socio-economic issues at this local level is important to improving coastal resource management in the Pacific islands. The purpose of this thesis is to empirically analyse CBCRM, using a theoretical framework based on the academic literature on common pool resource management and social capital.

2.5 Common-pool resource regime and CBCRM

Coastal resources, particularly fishery resources, possess the characteristics of a common pool resource (CPR) and, therefore, may encounter problems of management. These resources are part of the natural capital stock that can be added to or depleted by the level of harvesting. To address the question as to how people can most efficiently and equitably manage their local coastal resources, the debate centres around whether they can coordinate their actions for long-term group benefits. From this perspective, social capital may play a significant role in CBCRM, since the resource users develop trust among themselves by building social capital. In order to understand how social capital helps deliver better CBCRM outcomes, I will first review CPR regimes in comparison with other property regimes. Then, the discussion will proceed to how CPR theories can explain three major collective action problems. The solutions are provided by focusing on how the appropriators develop their mutual understanding through their social relationships.

2.5.1 CPR and its management

A CPR resource is a system that:

- (1) is sufficiently large enough that it is difficult to exclude potential beneficiaries;
and
- (2) when there is joint use, it involves subtractability (Berkes and Farvar 1989: 7; Ostrom 1990: 30).

In other words, more than one individual can jointly use a CPR as a resource system and an individual using the CPR can receive the full benefit, while the full costs of use are shared

with others. Similarly to that of public goods, CPRs are likely to have certain management problems: free-riding, underprovision of the good, and the dissipation of resource rents. On the other hand, CPRs share a feature of private goods due to their subtractability, meaning that ‘the level of exploitation by one user adversely affects the ability of another user to exploit the resource’ (Feeny *et al.* 1990: 54). For example, multiple persons can fish in the same fishing ground at the same time, while the fish harvested by one fisher is not there for someone else. Prominent examples of CPR management include grazing land practices and investments; forest and agroforestry resource use and management; soil fertility management; irrigation systems; watershed management; and fisheries management (Meinzen-Dick *et al.* 2002; Ostrom 1990).

The concept of CPR regimes emerged as an alternative to the pessimism of the “tragedy of the commons”. Until two decades ago, there was a belief that the users of a commons were caught in an inevitable process leading to the destruction of the very resource on which they depended. Berkes *et al.* (1989: 91) characterise this as an open-access situation with an ‘absence of well-defined property rights’ which can lead to people free-riding and thus overexploiting a resource because individual users ignore costs imposed on others. Where open access prevails with no management implementation, resource use tends not to be optimal, since resource exploitation continues until total costs equal total benefits. The problem is that appropriators’ individual evaluation of the expected benefits does not take into account the decline in the others’ benefits caused by their exploitation. In other words, by their action, they impose an externality on the other users. This will eventually destroy the resource as stated by Garrett Hardin:

'The rational herdsman concludes that the only sensible course for him is to add another animal to his herd. And another . . . But this is the conclusion reached by each and every herdsman sharing the commons. Therein is the tragedy. Each man is locked into a system that compels him to increase his herd without limit - in a world which is limited' (1968: 1244).

Hardin (1968: 1245) proposed two possible solutions to avoid the seemingly inevitable - the transfer of the resource to either private ownership or to government control.

Mancur Olson (1965) made another classic argument that overexploitation was inevitable due to the problem of collective action. Outcomes are at least partly determined by incentive structures, which may, in part, be determined outside of the community or affected by external actions. In large group situations, free riding is identified as a general problem in the use of the commons. Olson (1965: 2) asserts that 'rational, self-interested individuals will not act to achieve their common or group interests,' and he summarises his view thus:

'The idea that groups tend to act in support of their group interests is supposed to follow logically from this widely accepted premise of rational, self-interested behaviour. In other words, if the members of some group have a common interest or object, and if they would all be better off if that objective were achieved, it has been thought to follow logically that the individuals in that group would, if they were rational and self-interested, act to achieve that objective' (1965: 1).

Based on Olson's argument, the solution to commons problems, such as the sustainable use of coastal resources, is relatively simple and plausible. Individual contributions are determined by selective incentives, which include rewards for co-operators and punishment for violators/free riders. Therefore, external actors such as governments may be needed to create the selective incentives, protect assets, and improve

missing markets (Olson 1965). Olson's challenge was to prove that an incentive for a group is not a sufficient condition to motivate individuals for their collective action to achieve group benefits. This analysis was built on two broad presumptions: that attributes of the set of individuals facing a common problem affect their capabilities to solve problems themselves; and that two attributes of the phenomena involved in a problem, namely exclusion and jointness, would also affect the capabilities of a set of individuals to solve a common problem. In other words, the assumption on which Olson based his argument is that each appropriator makes an isolated, independent decision about participation in conservation activities.

The assumption that all individuals make independent, selfish decisions seeking to maximise short-run benefits is reasonable for large markets where the actors do not know each other (Feeny *et al.* 1996: 188-9)¹¹. When a large number of individuals make high demands on a single resource and act independently, taking only their own expected return into account without communicating with each other, the tragedy of the commons may occur. However, CPR theories imply that both Hardin and Olson's arguments are not necessarily valid in community-based natural resource management.

In relatively small scale situations, the maximisation of short-term benefits is not the only goal of individuals. Non-pecuniary rewards, such as prestige, respect, kinship and other social and psychological objectives, are also important motivations for resource

¹¹ The pessimistic analyses were based on the assumptions that: (1) individual appropriators are homogenous and lack distinguishing characteristics; (2) that no property rights are assigned to resources thus, access to the resources is open to all; and (3) that there is no interaction among individual appropriators and they are powerless to alter the institutional arrangements to affect the outcome. As a result, each user takes into account only his/her own marginal costs and revenues and ignore the fact that increases in his/her catch affect the returns to fishing effort of other users as well as the health of the resource. Krishna, Anirudh. 2001. "Moving from the Stock of Social Capital to the Flow of Benefits: The Role of Agency." *World Development* 29: 925-943.

exploitation in addition to profit maximisation (Oliver *et al.* 1985: 524). Furthermore, each individual can benefit from being a member of the community or larger group when they develop trust among themselves (Ahn and Ostrom 2001). Therefore, the individual has an interest in sustaining the group and its resources. In other words, considerations of solidarity or altruism, in addition to simple self-interest, are also relevant and important in understanding collective action (Feeny *et al.* 1996: 190; Marwell and Oliver 1993: 5).

Moreover, the likelihood of people's behaviour towards cooperation based on trust is not the only reason for optimism about community-based resource management. The two types of management regimes that Hardin suggested, private property and state property, could result in negative management consequences, or in some circumstances, it may not be possible to implement these two management regimes. Under the private property regime, the rights to exclude others from using the resource and to regulate the use of the resource are vested in an individual (or organisation) and normally these rights are transferable (Feeny *et al.* 1990: 3). While private property rights in many cases lead to the successful exclusion of other potential users and are effective in avoiding the tragedy of the commons, due to the characteristics of natural resources such as coastal natural resources, difficulties in the application of a private property regime are common. Problems arise because of their unique physical traits: indivisibility and multiple-resource characteristics (Adger and Luttrell 2000: 78). Many coastal resources such as fish and marine invertebrates are highly mobile, and ecotonal habitats on the coasts, such as tidal flats and coral reefs, alter seasonally or sometimes even daily. As a result, it is difficult to physically partition these resources. In addition, problems related to the multiple-resource characteristics include likely conflicts over the resources located on the boundaries between

several ecosystems, since different types of users tend to have a variety of large demands placed on them.

On the other hand, under state property the resource is held exclusively by the government. Decisions concerning access to and use of the resources are made by the government that has coercive authority over enforcement (Feeny *et al.* 1990: 3). However, due to problems in the political process, failures of law enforcement are not uncommon. In many cases of coastal resource management, *de facto* open access to users is more likely to conform to the predictions of an open access regime rather than one of state property.

The existing literature discusses a range of benefits generated by CPR regimes. In their book supporting indigenous property rights arrangements entitled *Halting Degradation of Natural Resources*, Baland and Platteau (1996: 175) argue that CPR regimes enable resources to be used just as efficiently as in private property regimes. Moreover, privatisation and government control are likely to eliminate the implicit entitlements and personalised relationships that are characteristic of CPR arrangements. Fisher (2005) shows that some natural resources in developing nations such as forests and grasslands are dependent on group-based systems of tenure and management and, therefore, are essential in reducing poverty and allowing economic benefits to flow to communities.

CPR systems often exist in combination with other property rights regimes. For example, large areas of forest are often under state ownership and controlled by government authority, while at the same time, the resources are managed *de facto* by nearby communities. The government of Nepal devolved permanent use rights of forests to a large number of Forest User Groups, increasing local control over the resources,

including local arrangements such as limiting collection of certain products and sharing them between households (Fisher 2005: 29). Satria *et al.* (2005) report a case of co-existing private property and CPR regimes that provide a preferred setting for a successful pearl-culture industry in West Lombok, Indonesia. In some Pacific island countries, land tenure systems combine aspects of group and individual rights and obligations. Although ownership is held at the group level, land use can be exercised at the individual or household level for personal benefit. Therefore, it is too simple to refer to CPR settings as only 'communal ownership' (Fingleton 2005: 4).

In sum, CPR regimes do play a critical role in the management of natural resources at the community-level, possibly superseding the more pessimistic models suggested by Hardin and Olson. In a relatively small-scale community, people could have close interactions for long periods of time, engaging themselves in a trial-and-error effort to learn more about the results of their actions so that they can evaluate benefits and costs more effectively (Ostrom 1990: 38). Berkes and Farvar (1989: 11) listed various roles that a CPR regime can play, such as:

- (1) a principle means of livelihood that assures the basic needs of community members;
- (2) a mechanism for equitable use of resources with minimum internal conflict;
- (3) the basis for the system of production in community life; and
- (4) a system of resource conservation that supports local self-sufficiency and provides ecological sustainability over generations.

In response to CPR researchers' criticism against the tragedy of the commons, Garret Hardin later admitted that he had misused the term "commons" instead of "unmanaged commons" in his classic 1968 article. Hardin revised his argument as follows:

'...the way to avoid disaster in our global world is through a frank policy of "mutual coercion, mutually agreed upon." Under conditions of scarcity, ego-centred impulses naturally impose costs on the group, and hence on all its members' (1998: 682).

His modified argument then is that 'a "managed commons" describes either socialism or the privatism of free enterprise' (Hardin 1998: 683). However, Ostrom *et al.* (1999: 278) criticise Hardin for his article of 1998 by comparing Chinese, Russian and Mongolian land use policies and their outcomes as examples of how socialism and privatisation can end up with more degradation than the outcomes of a traditional group property regime characterised by self-organised institutions.

2.5.2 Solutions to collective action puzzles

As explained above, the CPR theory has been used to empirically demonstrate the settings of a management regime where actors who are principle appropriators of the resource are involved over time in making and adapting rules within collective-choice arenas. How then can CPR theory reasonably resolve or explain the theoretical questions related to collective action? Ostrom (1990: 42) raised the following three theoretical questions:

- (1) Why do institutions emerge even though creating a new set of rules attracts free-riders?
- (2) How is the commitment of appropriators' in key management practices maintained?

- (3) How can the appropriators engage in mutual monitoring of conformance to a set of their own rules?

Regarding the emergence of institutions, they may enhance the welfare of rational actors, thus building new institutions may cause another collective action problem because supplying new rules is the equivalent of providing another public good. A possible solution to this problem is proposed by Robert Bates (1988) on the basis of a repeated Prisoner's Dilemma game. Bates (1988: 399) argues that rationality on the part of individuals lead to coherence at the community level. People reciprocate a series of mutually productive plays and could establish trust and a sense of community that work as mechanisms for solving the problem of building new institutions (Ostrom 1990: 43).

To maintain the appropriators' commitment, the key is for them to share common knowledge concerning:

- (1) what the rules are and how they work; and
- (2) the likelihood that others behave in reciprocal ways.

This knowledge of the rules and their operation greatly increases the appropriators' reciprocal behaviour, because there is a 'you know that I know this' situation that discourages them to act exploitatively. This is particularly true in long-enduring CPR cases because the appropriators themselves have established and revised rules.

Lastly, researchers have observed that, in many long-lasting CPR cases, monitoring and sanctioning are undertaken by the appropriators by themselves rather than external authorities. Ostrom (1990) uses Margaret Levi's analysis of strategic actors to explain why

the appropriators can engage in mutual monitoring. Levi (1988: 60) argues that the actors comply with a set of rules when:

- (1) they perceive that the collective objective is achieved, and
- (2) they perceive that others also comply.

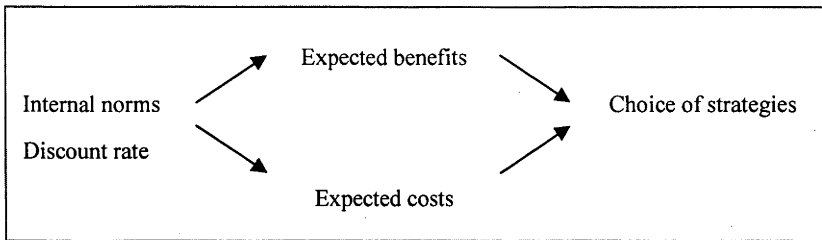
In short, cooperation is conditional on information available to the actors. Advancing from Levi's argument which presumed the presence of an external enforcer, Ostrom (1990) explains how self-monitoring by the appropriators is feasible and essential. The key to understanding self-monitoring is, again, functions of information and knowledge given to the actors. In the settings where the appropriators have or acquire complete information about past history, such as rate of rule compliance, they know what others did in the last round of decisions and how those choices affected outcomes (Ostrom 1990: 96). Therefore, having a self-monitoring system provides better information and knowledge to the whole group at low cost and, if each individual learns that others follow the rules, it is safe for them to also comply with the rules.

If CPR theories can offer solutions to all these major theoretical questions, why have resource management problems then been reported in different places of the world? Why have Pacific island communities experienced degradation of their coastal resources (Baines et al. 2002; Huber and McGregor 2002; UNEP 1999; World Bank 1999)? Why have we found the mixed outcomes of CBCRM in the South Pacific based on CPR theories? This thesis intends to find answers to these general questions by focusing on social relationships not only among the actors in the community but also external relationships between the community and other actors.

2.5.3 Social relationships in CPR management

It is important to note that the three collective action puzzles as described by Ostrom (1990) of how appropriators develop institutions; how they credibly commit to follow the institutions; and how they monitor others' compliance, as well as their solutions, are all about interactions among appropriators. It is this focus on the appropriators that points to the significance of social capital in CPR management. In CPR settings that have existed for an extended period of time, people have developed internal norms. When these are shared by the appropriators of a CPR, they are able to use complex strategies rather than simply independent strategies in relation to other individuals. This can reduce the cost of monitoring and sanctioning activities considered necessary to counter self-interested free-riding or opportunistic behaviour (Ostrom 1990: 35-6). As a simplified mechanism to explain rational behaviour, Ostrom focuses on internal norms and discount rates, as these two variables affect individual choices of actions (Figure 2.1). Depending on the situation, appropriators develop and share different types of the internal norms, while internal discount rates are affected by the range of opportunities that an individual has outside any particular situation (Ostrom 1990: 37). In other words, it matters for CPR management how people build up the necessary level of trust for them to function and how they share norms and information.

Figure 2.1 Simplified conception of rational action



Adapted from Ostrom (1990)

In order to address this important theoretical issue regarding the relationship between people's interaction and CPR management, it is necessary to understand how the social networks of communities affect the achievement of their goals. The term 'social network' describes people's interdependence: it refers to the links between individuals and the multiple relations that can exist among them (Monge 1985: 130). All societies are built from social groups consisting of individuals. These groups affect people's attitudes, beliefs, identities and values, as well as their access to resources and opportunities (Narayan 1999: 1). Those social relationships may be built on internal links, such as a common gender or age, kinship associations, or external links, such as neighbourhood-based groupings, employment-based networks and other organisations. The idea of internal and external social links has led to theoretical work seeking to break the notion of social capital down into different sub-types.

2.6 Existing CPR research and social capital

Some scholars argue that social capital relates to long-enduring CPR management (for example, Agrawal 2002; Ahn and Ostrom 2001; Ostrom 1994). Others have attempted to analyse the functions of social capital in CPR management (for example, Grafton 2005;

Plummer and FitzGibbon 2006; Rudd 2000). However, there have been only a few studies on the CPR-social capital relationship that have considered bonding and bridging social capital. In particular, empirical studies in this topic are rare. This section will provide a review of existing major CPR research in order to understand how it has used the idea of social capital.

Many academic CPR studies have focused on the investigation of conditions under which CPR institutions are viable. In his comprehensive studies, Arun Agrawal (2001; 2002) compiled a list of conditions for sustainable CPR management (Table 2.4), based on the work of Robert Wade (1988), Elinor Ostrom (1990) and Jean-Marie Baland and Jean-Philippe Platteau (1996). Agrawal chose these three studies because they have made significant academic contributions to CPR theory development based on empirical investigation of specific cases. He categorised critical conditions for sustainability of the commons into the following four groups (2002: 54-5):

- (1) physical attributes of the resource, such as size, boundaries and mobility;
- (2) characteristics of the appropriator group, such as size, past experience and heterogeneity;
- (3) institutional arrangements, such as resource use rules and decision-making systems; and
- (4) external environment, such as market influence and assistance from government agencies.

Table 2.4 Critical enabling conditions for sustainability on the commons

<p>(1) Resource system characteristics</p> <ol style="list-style-type: none"> 1. Small size (RW) 2. Well-defined boundaries (RW, EO) 3. Low levels of mobility 4. Possibilities of storage of benefits from the resource 5. Predictability <p>(2) Group characteristics</p> <ol style="list-style-type: none"> 1. Small size (RW, B&P) 2. Clearly defined boundaries (RW, EO) 3. Shared norms (B&P) 4. Past successful experiences – social capital (RW, B&P) 5. Appropriate leadership – young, familiar with changing external environments, connected to local traditional elite (B&P) 6. Interdependence among group members (RW, B&P) 7. Heterogeneity of endowments, homogeneity of identities and interests (B&P) 8. Low levels of poverty <p>Combination of (1) and (2) Relationship between resource system characteristics and group characteristics</p> <ol style="list-style-type: none"> 1. Overlap between user group residential location and resource location (RW, B&P) 2. High levels of dependence by group members on resource system (RW) 3. Fairness in allocation of benefits from common resources (B&P) 4. Low levels of user demand <p>(3) Institutional arrangements</p> <ol style="list-style-type: none"> 1. Rules are simple and easy to understand (B&P) 2. Locally devised access and management rules (RW, EO, B&P) 3. Ease in enforcement of rules (RW, EO, B&P) 4. Graduated sanctions (RW, EO) 5. Availability of low-cost adjudication (EO) 6. Accountability of monitors and other official to users (EO, B&P) <p>Combination of (1) and (3) Relationship between resource system and institutional arrangements</p> <ol style="list-style-type: none"> 1. Match restrictions on harvests to regeneration of resources (RW, EO) <p>(4) External environment</p> <ol style="list-style-type: none"> 2. Technology: <ol style="list-style-type: none"> i. Low-cost exclusion technology (RW) ii. Time for adaptation to new technologies related to the commons 3. Low levels of articulation with external markets 4. Graduated change in articulation with external markets 5. State: <ol style="list-style-type: none"> i. Central government should not undermine local authority (RW, EO) ii. Supportive external sanctioning institutions (B&P) iii. Appropriate levels of external aid to compensate local users for conservation activities (B&P) iv. Nested levels of appropriation, provision, enforcement, governance (EO)

Adapted from Agrawal (2002: 62-3)

RW, Wade (1990); EO, Ostrom (1996); B&P, Baland and Platteau (1996).

While the list of these variables does not provide a blueprint to be imposed on resource management regimes, it can provide a framework to understand the factors that enhance or

reduce the capabilities of individuals collaborating in group management so as to organise long-enduring institutions. As Ostrom states, listing CPR conditions is important because:

‘...they can affect incentives in such a way that appropriators will be willing to commit themselves to conform to operational rules devised in such systems, to monitor each other’s conformance, and to replicate the CPR institutions across generational boundaries’ (1990: 91).

As Table 2.4 shows, the list of CPR conditions suggests social capital as one of the variables that affects sustainability of CPRs. However, in this list, social capital seems to suggest a narrow meaning. Following Wade (1988) and Baland and Platteau (1996), Agrawal (2002: 54) uses the term ‘social capital’ to refer only to ‘a community’s past successful experiences in collective action.’ He does not discuss social capital regarding its definition or function. As explained above, in accordance with other major social capital studies, social capital in this study is defined as a set of values such as the norms of reciprocity and social relations, embedded in the social structure of society that enables people to act collectively and achieve desired goals. Although past experience of successful collective action can be part of the common knowledge that encourages people to take further collective action, shared norms are also relevant to social capital or considered an even more important form of social capital. In short, Agrawal’s definition of social capital does not include the key feature of shared norms that is so important in collective action due to their function in reducing the cost of monitoring and sanctions (Ostrom 1990; Ostrom 1998a; Ostrom 2000).

Other research has attempted to analyse how social capital works to solve collective action problems and how it relates to CPR management. Using the concept of bargaining found in game theory, Ostrom (1994) theoretically explores social capital. She finds that

appropriators engage in collective action by investing their time, effort and resources to build physical capital such as an irrigation system. The social capital she is concerned with only refers to institutions as rules of resource use. Although she notes the presence of other forms of social capital, such as networks, norms and social beliefs, social capital in that study seems to be quite unusually defined. We have discussed this point whether social capital should include 'institution' or not in section 2.3.2 of this chapter. In fact, in her later work with Ahn (2001) she identifies trustworthiness, networks and institutions as three basic forms of social capital. What is more, she states that 'whether or not to include institutions as a form of social capital is a matter under debate (Ostrom 1994).' While it is necessary to point out that her definition of the term 'social capital' is not comprehensive, Ostrom (1994) theoretically demonstrates how trust among the appropriators, the core idea of social capital, can be developed both among homogenous and heterogeneous appropriators in their process of rule making. Since locally crafted institutions that make collective action possible are one of the keys in long-term CPR management (Agrawal 2001; Agrawal 2002; Baland and Platteau 1996; Ostrom 1990; Wade 1988), Ostrom's work (1994) is important in understanding the mechanisms of local rule-making. She emphasises the importance of common understandings among the appropriators regarding rules in resource use and lists seven assumptions that they need to share.

Ostrom's theory (1998a) of behavioural rational choice is based on the idea that trust, reputation and norms of reciprocity interact with each other and thus can lead to higher levels of cooperation and outcomes that are 'better than rational.' According to her, although individuals are boundedly rational, meaning that they are not given complete information regarding all potential actions and strategies available to them, they can use

experience they have learnt from their interactions with others and also learn to adopt and use norms and rules as they communicate with others. Although Ostrom (1998a) did not explicitly use the term 'social capital,' her experimental method is useful because it helps explain the role of trust in leading to greater cooperation necessary for resolving social dilemmas. Although the generalisability to the real world of any controlled experimental study must be treated with caution, she does demonstrate the basis of how social capital can function in creating new structural arrangements that may be used to solve CPR problems. The study theoretically supports the significance of social capital in empirical CPR settings.

Rudd (2000: 132) used a social capital framework 'to develop theories of the effects of institutional structure on sustainability and to articulate the links between social interaction, collective action and social vision.' He sees social capital as 'an input factor in the production of environmental quality' because it facilitates norms of reciprocity, trust and those which matter to produce and maintain public goods, such as natural resources (Rudd 2000). In order to connect structural variables in the creation of social capital (for example, group size, similarity of interests, and info availability) with collective action, he combines a framework for conceptualising social capital based on social indicators proposed by Collier (1998) with a theory of rational choice behaviour developed by Ostrom (1998a). However, while he demonstrated the utility of a social capital theory, his framework still lacks strong evidence and, therefore, needs to be empirically tested.

2.7 A theoretical puzzle in CBCRM

As I have discussed, social capital plays an important role in cases of CPR management that require collective action. Social capital refers to a set of values, such as the norms of

reciprocity, and social relations embedded in the social structure of society that enable people to act collectively and to achieve desired goals. This is possible because social trust facilitated by building social capital enhances coordination, communication, and thus resolves social dilemmas surrounding collective action, reducing the incentives for free-riding. This view is summarised by Michael Woolcock as:

'Ceteris paribus, one would expect communities blessed with high stocks of social capital to be sager, cleaner, wealthier, more literate, better governed, and generally "happier" than those with low stocks, because their members are able to find and keep good jobs, initiate projects serving public interests, costlessly monitor one another's behaviour, enforce contractual agreements, use existing resources more efficiently, resolve disputes more amicably, and respond to citizens' concerns more promptly' (2005: 7).

From his argument, we hypothesise that in a situation of CPR management, higher levels of social capital should facilitate greater collective action for long-lasting natural resource management. Still, numerous questions remain unanswered. Through what process does social capital built by external relationships affect CPR institutions? Is long-lasting coastal resource management at the community level stimulated by more social capital, regardless of the form it takes? Does building social networks with external organisations really benefit CBCRM, as Woolcock's argument would seem to suggest? While the hypothesis that higher levels of social capital leads to improved collective action is plausible, it still needs to be empirically investigated in a complex CPR setting.

The two dimensions of social capital are relevant to the effectiveness of rules in CBCRM. First, the greater the amount of bonding social capital that exists in a community, the more rigid are rules due to its rationalisation function. Rationalisation is the degree to

which norms and values are formally codified (Fedderke *et al.* 1999: 719), meaning that there is greater awareness within the community of rules, and fewer chances of misunderstandings. Second, bridging social has the transparency function, which increases the comprehensibility of the rules, norms and values of an institution (Fedderke *et al.* 1999: 719). The greater the amount of bridging social capital the community holds, the better information flows with external groups, therefore, reducing transaction costs. For the purpose of this thesis, I have classified the impact of bonding and bridging social capital on CBCRM into two categories:

- (1) Promotion of shared understanding on rules in use; and
- (2) Enforcement of rules and better compliance (Table 2.5).

1. Shared understanding on rules in use

a. Provision of knowledge: Knowledge diffusion, transmission and exchange

Bridging social capital based on weak ties with external groups can provide new knowledge, ideas and technologies to the community. Once the information is introduced into the community, bonding social capital helps in its dissemination. For the external groups, such as government agencies and supportive NGOs, local knowledge and regulations, helpful for management, can be obtained through bridging social capital. The exchange of knowledge is important for them to develop sound co-management policies or assistance strategies that meet local needs. Transparency enhanced by social capital facilitates the flow of information and increases trust between the groups (Fedderke *et al.* 1999).

b. Conflict resolution mechanisms: Availability of low cost adjudication mechanism

Both types of social capital are also important for conflict resolution depending on the level at which the conflict takes place (Grafton 2005: 7). At the community level, internal mechanisms are necessary for resolving what is or is not a rule infraction because different individuals could interpret even a simple rule in different ways (Ostrom 1990: 100). On the other hand, a community may have conflicts with neighbouring communities or outsiders, such as commercial fishers coming from long distances. In such cases, links across the community or supportive external sanctioning institutions may be necessary to mitigate the conflict.

c. Nested enterprises: consistency of rules at multi-levels

By facilitating better communication among different levels, bridging social capital can help rules to be consistent in a large system. Rules and norms on a day-by-day basis are not isolated structures but parts of a wider and complex set of institutions. The pattern of interrelation of these institutions at the lower levels provides a higher level institution in society. When rules at one level take rules at the other levels into account, the governance activities can be organised in multiple layers of nested enterprises that range in size from small to large. This can solve diverse problems involving different issues of scale (Ostrom 1990: 102; Ostrom 1998b: 8; Ostrom 2000: 152).

2. Enforcement of rules and better compliance

Bonding social capital based on strong ties within a community is important for ensuring that its members comply with rules. The norms of reciprocity they develop over the long term motivate them to follow the rules because they assume that others will also conform. Rational individuals cooperate with one another rather than cheat because of the mutual trust they build through their ties. The system of monitoring and sanctioning further reinforces rule compliance.

a. Monitoring: Accountability of monitors to users

As Gibson *et al.* (2005) argue, rule enforcement is necessary for long term CPR management. Resource monitors have to be accountable to the users and keep a watchful eye on resource conditions and user behaviour. Monitors can be selected from among the resource users themselves or provided by reliable officials (Ostrom 1990). Those CPR user groups that enforce their own *de facto* sets of rules, monitored by locally selected individuals, could potentially be a low cost but effective means of enforcement. However, if rule breaking by outsiders is common, enforcement of *de jure* rules by official agents might be necessary. In either case, the important point here is that monitors are trusted. This is necessary so that they can continue cooperating without constant fear that they are being taken advantage of (Ostrom 2000: 151).

b. Sanctioning: Graduated sanctions

Ostrom (2000: 151) also argues that the initial sanction can be relatively low. In fact, it does not even have to be considered a 'punishment'. It could be simple information provided to the person who broke the rule and the rest of the community. When the members of the community have higher levels of trust among themselves, they are more forgiving of mistakes. However, if an outsider is guilty of repeated infringements, then, the community has no effective means to exclude them. The result is a possible real threat to community-based resource management. In this case, the provision of supportive external sanctions could be necessary for the continuance of the CPR institutions (Baland and Platteau 1996: 345).

Although the two-dimensional nature of social capital plays an important role in understanding CPR management, little empirical work has been done analysing how different types of social capital function in CPR management. For example, Jain and Jain (2002) analysed the functions of social capital in forest resource management in India. Although they acknowledge the presence of vertical relations of the community as part of social capital, their focus remains on the horizontal relations within the community. My research thus intends to incorporate the two-dimensional nature of social capital in CPR management because it explains how external organisations relate to the community in building long-lasting CPR institutions. Although different distinctions of social capital types have been suggested by various scholars (for example, Fedderke *et al.* 1999; Woolcock 1998), this research employs the most widely used (Halpern 2005: 22) bonding-

bridging distinction to express the links between the community and non-local organisations regarding CPR management.

Table 2.5 Theoretical functions of social capital in CBCRM¹²

	Bonding social capital	Bridging social capital
1. Shared understanding on rules in use		
a. Knowledge		
Diffusion	X	
Transmission and exchange		X
b. Conflict resolution mechanism		
Availability of low-cost adjudication	X	X
c. Nested institutions		
Consistency of rules at multi-levels		X
2. Enforcement of rules and better compliance		
a. Monitoring		
Accountability of monitors	X	X ¹³
b. Sanctioning		
Graduated sanctions	X	X ¹²

2.8 Measuring social capital

Despite the fact that the concept of social capital has witnessed a remarkable rise to prominence in the theoretical literature in social science, economic development, health, and resource management, perhaps the greatest sticking point remains the problem of measurement. Studies of economic rationality require rigid indicators of social capital because ‘if we cannot measure it, you cannot manage it’ (Bullen and Onyx 1998: 8). However, as we have discussed, social capital is a complex construct - simple proxies are not suitable. Woolcock and Narayan (2000: 239) state that obtaining a single, true measure of social capital is probably not possible. The reasons are:

¹² The style of this chart follows Grafton’s (2005: 759).

¹³ Effects of bridging social capital in monitoring and sanctioning depend on the presence of outsiders and its seriousness.

- (1) social capital has a multi-dimensional nature incorporating different levels and units of analysis;
- (2) the nature and forms of social capital change over time as the balance between informal organisations and formal institutions shift; and
- (3) the absence of a long-standing cross-national survey measuring social capital.

In spite of the difficulties in measurement, a number of researchers have developed indicators to measure social capital. This section critically reviews the approaches to measuring social capital and introduces the methods to be used in this thesis.

2.8.1 Measures used in key studies

A general pattern of social capital measurement in large scale studies tends to use only one or a few measures of social capital, including trust and membership of groups, and civic engagement. For example, the General Social Surveys conducted by the National Opinion Research Centre in the United States asked for 'membership in a variety of voluntary associations' and then aggregated responses up to the state level to create an indicator of per capita membership in voluntary groups. The result was used by Putnam (1993) as an indicator of social capital in his groundbreaking study. However, Halpern (2005: 32-33) identifies three serious weaknesses in operationalising social capital as the number and density of organisations for the following reasons:

- (1) it takes account of only a narrow definition of social capital, which is network-based definition of social capital;
- (2) the composition and nature of groups can be ambiguous and change over time; and

(3) studies after Putnam have sometimes failed to replicate his results (for example, Knack and Keefer 1997).

Knack and Keefer (1997) used indicators of trust and civic norms from a sample of 29 market economies. Their conclusion was that memberships in formal groups was not associated with greater levels of trust or with improved economic performance, although they argue that social capital matters for measurable economic performance. Though not directly concerned with norms or levels of trust, Krishna (2001: 930) also criticises Putnam (1993) for using the number and density of organisations as mere proxy measure of social capital. More importantly for my purposes, Putnam's method of measurement may not be applicable in other cultures beyond Western Europe due to the differences in social structure and way of life. As a result, it is necessary to develop a locally-relevant scale for measuring social capital.

To develop an index of social capital in villages of a developing country, Krishna and Uphoff (1999; 2002) devised a locally relevant scale for measuring social capital in villages in Rajasthan, India, in the context of watershed management. Their factor analysis found that six specific types of activities which people were commonly engaged in are valid for investigating aspects of cooperation and coordination. These six items are aggregated into the development of a social capital index (Table 2.6). The index was further tested in study (Krishna 2001) on rural development that focused on agricultural activities in the same geographic area. The study found strong correlations among these six components, which suggest validity of the index. In short, Krishna (2001) observed high degrees of cooperation and reciprocity in villages with high scores on the social capital index, while people in villages where social capital was low were suspicious of each other.

These studies (Krishna 2001; Krishna and Uphoff 1999; Krishna and Uphoff 2002) suggested a useful method to measure social capital in rural areas of a developing country, incorporating not only membership in voluntary groups but also different aspects of social capital. However, a problem remains in the survey questions – specifically the question measuring solidarity. Krishna asked, ‘Is it possible to conceive of a village leader who puts aside his own welfare and that of his family to concern himself mainly with the welfare of village society?’ A question worded like this may threaten respondents who feel sensitive about discussing an issue like power in a small, rural village where authority clearly lays with their leader. As a result, their response may not reveal an accurate measure of their attitudes.

Following Krishna (2001), Grootaert *et al.* (2004) suggest focusing on people’s subjective perceptions regarding the following items:

- (1) trustworthiness of other people;
- (2) the institutions that shape their lives; and
- (3) the norms of cooperation and reciprocity that surround them.

In order to generate quantitative data on the various dimensions of social capital, they developed the Integrated Questionnaire for the Measurement of Social Capital based on five previous empirical works conducted in developing countries. Although the questionnaire they developed is expensive, time-consuming, and long (it consists of 95 questions in six sections), its comprehensive nature does provide a prototype instrument. The questionnaire has been pilot-tested in Albania and Nigeria. Grootaert *et al.* (2004: 2) suggest that the questionnaire needs to be revised to fit local conditions when used in

different part of the world, because not all the questions and not all the phrasings are relevant or appropriate in every context.

Table 2.6 Components of social capital index in the context of village-based agricultural development in Rajasthan

Components	Questions	Mode of response
(1) Membership in labour-sharing groups	Are you a member of a labour group in the village?	Yes or No
(2) Dealing with crop disease	If a crop disease were to affect the entire standing crop of this village, then who do you think would come forward to deal with this situation?	5 point Likert-scale, from 'Everyone individually deals with,' scored 1, to 'The entire village act together,' scored 5.
(3) Dealing with natural disasters	Suppose there was some calamity in this village requiring immediate help from the government, who in this village do you think would approach government for help?	5 point Likert-scale, from 'no one,' scored 1, to 'the entire village collectively,' scored 5.
(4) Trust	Suppose a friend of yours in this village faced the following alternatives: To own and farm 10 <i>bighas</i> ¹⁴ of land entirely by themselves To own and farm 25 <i>bighas</i> of land jointly with one other person	Answers were scored as follows: (1) scored 1 point, and (2) scored 2 point.
(5) Solidarity	Is it possible to conceive of a village leader who puts aside his own welfare and that of his family to concern himself mainly with the welfare of village society?	3 point Likert-scale, from 'such a thing is not possible,' scored 1, to 'such a thing happens quite frequently in this village,' scored 3.
(6) Reciprocity	Suppose some children of the village tend to stray from the correct path, for example, they are disrespectful to elders, they disobey their parents, are mischievous, etc. Who in this village feels it right to correct other people's children?	4 point Likert-scale, from 'No one,' scored 1, to 'Anyone from the village,' scored 4.

Source: Krishna (2001: 931-2)

2.8.2 Qualitative or quantitative?

While emphasising the importance of gathering quantitative data, to use social capital as a development tool and to make policy recommendations, the qualitative aspects of social

¹⁴ A *bigha* is a local unit for measuring land in Rajasthan. One *bigha* is roughly equal to quarter of a hectare.

capital should not be ignored. It is a contradiction in terms to argue that universal measures are the most valid and reliable means to understand local conditions. Depending on the setting, the survey instruments used to measure social capital require intensive periods in the field to ascertain the most appropriate methods to ask the necessary questions.

A number of researchers have supported the use of qualitative methods, in addition to quantitative methods, to study social capital. While their study focuses on quantitative measures of social capital in a health survey, Harpham *et al.* (2002: 1) explicitly recognise the significance of qualitative methods for exploring social capital. Grootaert *et al.* (2004: 4) state that the combination of both quantitative and qualitative methods can produce a more comprehensive picture of the structures and perceptions for measuring the different dimensions of social capital. Harpham and his colleagues (2002) agree with this in their study and use a quantitative measure of social capital, recognising that ‘the importance of developing qualitative methods for exploring social capital that will be important in setting the issue within local context [sic]’(p.106). Thus, my study employs both quantitative and qualitative elements to examine the role of social capital in community-based coastal resource management as CPR management that involves external organisations.

2.9 Summary

To summarise my argument to this point, the purpose of this research is to investigate the role of social capital in CBCRM. Through the analysis, I intend to explore the appropriate institutional arrangements for effective CBCRM. This thesis draws on the literature of social capital, a term for norms and social networks that facilitate collective action among individuals. It is a set of values and relationships developed by people through repeated

interactions in a society. The theories of CPRs, an important category of institutions for the study of governance of natural resources, support the significance of social capital in CBCRM because users of a CPR need to cooperate to avoid problems associated with the ‘tragedy of the commons.’ Social capital shapes levels of trust and co-operation among the resource users and between resource user groups and external organisations so as to affect management outcomes. The focus of this thesis is on two major relationships between actors regarding CPR management, the two conceptual categories of bonding and bridging social capital. Due to the different roles of these two types of social capital in CPR management (Table 2.5), it is important to understand the role of social capital.

CHAPTER 3

The Context – People and the Environment

3.1 Introduction

In Chapter 2, I explained the theories of common-pool resources (CPR) and social capital. The purpose was to offer a theoretical background for exploring people's relationships in community-based coastal resource management (CBCRM) first, within the community and, second, between the community and external organisations. Although this study investigates the role of social capital in the management of CPRs in which external organisation have intervened, the main policy implication is the possible development of an improved system for managing coastal natural resources in Fiji. As Scura *et al.* (1992) describe, the management of resources of coastal areas encompasses 'the interactions among the biophysical, terrestrial and marine environments and human activities, including the governing institutional and organisational arrangements.' Therefore, it is essential to understand the particular physical and socioeconomic conditions of the area under study as a background. The description of these conditions below includes the characteristics of Fiji's coastal natural environment, the livelihood activities of Fijian people on the coast, and their resource management activities. The purpose of this chapter is to describe the conditions particular to Fiji necessary for understanding the problems and issues related to CBCRM.

The chapter is divided into five sections. First, I explain the relevance of the geography and natural environment of Fiji to the study. Although Fiji's ecosystems vary, this study is limited to its coastal region. The coastal environment is significant for both the people and the state because half of the economically active population are engaged in subsistence living either on a full-time or part-time basis, and a substantial portion of these citizens depend on fishing. Although its activities are largely done offshore, fishery is a large export industry and provides large numbers of people with a stable income. What is more, since visitors who go to Fiji for the beaches bring much needed foreign exchange, natural resources and sceneries of coastal areas are a key attraction in the tourist industry.

Second, I explain the key concepts relevant to Fijian society. Knowledge of the social structure is important to understand the norms upon which the culture is organised. Norms relay the information as to how individuals, based on their standing in society, are expected to act in their interactions with others. They shape the patterns of people's behaviour and constrain their choices. From existing anthropological studies, it seems that some specific concepts form the basis of particular rules that affect Fijians' behaviour, including kinship, the chiefly system, and consideration based on age and seniority.

The discussion then proceeds to key social issues relevant to this study, customary marine tenure and the norms of reciprocity. The institutions of the customary marine tenure system give indigenous Fijians authority over management of marine resources to some extent, providing an important incentive for CBCRM (Johannes 2002: 328). As discussed in Chapter 1, its presence justifies the validity of a community-based approach in Fiji. On the other hand, the norms of reciprocity are forms of social capital and their presence implies trust among the people. As a result, they are able to make those credible

commitments that are key to solving the problem of collective action. In the review of the relevant literature below, these are explained as necessary background knowledge for understanding the role of social capital in CPR management.

Third, I explore the public policy structure of Fiji relevant to CBCRM by discussing national-level public policy, including a review of relevant legislation and government agencies. Understanding public policy is necessary in an analysis of institutional arrangements of CBCRM. The presence of a supportive national legislative framework and management capacities of government are critical in the implementation of natural resource management at the community level (Ruddle 1998: 122).

Lastly, this chapter explains the general concept of coastal management and outlines recent trends in Fijian coastal resource management. The emphasis is on recent marine protected areas (MPAs), commonly used as a conservation tool in Fijian CBCRM, and non-governmental organisations (NGOs) that have been actively involved in MPAs.

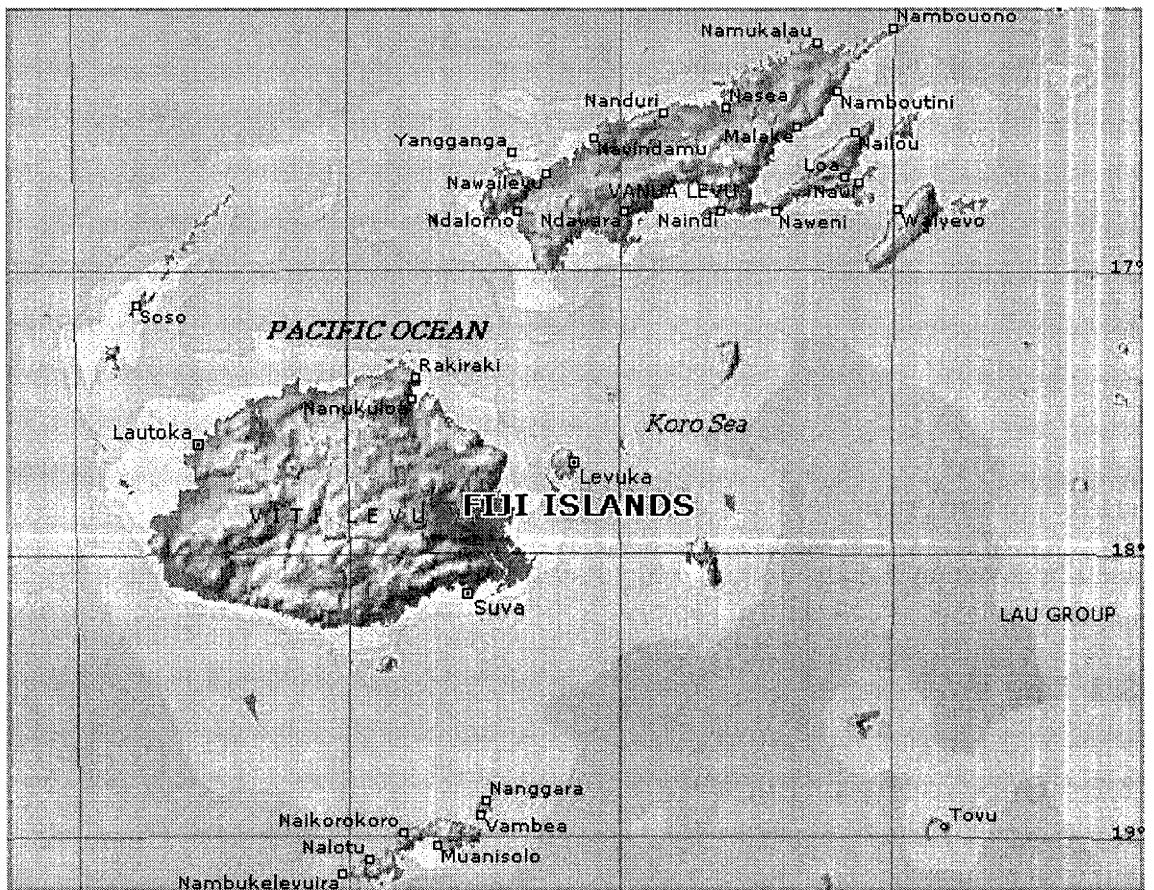
3.2 The environment

3.2.1 Geography of Fiji

Fiji is an archipelagic state that lies midway between Wallis and Futuna and Samoa to the northwest, Tonga to the east, New Caledonia to the southwest, Vanuatu to the west, and Tuvalu to the north (Figure 3.1). The country consists of 332 islands, and the total land area is 18,333 square kilometres (Fiji Government 2004). In 2007, approximately one-third of these islands were inhabited by a total population of 827,900. This was divided into 57.3 per cent Fijians, 37.6 per cent Indians and 5.1 per cent others. While the two largest islands,

Viti Levu and Vanua Levu, constitute 87 per cent of the total area, small and scattered islands make up the rest of the country.

Figure 3.1 Map of Fiji



Source: Microsoft Expedia.com

Fiji enjoys a south sea maritime climate that supports various rich ecosystems and a wide variety of habitats. As terrestrial ecosystems, the islands include lowlands and montane rainforests, inland swamps and grasslands. The coastal and marine areas of Fiji

also vary with different types of ecosystems, such as mangroves, sandy beaches, tidal flats and coral reefs. These different ecosystems provide humans with a variety of services, as explained in the next section. Although in the bigger islands the mountains and other inland natural environments are important as sources of water and agricultural land, a significant portion of people, particularly those living in coastal areas and small islands, are dependent on the coastal and marine environment and their natural resources. According to the Fisheries Division Annual Report (Fiji Government 1996b), approximately 50% of all rural households in Fiji depend on fishing to satisfy their protein needs. The subsistence production is estimated to be 21,600 tonnes including finfish and non finfish, or slightly more than half of all domestic production (FAO 2002).

3.2.2 The Coastal Environment

Definitions of a coastal zone

The boundary between the land and ocean generally occurs through a gradual transitional region, called a 'coastal zone.' As suggested by Carter, a very broad definition is:

'The coastal zone is that space in which terrestrial environments influence marine (or lacustrine) environments and vice versa' (1988: 1).

Since the natural processes that shape the coast are highly dynamic, varying in both space and time, this line where land and ocean meet constantly moves. Accordingly, there is no single definition for such zones, and different boundaries are delineated for particular management purposes, as Hildebrand and Narrena state:

'In practice, the [coastal] zone may include a narrowly defined area about the land-sea interface on the order of hundreds of metres to a few kilometres, or extend from the inland reaches of coastal watersheds to the limits of national

jurisdiction in the offshore. Its definition will depend on the particular set of issues and geographical factors which are most relevant to each stretch of coast' (1992: 94).

In particular, small island countries like Fiji should have a specific definition of coasts, because the general definition could cover the entire land of the state. Filer *et al.* proposed a narrow definition for Papua New Guinea's coastal zone as:

'the space which extends 10 kilometres inland from a shoreline up to a maximum height of 600 metres above sea level, or 10 metres below mean sea level but within 10 kilometres of a shoreline' (2004: 9).

I argue that this definition can be applied to Fiji, particularly for some of its bigger islands because its geographical characteristics as an island are similar to those of Papua New Guinea.

In this thesis, my attention is on the marine component of coastal zones, although I realise the importance and impact of the management of terrestrial components, such as agriculture, forestry and construction of human settlements on the coastal zone. However, Fijian CBCRM has evolved focusing on marine resources and customary marine tenure explained in this chapter. Thus, management activities of the marine components provide an appropriate case for an analysis of the role of social capital in CBCRM in Fiji.

Coastal ecosystems and their services

As discussed in Chapter 1, a great number of Fijians directly use coastal resources as a source of food and commercial products, as well as a cultural good. In addition to these economic and social benefits, different types of ecosystems, such as mangroves, tidal flats, seagrass beds and coral reefs, provide different ecological services.

Mangroves are a formation of coastal trees or shrubs that are adapted to estuarine or even saline environments. It is known that mangroves provide significant value in the coastal zone as a buffer against erosion, storm surge and waves along many low-lying tropical coasts. Serving as a bulwark, they protect human settlements, agriculture and other infrastructure from storms. Mangroves are also one of the most important habitats for wildlife, including a number of bird species and commercially important species of fish and crustaceans. The mangrove ecosystem is highly productive and the abundance of decomposing detritus from the trees and other plants in the forests provides a rich source of food. Furthermore, the structure of mangrove roots that normally exist in shallow water prevents access by predators and provides a relatively secure nursery ground for the juveniles of different species of prawns, crabs and fishes.

The richest mangroves in Fiji occur at the mouths of major river deltas around mud-covered stream banks in the tidal zone. Fiji's mangroves are mainly found on the two largest islands, Viti Levu and Vanua Levu. As a result, mangroves are often close to human inhabited areas thus making them vulnerable to major damage from various types of development. According to time series data compiled by the Food and Agriculture Organisation of the United Nations (Wilkie and Fortun 2003), the estimated area of mangroves of Fiji declined from 51,700 square kilometres in 1969 to 49,777 square kilometres in 1975, and then to 42,464 square kilometres in 1991. The decrease has continued mainly due to developments for farming (especially in Ba and Labasa areas), tourism (Nadi Bay) and urban development (especially in Suva area) (Fiji Government 1997a: 11). The state has developed mangrove management plans (Phase I in 1985 and

Phase II in 1986) to promote sustainable uses of the mangroves but these need to be implemented and enforced.

Intertidal areas of the coastal edge sometimes have wide areas of open tidal flats, often found in estuaries and lagoons. Such intertidal areas support seagrass and marine algae that provide essential feeding areas for fish at high tide or birds at low tide. The tidal flats also serve to catch nutrients and hold them, thus they act as important energy processing and storage elements of the lagoon, estuary, and delta ecosystems.

Coral reefs are often regarded as one of the most important ecosystems for tropical maritime nations. Like mangroves, coral reefs are known to provide a defence against storm waves that would otherwise inundate coastal lands. Although endemism tends to be low, coral reefs generally have a high diversity of species. Based on the concept of 'hotspots'¹⁵, coral reefs also receive high levels of attention as targets for environmental protection.

With an estimated number of reefs at over 1,000, Fiji has one of the largest and best developed coral reef systems in the Pacific (Zann 1994: 55). These include a variety of types, including fringing reefs, barrier reefs, platform reefs, oceanic ribbon reefs, drowned reefs, atolls and near atolls. The major coral reefs are the Great Sea Reef in Macuata in Vanua Levu, the Coral Coast reef of Viti Levu and the Great Astrolabe Lagoon situated north-east of Kadavu or 70 kilometres south of Suva.

¹⁵ Hotspot is a term for areas rich in total number of species or number of a particular kind or category of species. Norse, Elliott A. 1993. *Global marine biological diversity: a strategy for building conservation into decision making*. Washington, D.C.: Island Press. p.51.

Although Morrison and Naqasima (1999) found the Great Astrolabe Lagoon to be in a healthy state due to its remoteness, destructive fishing practices remain a serious problem throughout Fiji. Dynamiting is prevalent in some areas of western Viti Levu and western Vanua Levu, and the use of traditional fish poisons, domestic pesticides and bleach is relatively common in most areas (Zann 1992). Thaman and his colleagues (2001) reported that the community near Yanuca Island of the Coral Coast area attributed increasing sedimentation to the construction of a large-scale resort. Furthermore, numbers of 19 of 26 finfish species declined over the past 25 years due to an increase in fishing efforts and the use of more destructive fishing methods.

3.3 Fijian people and their life

3.3.1 Key concepts in Fijian villages

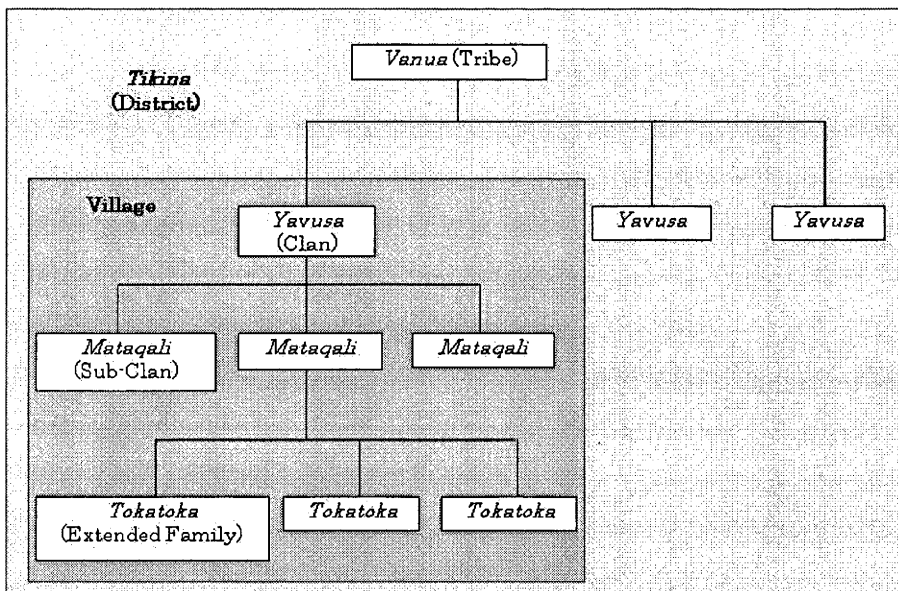
Kinship based social structure

Fijian society is based on a hierarchical structure. The primary unit of local organisation in Fijian society is the village, of which there are approximately 1,080. A village can be further divided into social unit groups that are ranked relative to each other (Figure 3.2). According to Ravuvu (1983: 76), the largest and broadest division is *yavusa* or clan, of which the members trace their descent back to a common male ancestor or ancestor god. A clan consists of *mataqali* or sub-clans, the second subdivision in the village. A child is normally registered at birth as a member of the father's sub-clan, which entitles the child to all rights and privileges, including customary land rights (Ravuvu 1983: 1). The sub-clan is

a group of extended families called *tokatoka*. The unit of extended families is usually composed of a group of adult brothers and their sons' families.

Although Fijians generally claim the hierarchical structure as their tradition, anthropological researchers have argued that this 'customary' organisational framework is actually a relatively recent creation. Walter (1978: 352) states that, in order to administer efficiently land tenure which varied locally, colonial governments demanded uniformity in the officially recorded native system of land tenure. In this process, the colonial government applied the common social unit, *mataqali*, to the entire country as the official corporate land-owning group, despite the fact that it was used only on the politically dominant island of Bau in southwest Viti Levu (Walter 1978: 352).

Figure 3.2 Fijian Social Structure



Adapted from Ravuvu (1983: 77) and modified by the author

However, in spite of its recent introduction, it appears that the organised specific model of social structure has become an accepted feature of Fijian national identity. Although people may have different alternatives in their life, such as moving to city or town or even migrating overseas, it is rational for many individuals to remain within villages because they are secure places in a carefully ordered society that encourage a sense of mutual obligation (Frazer 1973: 85). This is especially true for people who do not have much financial capital to invest in migration and/or did not receive higher levels of education or training to find jobs.

In order to enable a village to maintain a sense of consistency among the divergent interests of its members, Nayacakalou (1975:15) states that three hierarchical levels of decision making seem to be the optimal structure. As the head of a village, the *Turaga ni Koro* is elected or appointed by the villagers for implementing local administrative work. This is such an ingrained element of Fijian society that the tiered system of administration which begins with the *Turaga ni Koro*, extends from the appointed provincial heads, *Roko Tui*, to the Secretary for the Ministry of Fijian Affairs. In short, the administrative structure at the three levels is set on top of the Fijian social structure that is kin-based.

A number of clans, or *yavusa*, are grouped together to form *vanua*, or a tribe. This is a socio-political association, cemented by social and economic ties, with common allegiance to a chief (Lasaqa 1984: 18). In the modern administrative system, the term *tikina* or district is used almost as an equivalent to that of tribe. A number of districts collectively make up a province and each of the 14 provinces is governed by a council with an executive head, or *Roko Tui*, appointed by the Fijian Affairs Board. The Fijian Affairs

Board¹⁶ is regarded as the guardian of the Fijian administrative system and many other aspects of Fijian customs. This system of local government is operated exclusively by indigenous Fijians (Fiji Government 2004: 15).

Chiefs

Like many other nations in the Pacific, the social significance of the chiefly system is well known in the social context of Fiji. The chiefly system exists exclusively among indigenous Fijians. It divides the Fijians into two mutually exclusive groups - that of chief and that of commoner. Chiefs are those for whose status is attained by birth and passed on to descendants in a system of patrilineage. Commoners are the rest of the villagers. The chief, or *turaga*, is selected from the highest-ranking sub-clan, or *mataqali*, of the village. Other sub-clans are allotted different social roles, such as chief's spokesman, warrior, carpenter, fisher and priest.

In the chiefly system, the chiefs and the people cannot exist independently. The bond between the two groups has evolved over time due to their interdependence for survival (Bole 1992: 73). The chief is given certain privileges and responsibilities and generally maintains authority over all members of the village. His/her position and presence is important in village life, expressed by a term denoting ideal behaviour, *vakaturaga*¹⁷. The idea of *vakaturaga* includes respect, deference, and humility, as well as compliance to the various traditional obligations and responsibilities. A chief must show these qualities in his/her actions in relation to all people as if they held positions of

¹⁶ The Fijian Affairs Board was established under the Fijian Affairs Act of 1978. It governs all matters concerned with the administration relating the development of indigenous interests.

¹⁷ 'Turaga' means a chief and one of the uses of prefix 'vaka' is to indicate possession of the followed noun; 'vakaturaga' literally means belonging to a chief.

authority and importance or occupied the seat of the chief (Ravuvu 1983: 103; Ravuvu 1987: 18).

At the national level, the Great Council of Chiefs, or *Bose Levu Vakaturaga*, is the highest assembly of the traditional chiefs of Fiji which consists of 55 members nominated from all the provinces. The Council enjoys extensive power as it appoints the President and Vice-President, and, according to a publication of the Fiji Government (2005: 5), its advice is esteemed by all communities in Fiji. However, in spite of the common perception, it was created by the British colonial government and many argue that it is a politically 'invented tradition' (Ewins 1998).

Seniority

While chiefs are highly respected, relative age is also important in determining social behaviour and relationships among Fijians. The younger person in any relationship is expected to respect and obey the elder while the elder is obliged to behave in a mature and responsible way in all social and economic activities (Ravuvu 1983: 7). In addition, they are to give instructions to younger members of the village. For the selection of leaders, although the principle of patrilineal descent determines actual seniority in the villages, seniority in terms of age is also of considerable importance (Nayacakalou 1975: 33).

In addition, while observers of social relations among Fijians often consider that men have a social and political status vastly superior to women, Toren (1990: 41) argues that the seniority and gender relationship is more complex. Some older women are ranked higher than young men and thus treated with greater respect.

3.3.2 Key social issues in Fijian villages

Customary tenure

The term *vanua*, which literally means land, represents both the social units and the social and cultural aspects of the physical environment identified with a particular social group. The concept has interrelated physical, social and cultural dimensions related to the land, including vegetation, animal life, and other objects. Furthermore, it represents an all pervading aspect of the Fijian way of life, referring to the people and their social structure, values, beliefs and common ways of doing things (Narayan 1984: 12; Ravuvu 1983: 76). As the concept of *vanua* shows, not only does Fijian society have a bond with the land in general, but Fijians also identify themselves with a particular piece of land¹⁸ (Lasaqa 1984: 22). As mentioned earlier, Fijians are registered as landowners at birth by the government to assure their indigenous land rights. Eighty-three per cent of the country's area is made up of land under customary tenure, while nine per cent is state land and eight per cent is freehold land, which can be put on the market for trade (Fiji Government 2004).

Like the land, authority over the fishing grounds or *qoliqoli*, is to some degree given to the community under customary marine tenure. This includes all rivers, creeks, lakes and stretches of coast. Customary fishing rights in *qoliqoli* are generally claimed by the tribe or clan or a group of clans (Waqairatu 1994: 82). Although some residents such as warriors and carpenters who do not usually go fishing due to their customary social duties, they have the same fishing rights as the other members of the *vanua*. These rights are secured so that the *qoliqoli* is open to all residents wishing to exploit marine and freshwater

¹⁸ Although the term *vanua* represents the Fijian – land interactions, the most common landowning unit is normally the *mataqali* [sub-clan] rather than the *vanua* [tribe].

resources as their source of food (Ravuvu 1983: 75; Waqairatu 1994: 82). The central government has clearly demonstrated the boundaries of all *qoliqoli* (385 marine and 25 freshwater *qoliqoli*) throughout the country and the boundaries appear on maps which have been registered. Despite this, disputes over ownership and resource use still occur even among local residents¹⁹.

Reciprocal relationships

One of the most important principles in Fijian village life is that related to reciprocity (Ravuvu 1983: 11). The norm of reciprocity is important for this thesis because it can be considered one form of social capital. Reciprocity is an on-going exchange over time that makes collective action possible among multiple numbers of persons (Oakerson 1993: 143-4). In reciprocal relationships, people have developed trust among themselves for a long period of time. As a result, they cooperate rather than free ride because they expect others to do the same. The economic benefits they receive from reciprocal relationships are an incentive for them to stay in the village (Frazer 1973: 85).

Some examples of local customs show how reciprocity works in the villages. First of all, it is quite normal for Fijians to reciprocate on visits between friends and relatives, giving *yaqona*, food and other items in order to show their hospitality, honour, respect and acceptance. The value and amount of the gifts are symbolic of the social status of the giver and the recipient. The person who gives the best and the most tends to feel better and is treated with greater respect (Ravuvu 1983: 11). While the norm of giving gifts is not

¹⁹ For example, Fiji Times on 11 July, 2005 reported that a man, living in Vutia village on Viti Levu, who claimed to have the traditional rights found men from neighbouring villages in 'his' fishing ground. He demanded the fish catch and threatened to kill them, but the men ignored him. The incident allegedly turned violent on the water with two people admitted in hospital.

limited to these visits, the sharing of commodities among neighbours is a custom found in the day-to-day life of Fijian villages. Watters (1969: 134-5) observed that some Fijian villages households with low income tended to depend on other households to obtain their food. Although at first glance this may seem to be an asymmetrical relationship, the fact that most village relationships are expected to be long-term investments may produce equivalent or higher levels of return in the future.

A second example of reciprocity can be found in the village labour force consisting of the entire village population of working age. Rather than being determined by legislation or considerations of productivity in relation to wages, the allocation of jobs is determined by the people's physical ability to work (Nayacakalou 1978: 107). Labour is generalised due to the comparative absence of rigid categories of economic specialisation. As a result, a high degree of mobility exists between occupations and households, between household use and communal use and even between gender and age groups (Nayacakalou 1978: 107-109). Mobilisation of village labour depends on the principles of seniority based on age and social position based on the chiefly system.

A third example of reciprocal relationships among Fijian customs can be found in the *vasu* relationship, which is based on a child and its mother's natal lineage. Fijian women generally marry into other villages. When giving birth to a child, the *vasu* relationship allows the child to receive care from the sub-clan of his/her maternal uncles and to take anything without asking, including use of the sub-clan's land for planting. Although the colonial government did not permit the right of appropriation to continue, the practice continues to exist (Geddes 2000: 69). This traditional system of reciprocity

ensures the long-term wellbeing of children and the consolidation of relations between different groups.

As it can be seen from these three examples, the basic needs of the people are provided for by kin-based networks and the sharing system based on reciprocity. This is the basis for my claim that Fijian villages have high levels of bonding social capital. Hoarding is traditionally neither necessary nor practical (Narayan 1984: 12). A Fijian term, *kerekere*, meaning to 'organise things by begging for them from a member of one's own group' (Capell 1991: 95), is frequently used among Fijians, and this reciprocative system ensures that surpluses are shared. In reciprocal relationships, especially in small communities, it is quite rational for people to offer help for others rather than accumulating wealth for themselves because of the knowledge that they may one day require assistance themselves (Oakerson 1993: 143). In other words, the incentive to reciprocate in the villages is not one of direct, immediate economic reward but one of long-term security (Nayacakalou 1978: 119). As a result, Fiji has historically achieved 'subsistence affluence' (Fisk 1970: 2; Knapman 1987: 2), and the village economy has been maintained by the sharing system with minimal amounts of money used in day-to-day life (Ravuvu 1983: 43).

Although even today sharing and exchange are the basis of the economic, political and social systems of Fijian villages (Kaplan 1990: 137), modernisation has resulted in a fundamental transformation of village life (Frazer 1973). Semi-commercial activities have replaced subsistence living and self-sufficiency while paid labour and individually owned venues have provided substitutes for communal labour and ownership (Ward and Kingdon 1995: 222-5). A money income is keenly desired by most Fijians to ensure a better education for their children, purchase of manufactured food, or for investing in a vehicle or

business (Fisk 1970: 45). As a result, most Fijian villages have a dual economy with an intricate mixture of traditional reciprocity and the contemporary money-based systems (Veitayaki 2000b: 60).

3.3.3 Village social systems and their implications for CBCRM

The kinship based social structure is a highly cohesive entity bound together with a decision making, monitoring and enforcing system that would seem to be conducive to collective action. Less heterogeneity in identities and interest helps the villagers share common norms so as to increase the likelihood of success in collective action (Baland and Platteau 1996: 302). While the centralised decision making system gave limited opportunities for villagers to participate in the decision-making process, the norm of hierarchical power relations limited the exercise of private interests among individuals.

However, in recent decades, the Fijian village has become far less cohesive, with individuals more willing to pursue various goals. Social change has been observed continuously since cession to Britain in 1874 (Frazer 1973). In particular, Sofer (1987: 2) argues that the change in style of agriculture made the mobility of individuals possible since the 1930s, when villagers started conducting a form of individual farming, locally known as *galala*. These *galala* farmers normally lived in a settlement outside of their village and, in 1958, Regulation 6 of the Fijian Regulations outlined the legislation that enabled individuals to become *galala* farmers.

The rate of change further increased rapidly after independence in 1970 when the state began encouraging rural development with an emphasis on economic activities. For example, Development Plan VII (1976-1980) aimed to decentralise economic activities so

as to enhance the material living standards and the social amenities of rural areas. In the process of rural development, some customs based on the existing communal system were regarded as impediments to development and this offered justification for new socio-economic activities based on individual economic needs (Ravuvu 1988: 83). Sofer (1987: 4) argues that fundamental to the promotion of independent commercial farming was a weakening of communal relations and a strengthening of individualism.

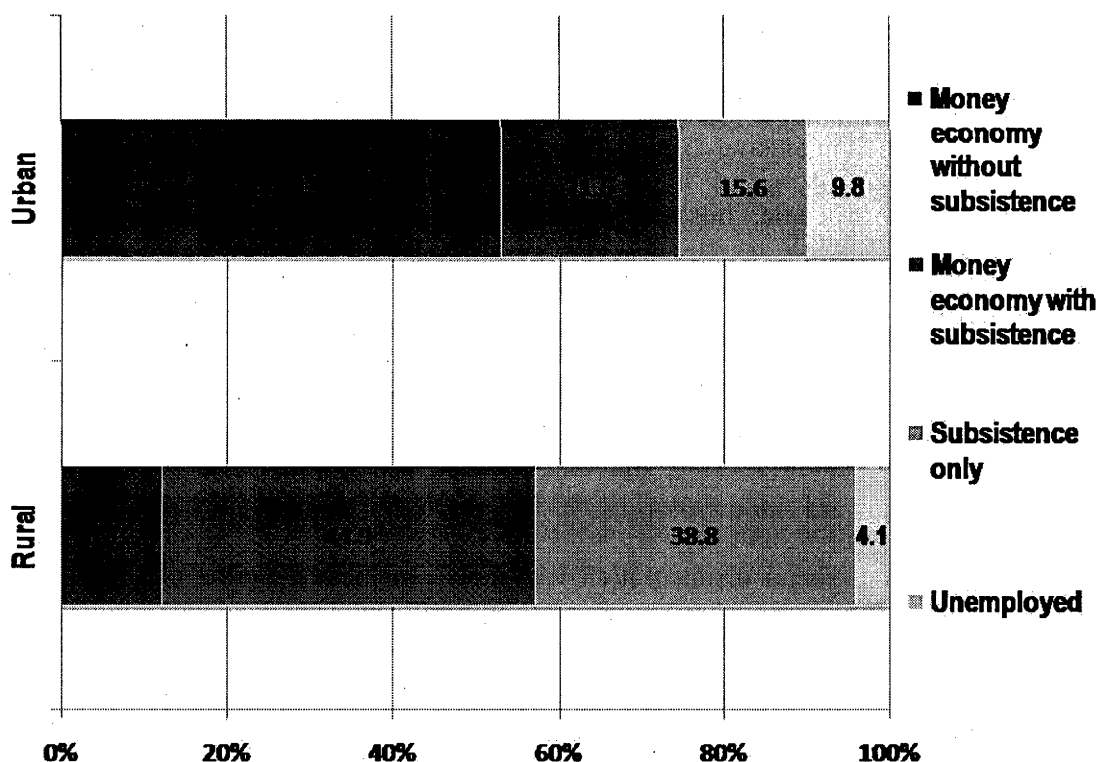
While the development policy largely affected the attitudes of village residents and altered their way of life, the socio-economic change has also affected the status of marine resources. Individual needs brought to the fore the economic and monetary values of the various natural resources under their control (Ravuvu 1988: 83). The changes from a subsistence economy to a monetary one have resulted in more fishing efforts and the use of advanced fishing gear, contributing to the degradation of near shore resources (Veitayaki 1995: 1). Since such intensive fishing efforts pose a danger of overexploitation and threaten the lives of people, this has led to a growing awareness of the need for conservation efforts. There is a growing recognition that the costs of not being able to properly manage resources will be high for both people in the villages and the government.

However, although the entire country has more or less experienced the socio-economic change toward modernisation, it is important to note that the extent of commercialisation and social disintegration vary between different parts of the country. Sofar (1988; 1990; 1993) argues that a polarised economic pattern was established due to the colonial government's policy and the basic structure maintained over time has resulted in uneven patterns of economic development because two different modes of production

exist throughout the country - the *capitalist* mode in the core and the *village-based* mode in the periphery.

Figure 3.3 shows the pattern of differentiation in economic opportunities in rural and urban areas. While 74.6 per cent of the urban Fijian population are engaged in wage employment and only 15.6 per cent lives on subsistence in urban areas, 57.1 per cent of the rural Fijian population are given employment opportunities and another 38.8 per cent work only on subsistence activities. It is apparent that people living in rural areas are still largely dependent on natural resources under the customary tenure.

Figure 3.3 Economic activities among Fijians over 15 years old of age in rural and urban areas



Source: Fiji Government (Fiji Government 1996a)

3.4 Public policy structure related to CBCRM

For the purpose of this thesis, knowledge of the socio-economic conditions of local communities in Fiji is significant because they largely control coastal resources. However, it is also important to understand national level public policy because the state shares rights and responsibilities in the management of coastal resources throughout the country. Below, I will discuss the public policy structure of Fiji specific to jurisdiction over concerns regarding CBCRM. I first review legislation relevant to CBCRM. The important government agencies, namely the Department of Fisheries and Ministry of Fijian Affairs, are then discussed, including their responsibilities and management priorities, organisational structure and management programs, with a particular emphasis on their relationship to coastal management.

A review of public policy is important in an analysis of institutional arrangements of CBCRM, because a supporting legislative framework is critical for the management of natural resources at the community level. In addition, management capacities at the national level can determine what policy options should be taken (Ruddle 1998: 122). Therefore, how government agencies are constituted and how they function needs to be understood.

3.4.1 Legislative framework

The Fisheries Ordinance of 1942, which is now referred to as the Fisheries Act, is the most relevant legislation regarding the management of coastal resources at the community level. The main features of the Act important to the current discussion are that it:

- recognises Fijian use rights in customary fishing areas or *qoliqoli* and their exclusive use to members of the customary owners;
- establishes the Native Fisheries Commission charged with the duty of ascertaining customary fishing rights (this will be explained below in the section on Ministry of Fijian Affairs and related organisations);
- prohibits the taking of fish in Fijian fisheries waters by way of trade or business without a licence; and
- gives authority to the Minister:
 - to empower any licensing officer, police officer, customs officer, honorary fish warden and any other officer to enforce the Act; and
 - to make regulations on:
 - fishing practices or methods which are likely to damage the maintenance and development of a stock of fish;
 - prescribing areas and seasons when fishing is banned or restricted, either entirely or with reference to a listed species;
 - prescribing limits to the size and weight of fish of listed species which may be taken;
 - prescribing limits to the size of nets or the mesh of nets which may be used for fishing; and
 - regulating any other matter relating to the conservation, protection and maintenance of the stock of fish.

While the Fisheries Act recognises Fijians' exclusive use rights in customary fishing areas or *qoliqoli*, the State Lands Act of 1946 gives the state control over the littoral zone, foreshore and submerged sea floor. Confusion over property rights have been observed because of this dual ownership system. The ruling party, the United Fiji Party, or *Soqosoqo ni Duavata ni Leweni Vanua*, of Laisenia Qarase intended to transfer the ownership rights to Fijians²⁰. However, it was opposed by the military and was one of the major reasons for the coup of December 2006.

Concerning fisheries, the Marine Spaces Act is the most recent legislation. It defines the 200 mile Fiji Exclusive Economic Zone and takes over from the Fisheries Act all regulation of foreign fishing vessels. The Act requires any vessel that is not a Fijian fishing vessel to obtain a licence to operate in local fishing waters, which include areas outside of the customary fishing grounds. It is generally much stricter in its provisions than the Fisheries Act, and mandates much higher penalties for illegal fishing. Since I am focusing on activities conducted by the local residents in nearshore water adjacent to their residence, I consider the provisions included in the Marine Spaces to be beyond the scope of this thesis.

3.4.2 Government Structure

Department of Fisheries

The main government agency which is potentially responsible for CBCRM in Fiji is the Department of Fisheries under the Ministry of Fisheries and Forests. The mandate of the

²⁰ The '*Qoliqoli* Bill' was enacted by the Parliament of Fiji in November 2006 for an Act to provide for the transfer of the proprietary ownership of *qoliqoli* areas from the state to the *qoliqoli* owners, for the establishment of the *qoliqoli* commission with its powers and functions and for the regulation and management of fisheries resources within *qoliqoli* areas and for related matters.

Ministry is to ensure, in the best possible sustainable way, development and management of the fisheries and forest resources in order to maximise the benefit of all stakeholders. The roles and responsibilities of the Department of Fisheries include research and development, provision of services and training, law enforcement, monitoring and surveillance, and provision of support infrastructure where economically viable.

The policy and strategy for the fisheries sector of 2002-2004 include:

- (1) to promote and expand sustainable competitive exports of living marine products by providing suitable, technological appropriate, safe and cost effective fishing vessels, particularly for industrial fisheries segment;
- (2) to manage marine resources in a way that maximises resource owner and community benefit, whilst taking biodiversity and conservation issues into account;
- (3) to improve food security in the context of availability, accessibility and affordability;
- (4) to liaise with the traditional customary fishing right owners on the use, conservation and sustainability of bait-fish and other lagoon fish species;
- (5) to provide assurance of adequate air freight for export;
- (6) to encourage local value-adding and down-stream processing with the aim of maximising the value of marine products;
- (7) to develop and provide infrastructure to island communities; and
- (8) to explore new areas such as the black pearl industry.

CHAPTER 4

Methods

4.1 Introduction

The purpose of this chapter is to explain my methods. I use a mixed method approach that includes both qualitative and quantitative data. Furthermore, I employ several different modes of collection. Creswell summarises the advantage of an approach that:

‘...employs strategies of inquiry that involve collecting data either simultaneously or sequentially to best understand research problems. The data collection also involves gathering both numeric information as well as text information so that the final database represents both quantitative and qualitative information’ (2003: 18).

This thesis seeks convergence among the research results by combining these two types of data. In this study, qualitative methods guide the research and quantitative methods are embedded or nested within so as to enrich the description of the sample participants, described by Tashakkori and Teddlie (1998). The combination allows the researcher to gain broader perspectives as a result of using different methods simultaneously as opposed to using a single method (Creswell 2003: 218). A mixed method is appropriate for this study, because only through both quantitative and qualitative analyses can I produce a comprehensive picture of the structure and perceptions of the different dimensions of social capital (Grootaert *et al.* 2004: 4).

The purpose of my fieldwork was to obtain the necessary data to analyse the role of social and institutional arrangements of community-based coastal resource management (CBCRM) in Fiji. In order to obtain in-depth qualitative information, I conducted semi-structured interviews and direct and participant observation. So as to acquire quantitative data, I distributed individual surveys. In addition, I also collected and reviewed Fijian government documents in order to obtain the necessary background information. Triangulation (Maxwell 1996; Patton 2002; Tashakkori and Teddlie 1998) allows the researcher to combine the data and information collected through these multiple methods and to then confirm whether they are accurate.

This chapter is divided into four parts. First, I explain the selection criteria for the study sites. Second, I present each field method in greater detail. Third, I discuss the validity and reliability of the methods, as well as ethical considerations. Fourth, I discuss criteria used for study sites selection and, finally, I describe the study sites in order to provide the reader with general background knowledge necessary for the proceeding analytical chapters.

4.2 Field data and methods

The fieldwork in Fiji was divided into three phases. As mentioned above, I conducted the first phase as a preliminary field visit from the 15th of October 2003 to the 19th of November. I stayed in Suva, the capital, and visited several government agencies, NGOs and academic institutions relevant to natural resources and environmental management so as to obtain general knowledge and build personal contacts. Relevant documents that

supply baseline information were also collected. The information and experience gained through this phase helped me develop my research design.

I conducted the second phase of my fieldwork from the 11th of April to the 22nd of June 2004. I had a meeting with the representative from Fiji LMMA Network and reached an agreement regarding my fieldwork conditions in their project sites. I agreed to provide the Fiji LMMA Network with my data collected from their project sites after the completion of my thesis, while they offered necessary assistance in my fieldwork. Interviews of government officials and NGO staff were conducted in Suva. I also spent two to three hours every weekday for one month to learn the basics of Fijian language with a language tutor. In addition, through visits to two villages²⁴ that worked on CBCRM activities, I gained general knowledge on CBCRM in Fiji and became familiar with customs and daily life in Fijian villages.

The third phase of fieldwork was implemented from the 20th of August to the 13th of December 2004. I conducted data and information collection in the villages. In each of my study sites, I stayed with a host family and visited all the villages in the districts. I also interviewed local government officers and some NGO staff. The field methods that I used for data and information collection are summarised in Table 4.1, and each of them is explained below.

²⁴ These villages are different from my study sites.

Table 4.1 Field methods

Method	Purpose	Type of Data	Source
Semi-structured interview	To obtain detailed information regarding resource management activities and social arrangements from interviewees' perspective	Qualitative	Individuals villagers Government officials NGO staff Dive operator Commercial fisher
Individual questionnaire survey ²⁵	To obtain data on resource user characteristics, resource use pattern, resource and perceptions on resource management activities	Quantitative	Individual villagers
Direct and participant observation	To gain first hand knowledge of activities and events	Qualitative	Resource use activities in village
Documents	To obtain baseline information on coastal resource management and social arrangements of the study sites	Qualitative and quantitative	Legislation Official maps Government reports NGO documents Academic reports Village records

4.2.1 Interviews

Semi-structured, open-ended interviews were the principal means of fieldwork to obtain detailed information on the topics relevant to this study. I conducted a total of 53 interviews. Interviews with villagers were conducted in all villages of the two districts and the total number was 37, including 17 in Cuvu and 20 in Wai. In Suva, I interviewed eight people at three NGOs. I also conducted interviews with four government officials in Suva and two in Nadroga Province. In addition, I interviewed one diving manager at a local resort, and one commercial fisher. The types of interviewees are summarised in Table 4.2.

In each village, I interviewed the village leader (*Turaga ni Koro*) as the key source of information. Other village interviewees were selected for different reasons. When I asked the village leader of each village to introduce me to the key persons in local coastal

²⁵ Respondents of the survey are different from the semi-structured interview.

management activities, he suggested that I interview persons in different roles in the village, such as traditional chiefs, elders, women, fish wardens, youth group members, and boat owners.

I used interview guides that were prepared for different subgroups (for example, villagers, NGO staff, and government officials). A sample interview guide is shown in Appendix A. Since most questions were open-ended and interviews remained flexible, the format allowed the interviews to be tailored to the knowledge and concerns of each interviewee (Patton 2002: 333). By using the common format for the same type of subgroups, the researcher is able to obtain reliable and comparable qualitative data while the interviewees are allowed to freely discuss issues that they consider to be important (Bernard 1988: 205). The interviews were conducted in the interviewee's home, village hall or office, and ranged in duration from 15 minutes to two hours. On average, most interviews took 30 to 40 minutes. Although many of my interviewees speak English, my native Fijian field assistants translated when necessary.

Table 4.2 Summary of interview

Type of interviewee	Location	Description	Number of interview	
Village resident	Cuvu	Village leader (<i>Turaga ni Koro</i>)	8	
		Traditional chief	Sub-clan head (<i>Turaga ni Mataqali</i>)	2
		Other resident	Elder	2
			Chairperson of village	1
			Chairperson of environment committee	1
			Fish warden	1
			Woman	1
	Church priest	1		
	Wai	Village leader (<i>Turaga ni Koro</i>)	5	
		Traditional chief	Clan head (<i>Turaga ni Yavusa</i>)	1
			Sub-clan head (<i>Turaga ni Mataqali</i>)	2
		Other residents	Elder	2
			NGO liaison officer	1
			Fish warden	1
			Woman	2
Youth	2			
Other	4			
NGO staff	Cuvu	PCDF	2	
	Wai	WWF	2	
	Other	Other NGOs	4	
Government official		National government	Fisheries Department officer	1
		Environment Department officer	1	
		Ministry of Fijian Affairs officer	2	
		Provincial government	Provincial officer (<i>Roko Tui</i>)	1
		Fisheries extension officer	1	
Diving manager	Cuvu		1	
Commercial fisher	Cuvu		1	
Total			53	

All formal interviews were recorded and transcribed. The transcription was coded on the software package ‘Atlas.ti’ for content analysis. This software enabled me to organise, store and retrieve narrative data so as to facilitate systematic exploration. Furthermore, it is compatible with various kinds of theoretical orientation (Kelle 1997: 1.4). In this research, the software was used mainly in the process of coding interview data and searching the database to identify major themes and issues. The coding process started with a list of provisional codes from the theoretical framework and the research questions. As I categorised information in the transcripts with the a priori codes, other categories were

subsequently added to the code list that emerged from the data. The latest list of codes is structured as a 'conceptual web' (Miles and Huberman 1994: 63) and a summary of codes with operational definitions are presented in Appendix B. Interview answers in this thesis were selected from the transcripts and edited for general readability, including the removal of irrelevant material (for example, 'well', 'you know'). The reporting style followed the Guidelines for Reporting Interview Quotes' suggested by Kvale (1996: 266-7).

In addition to the semi-structured interviews, when given the opportunity, I conducted informal, unstructured interviews such as during meals in village residences and during fishing activities with the villagers. I took notes during or immediately after the informal interviews.

My over dependence on interviews as the main source of my data is the weakest part of my research design, especially in terms of validity. In deciding whom to interview, I faced the serious problem of selection bias. I did my best to ensure that I spoke to a wide cross-section of individuals in the villages I visited but I was still limited to talking to only those respondents who had been approved by the local chief. In terms of data analysis, I also realise that my over reliance on open-ended answers to my questions leads to the problem of how to interpret the responses. I attempt to get around this problem by explaining the context of all responses.

4.2.2 Individual questionnaire survey

The purpose of a questionnaire survey is to provide a quantitative description of trends, attitudes or opinions of a population by studying a sample of that population (Creswell 2003: 153). In this research, I conducted a questionnaire survey in order to obtain

quantitative data on resource user characteristics, their marine resource use patterns, and their perceptions on coastal resource management. A questionnaire was drafted with 26 structured, close-ended questions guided by the literature on theories of CPRs, social capital and coastal resource management. The questions regarding resource user characteristics and their resource patterns are based on sample questions suggested by Bunce *et al.* (2000). The questions regarding social capital were adapted and modified from the 'Integrated Questionnaire for the Measurement of Social Capital' (Grootaert *et al.* 2004) as well as other existing studies (Narayan 1997; Narayan and Pritchett 1999). The draft was translated into the Fijian language by a language tutor, and I conducted a pilot study and pre-test in a village on Laucala Island with 10 participants. The translator then assisted me in making the necessary corrections based on the comments of the pre-test respondents.

A sample questionnaire is shown in Appendix C. The questionnaire was divided into four sections. Section 1 has a question regarding their sources of food. This question intended to measure the villagers' dependence on marine resources in their day-to-day life. In Section 2, ten questions were related to resource use patterns and asked the villagers how they conduct their fishing activities. These included years in fishing activities, frequency of fishing, gear types they use, places to fish, obligations in case they borrowed fishing gear and other activities at sea other than fishing. While these questions ask how the residents use the marine resources, they also aimed to measure reciprocity among the residents in relation to their resource use. This was important since reciprocity is one of the key ideas in the social capital concept. Seven questions in Section 3 measured respondents' perceptions regarding fishing rules, including who makes decisions, how they know the

changes in the rules, their compliance to the rules and needed changes in rules, their participation in rule making and their sense of solidarity in problem solving. The final section asks for background information on the respondents, such as sex, age, employment and education, and social groups they belong to. The question about social groups was necessary since, along with reciprocity, it is another key idea embedded in the concept of social capital. All questions, except for those regarding names of social groups, employment category, and the amount of income, are multiple choice. Question statements were slightly modified before being applied to the two study sites, as specific conditions differ between the districts.

Prior to the survey, I explained to the participants about the purpose of my visit to their village, objectives of my study, as well as how I would implement the survey. On the cover page of the questionnaire, these explanations were also given to the participants in written form.

I conducted the survey with 60 individuals in Cuvu and 62 individuals in Wai. Prior to my visit to a village, I asked my field assistant to make contact with the village leader to organise a villagers' gathering for my survey. The village leader announced my visit in their regular village meeting and told the villagers to attend my survey. Although I looked for a sample of participants in each village balanced in gender and age, attendance remained voluntary. The survey gathering was normally held in the village hall. However, in some cases, I conducted the survey in a personal residence. Although the survey was conducted in a group during the gatherings, the participants answered the questionnaire individually. It normally took 15 to 30 minutes for the participants to complete the

questionnaire. While all of the participants were literate, there were some elder participants who needed the help of my field assistants in reading due to their weak eyesight.

I coded and analysed the answers using ‘SPSS’ to obtain descriptive statistics. Table 4.3 provides the demographic information of all respondents. Since the participants of the interviews and questionnaire survey did not overlap, the total number of people who participated in the study was 158.

Table 4.3 Demographic breakdown of survey respondents

a. Gender

	Cuvu	Wai
Male	26	29
Female	34	33
Total	60	62

b. Age

N=119, Minimum=16, Maximum =76, Mean=46.38, Standard deviation =15.12							
	Cuvu			Wai			
	Male	Female	Total	Male	Female	Total	
Under 20	0	3	3 (5%)	3	3	6 (10%)	
20-29	5	3	8 (14%)	2	6	8 (13%)	
30-39	5	6	11 (19%)	2	10	12 (20%)	
40-49	7	8	15 (25%)	7	8	15 (25%)	
50-59	2	6	8 (14%)	6	5	11 (18%)	
60-69	4	6	10 (17%)	5	1	6 (10%)	
Over 70	2	2	4 (7%)	2	0	2 (3%)	

c. Education

N=116						
	Cuvu			Wai		
	Male	Female	Total	Male	Female	Total
Primary School	10	8	18 (33%)	13	17	30 (49%)
High School	9	19	28 (51%)	15	14	29 (48%)
Vocational School	2	4	6 (11%)	0	1	1 (2%)
University	1	1	2 (4%)	0	1	1 (2%)
Other	0	1	1 (2%)	0	0	0 (0%)

d. Employment

N=121						
	Cuvu			Wai		
	Male	Female	Total	Male	Female	Total
Currently employed	7	11	18 (31%)	5	2	7 (11%)
Currently unemployed	18	23	41 (69%)	24	31	55 (89%)

4.2.3 Observation

During my stay in the villages, I conducted direct and participant observations. As the methodological literature notes (for example, Bernard 1988; Patton 2002), participant observation allows the researcher to gain direct insight into the activity under study. These experiences provided me with first hand knowledge of activities and events described by respondents and cited in documents.

I participated in the following CBCRM relevant activities: net fishing, spear fishing, gleaning, boating, and participatory river survey organised by an NGO. I also observed village meetings and a district meeting. I maintained notes on the events throughout these experiences and also kept a journal during my stay in the field. During my observation in the village and district meetings, I was assisted by a field assistant who translated people's conversation. Although I did not have a translator during my participation in the CBCRM activities, all the villagers I was with spoke English and I was able to communicate with them.

4.2.4 Documents

I collected relevant documents throughout the period of fieldwork. These include legislation, official maps of customary fishing rights areas, government reports, NGO documents, academic reports and theses, as well as newspaper and magazine articles. I also collected fish trading records from the village in order to obtain a general idea about what kinds and how much fish was caught in village waters and the commercial value of the fish. These documents provided baseline descriptive and quantitative information and helped to elicit and document the perspectives of villagers revealed throughout the interviews.

4.3 Reliability, Validity and Ethical Issues

4.3.1 Reliability and validity

Regardless of the nature, type or scale of measurement, two basic requirements need to be fulfilled pertaining to the collected data. These are the problems of reliability and validity. As a scientific study, this thesis has to deal with the 'quality control of data' based on these two criteria.

4.3.2 Reliability

The concept of reliability is related to the consistency of the data and error. Random error is defined as those chance factors that confound the measurement of any phenomenon and is endemic to social research (Carmines and Zeller 1979: 14). However, it is affected primarily by ambiguous instructions given to respondents and differential emphasis on particular words during an interview.

In order to reduce the chances of random error, this research took two approaches. First, I informed the survey respondents about the purpose of the research, about confidentiality and anonymity, and how the information they provided would be used and by whom. It is expected that this procedure encouraged the respondents to cooperate with the survey and to improve the overall data quality (Punch 1998: 104). Second, I made every effort to stay in control of the data collection procedure. For example, I was physically present during the survey and administered the questionnaire face-to-face in a small group of 3 to 15 people. My field assistant assisted in translation when the participants asked questions regarding the questionnaire.

4.3.3 Validity

While reliability focuses on a particular property of empirical indicators, validity, the second criterion in the quality control of data, concerns the crucial relationship between concept and indicator (Carmines and Zeller 1979: 12). Given that we can only observe measures rather than concepts, it is difficult to completely avoid the problem of non-random measurement error. To increase the validity of the measurement instrument, researchers need to use an indicator that is valid to the extent that it empirically represents the concept it purports is supposed to be measuring (Punch 1998: 100).

As explained previously, the questionnaire for the survey was adapted and modified from Grootaert *et al.* (2004), Narayan (1997), Narayan and Pitchett (1999) and Bunce *et al.* (2000). Therefore, many questions had been previously field-tested. In addition, the pretest of the draft questionnaire helped me answer four questions regarding the appropriateness of the questionnaire identified by Converse and Presser (1986: 54): level of variation, meaning, task difficulty, and respondent interest and attention. The qualitative parts of this research also had the potential to be compromised by threats to the validity of the interviews and observations. Following Maxwell (1996: 89-91), I recognised four types of threats:

- (1) Most of my interviews were analysed through recordings and transcriptions meaning that the truthfulness of my argument depended on the accuracy and completeness of interviews and field notes;
- (2) In the interviews which involve language interpretation, I may have imposed my meaning on to the interviewees by discussing possible misunderstanding of

concepts and terminology with my field assistants prior to, and following, the interviews;

- (3) Discrepant or contrary data was analysed more carefully by considering alternative explanations or understanding of the phenomenon in question; and
- (4) Making inferences beyond the cases was a problem because of first, the relatively small number of individual informants and districts included in this study, and second, the reliance on purposive, rather than random sampling.

Although these threats were identified throughout the fieldwork, the validity of the findings were enhanced by triangulation, meaning I collected data from a diverse range of subgroups and settings using a variety of methods for gaining multiple data types (Maxwell 1996: 75-76 ; Patton 2002: 247; Tashakkori and Teddlie 1998:41-42). This approach lowers the risk of conclusions reflecting only systematic biases or methodological limitations and offers a stronger assessment for developing more generalised explanations (Maxwell 1996: 93). Furthermore, the accuracy of the findings can be checked and it is possible to build a coherent justification for themes by triangulating different sources of information by examining evidence from the sources.

I also recognise that, in the process of selecting the respondents, a non-coverage error and a bias may have occurred due to the selection of villagers who were physically available during the period of my visit to the village. In both districts, I stayed overnight with a family in one village while visiting other villages in the district during the day. This was the recommended arrangement by both the NGOs working on CBCRM and the villagers. As a result, I visited 10 of 14 villages only during daytime hours. Although I

chose a day of village meetings or a day of community work when all adults were required to attend, villagers with full-time paid jobs might not have been able to participate in the survey.

This non-random method of selecting survey respondents likely resulted in some selection bias as I may have selected only 'high profile' villagers present on the day of the meeting. Since I had only limited time to conduct fieldwork in the villages, I had no choice but to select a limited number of residents as participants, affecting on the representativeness of the sample. Following village custom, I was required to ask the village leader for his help in organising the survey and, as a foreign researcher, was dependent on his decision. It is possible that these villagers might have greater concerns about MPA or *tabu* management and conservation than the general population of residents. However, given the cultural and time constraints, it was not possible to follow a random sampling method for the entire population. Since purposive sampling techniques have low external validity, any generalisation beyond the sample is of limited predictive utility. However, while unable to fully compensate for this, my study also employs qualitative methods of in-depth and detailed data collection so as to increase the depth of the study, while acknowledging limits to its breadth.

4.3.4 Research ethics

Before beginning my fieldwork, the Human Research Ethics Committee of the Australian National University approved the proposal for this research. The research design followed the National Health and Medical Research Council's National Statement on Ethical Conduct in Research Involving Humans of 1999 and particular ethical consideration was

given to the informed consent of the survey participants and interviewees, confidentiality, cultural and social appropriateness and handling of data and information. In accordance with consultations with the Committee about ethical considerations, all quotations throughout this thesis are anonymous.

4.4 Selection of study sites

Due to the costs and difficulties associated with conducting a large-N study in a region that spans numerous countries and thousands of islands, I used a case study approach for my project. Although it is difficult to generalise results from small N research, a case study approach is still an appropriate research design for making descriptive inferences. My case study offers a rich depth of detail that allows for greater understanding of CPR in Fiji. However, I acknowledge the limitations of my approach, most notably the question of to what extent my inference can extend beyond my cases.

Schwandt (1997: 12) defines a case as ‘a unit of analysis, representing a specific instance of a phenomenon bounded in time and space.’ The selected cases can be in one country or a comparison of a few countries. In a case study, a researcher explores in depth a particular program, event or activity, or the attitudes and ideologies of one or more individuals. Detailed data are collected using a variety of data collection procedures over a sustained period of time.

Robert Yin suggests that a case study is suitable when:

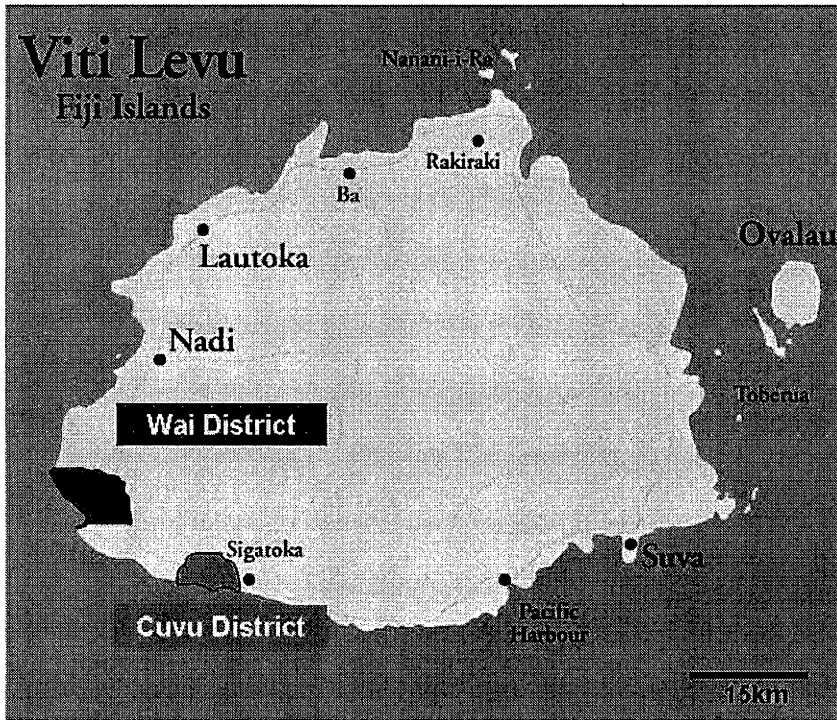
the investigators has little control over events, and when the focus is on a contemporary phenomenon within some real life context (Yin 2003: 13)

These conditions apply to my study because it examines the human interactions around CBCRM in Fiji in order to gain an understanding of how social capital functions in a particular CPR situation, as well as the implications for the institutional arrangements. As argued by Shively (2004: 103), the researcher can intelligently choose the cases, rather than select them randomly, so as to identify the relationship of interest.

The study sites for this research are two of the 21 districts found in Nadroga/Navosa province on the southwest coast of Viti Levu Island in Fiji - the District of Cuvu and the District of Wai (Figure 4.1). As the purpose is to examine the functions of different types of social capital in CBCRM from an institutional perspective, I used the following criteria for selecting the study sites:

- (1) They possess attributes of a CPR case under the Fijian customary marine tenure system;
- (2) The residents have received support on their coastal management activities from external organisations, such as NGOs for MPA or *tabu* establishment;
- (3) The coastal management activities supported by external organisations, such as management planning, involve community participation;
- (4) The areas are expected to possess different characteristics that could be conceptualised as bonding and bridging social capital; and
- (5) The residents and concerned parties including NGOs agreed to my visits to collect data and information.

Figure 4.1 Study sites



Four hundred and ten customary fishing grounds or *qoliqoli* are registered in Fiji. Thus, all the communities that have access to these areas were potential study sites. In order to find areas where the residents have received support on their coastal management activities from external organisations, I reviewed existing studies of MPAs. Although there are no national marine parks in Fiji, Huber and McGregor (2002) listed local-level MPAs in 22 areas. Among these MPAs, the oldest started in 1970 while some are still in the process of being established. At that time of site selection in May 2004, there were also some newly started and proposed MPAs under the framework of the Fiji Locally-Managed Marine Areas (LMMA) Network, not included in the list of Huber and McGregor. During my preliminary visit to Suva, the capital city of Fiji, in October 2003, I conducted an initial

inquiry about potential study sites. CBCRM professionals working at NGOs and local academics said that attempts to establish a CBCRM had been made in 20 districts throughout Fiji under the framework of the Fiji LMMA Network. As NGOs have increasingly intervened in their management by encouraging participatory approaches, the Fiji LMMA sites are appropriate as a study subject that involves community participation.

Regarding the criterion of social capital, the geographical location of villages, particularly proximity and logistical ease to city/town or tourism areas, was an appropriate indicator of availability of alternative sources of income. Sociological research has shown differences between the rural and urban environment, emphasising the fact that rural or 'traditional' communities have more cohesion and lamenting the lack of shared values in modern communities (Gilbert and Gugler 1982; Sandel 1984). In other words, it is expected that a community which is closer to a market economy possesses less bonding social capital and more bridging social capital, while a community which is more remote shows more bonding social capital and less bridging social capital. Therefore, in order to compare the different functions of social capital in CBCRM, I needed to choose two study areas that have different proximity and logistical ease to a market economy. In short, I chose one site that had easy access to a market economy and one site that had more difficult access.

For the purposes of this study, I considered the two districts, Cuvu and Wai, as appropriate study sites. Having secured permission from the concerned parties to fulfil the sixth criterion, namely the Institute of Applied Science of the University of the South Pacific, the World Wildlife Fund (WWF) Fiji Programme, and Partners in Community Development in Fiji (PCDF), I finalised selection of the study sites. A summary of these

are shown in Table 4.4. Both districts are part of Nadroga/Navosa province where the same paramount chief, *Turaga na Kalevu*, enjoys his authority.

The first study site is the District of Cuvu, which comprises seven coastal villages. These villages traditionally share a customary fishing ground with the neighbouring village of the District of Tuva. Due to this historical relationship among the villages, an NGO, PCDF, has worked with all of the eight villages in a coastal management project since 1999²⁶. Therefore, for the purpose of my research, the study site of Cuvu refers to the area that includes these eight villages. Cuvu District is located by the main highway and close to Sigatoka town. The tourism industry in and near the district provides employment opportunities for the residents. Due to these conditions, and consistent with those sociologists sociological research (Gilbert and Gugler 1982; Sandel 1984) who argue that a modernised community lacks shared values, I expected that the communities of Cuvu district would possess a relatively low level of bonding social capital and a high level of bridging social capital.

The second study site is the District of Wai, which has six villages of the western part of Nadroga/Navosa Province. Four of these villages, including the main village of Lomawai, are located along the coast approximately five kilometres away from the main highway while the other two are inland. Since 1999, the WWF Fiji Programme has worked on a community project for coastal resource management with the residents of the villages of Wai. Compared to Cuvu district, Wai district is remote, and it was expected that the villagers of Wai have a higher level of bonding social capital and lower level of bridging social capital.

²⁶ PCDF is formerly known as the Foundation for the Peoples of the South Pacific (FSP).

Table 4.4 A summary of study sites

	Cuvu	Wai	Comments
Characteristics of coastal management			
Attributes as a CPR case	Yes	Yes	Both districts are under Fijian customary marine tenure system
Coastal Management Activities	Yes, since 1999	Yes, since 1999	Both districts have established marine protected areas or <i>tabu</i>
External support in coastal management	Yes	Yes	CBCRM activities in both districts are under the framework of LMMA
Community participation	Yes	Yes	
Expected features of social capital			
Bonding social capital	Relatively low	Relatively high	The variation in social capital were expected due to the different degrees of economic development in the two districts: Cuvu has better access to the market economy with proximity to town and a large-scale resort, while the majority of the Wai villagers are subsistence.
Bridging social capital	Relatively high	Relatively low	
Other variables that may affect the effectiveness of coastal management			
Demography and social structure	2,172 residents in 8 villages	1,745 residents in 6 villages	
Education	Good access to primary and middle schools	Good access to primary and middle schools	
Religion	Christianity	Christianity	
Living standard	Better job opportunities; bigger houses made of concrete or wood	Weaker source of income; smaller houses built using less expensive materials	
Political power	Paramount chief, <i>Turaga na Kalevu</i> , enjoys his authority	Paramount chief, <i>Turaga na Kalevu</i> , enjoys his authority	Both districts are part of Nadroga/Navosa province and have the same paramount chief

The characteristics of my study sites also match a set of research design criteria set by Ostrom (1990: 26) for self-governing resource management of small-scale CPRs, where she explicitly mentions inshore fisheries. She states:

‘Serious study is more likely to penetrate the surface complexity to identify underlying similarities and processes’ (Ostrom 1990: 26).

In other words, a closer look at small CBCRM cases provides clear information about *the processes* involved in governing a long-lasting CPR and their effects. My cases meet the criteria for CPR research suggested by Ostrom (1990: 26) as follows:

- (1) The CPR cases are entirely located within one country;
- (2) The CPRs affect 50 to 15,000 appropriators;
- (3) The CPRs are heavily relied upon for economic returns by the affected individuals;
- (4) The CPRs are a renewable resource; and
- (5) The CPRs are subject to substantial scarcity.

Ostrom’s criteria seem vague because the criterion related to the range of appropriators’ number is large. In my study, the range is smaller as the Fijian population of Cuvu is 2,172 while that of Wai is 1,745.

4.5 Description of study sites

The last section of this chapter describes the two study sites, Cuvu and Wai Districts. My purpose here is to provide the reader with background information necessary to understand those other important variables that may be affecting CBCRM management. The descriptions below include, for each of the districts, demographic information, social structure, religion, education, living standards of villages and resource use patterns. General explanations of the NGOs involved in CBCRM are also provided. Since such little information is available on these districts, I depend mainly on data and

information collected by myself during fieldwork. The little data that does exist has been collected mainly by local NGOs. Although I compare the similarities and differences between the two districts in the following section, due to the fact that the different NGOs employed different methodologies in their data collection, the following section may appear uneven due to the variation in quantity and quality of information available between the two districts.

To repeat, I selected these two particular districts for my study because they were expected to contain variations in the different types of bonding and bridging social capital that affect CBCRM institutions in Fiji. In order to compare districts that have different types of social capital, I used the concept 'remoteness of the district' which determines 'availability of alternative sources of income' as a possible indicator for predicting the levels of bonding and bridging social capital. Cuvu district has relatively easy access to a town, Sigatoka, and is close to large-scale resorts that give residents better job opportunities, such as Shangri-La's Fijian Resort (referred to as Fijian Resort), while Wai district is relatively remote from any other market. Thus, I expect to find that Cuvu possess a relatively low level of bonding social capital and high level of bridging social capital. On the other hand, I expect Wai has a higher level of bonding, and lower level of bridging, social capital.

In the following discussion, I present variables that may account for differences in the effectiveness of CBCRM. Although both districts have worked on CBCRM projects with NGOs within the framework of Fiji LMMA, by holding constant those variables including demography, social structure, the level of education and types of religion, I intend to show that the difference in the level of remoteness of the districts is a major

causal factor in the varying levels of the economic status of the two villages. The difference in ease of access to a market economy has also led to differences in coastal resource use patterns that are known to affect people's willingness to cooperate (Gibson 2001; Ostrom 1998b). However, in the two study sites, when I asked my interviewees if they are satisfied with their MPAs and willing to continue to keep them, all of them stated that they were.

4.5.1 Demography and social structure

The villages of Cuvu District are located along the country's main road, Queens Road, which links the west coast sugar town of Lautoka, and the capital Suva on the south eastern side of the island. The area is in the heart of the Coral Coast, the belt along where the infrastructure of the tourist industry is concentrated. A frequent public bus service connects the villages to Nadi town and Sigatoka town.

The district includes seven villages, namely Cuvu, Naevuevu, Rukurukulevu, Sila, Tore, Yadua and Hanahana. This study also includes Voua village of Tuva District, because the CBCRM project in Cuvu District includes that village. Table 4.5 shows population distribution.

Table 4.5 Population distribution and number of households of Cuvu²⁷

Village	Population	Number of household
Cuvu	350	52
Naevuevu	233	60
Rukurukulevu	412	45
Sila	93	20
Tore	135	26
Yadua	428	89
Hanahana	200	26
Voua	321	54

The Fijian villages in the district are facing a rapid population increase: 1,747 in 2001 (PCDF 2003: 12) to 2,172 in 2004 (data from fieldwork). Job opportunities created by the tourism industry in Cuvu have resulted in a higher rate of migration than in other parts of the country. In particular, the newest village, Hanahana, was recently separated from Rukurukulevu village, as a residence of those who had migrated to this area.

The Cuvu District holds regional historical significance to the province because the paramount chief of the province, *Turaga na Kalevu*, resides in the district. Generally speaking, the paramount chief holds decision-making power over all matters in the district. According to one villager, a power relation also exists among the villages:

We have our Paramount Chief, and we have some sub-chiefs around. Yadua village is one of the major villages. The main villages are Yadua, Cuvu, and Navuevu. Others are sort of extension villages of the main villages. Most of the things are organised in these main villages. Here in Yadua, we have a *yavusa* [clan] chief, he is actually one of the high chiefs of the district. In Cuvu [village], we have our paramount chief and he looks after the whole district and the province. (Villager3 of Cuvu)

²⁷ The data used in this table were gathered in the villages during my fieldwork from September to December 2004.

These customary roles and power relations in villages are socially important for Fijians living in the districts. Thus, it reflects the design of the CBCRM project. An example is the involvement of Voua village in the CBCRM activities. As mentioned, although the village is not jurisdictionally a part of Cuvu, the project includes people living in Voua. A resident of Voua village told the history of their village:

Our ancestors came from Cuvu. We are brothers of Cuvu. This started when the missionary came. When the missionary came, they took this good news about Jesus to the western side of Fiji. So *Kalevu* chose one of his brothers from the family living in this village [Voua] and they brought the good news to Malolo. *Kalevu* died there. The title of *Kalevu* was then given to his brother, our ancestor. He is our great great grandfather. The title of *Kalevu* was kept here in this village for eight years. When they came to decide the *qoliqoli* and land, our village took half of them, because of the old days when *Kalevu* died. (Villager12 of Cuvu)

This story implies that historical events and customary borders have an important meaning in resource management in the district.

The national census in 1996 reported that the District of Wai held a total of 2,026 residents and 372 households (Fiji Government 1996a). The CBCRM activities involve only Fijians, who comprise 56.8 per cent of the population. Indo-Fijians comprise 43 per cent of the population and are widely scattered into individual cane farms and farming settlements. Most of these Fijians live in one of the six villages while others live in farming settlements. Table 4.6 shows the distribution of population in Fijian villages of Wai district in 2004. Although the total Fijian population of Wai (1,745) is slightly smaller than that of Cuvu (2,172), both fall into the category of 'small-scale CPR' as defined by Ostrom (1990: 26). In these CPRs, the number of individuals affected is between 50 and

15,000. The difference in population of 427 individuals is minimal and should not affect the process and outcomes of CBCRM in the two districts.

Table 4.6 Population distribution and number of households of Wai

Village	Population	Number of households
Lomawai	280	72
Kubuna	106	24
Korokula	316	54
Tau	240	45
Navutu	243	32
Bavu	560	43

Like Cuvu, Wai is part of Nadroga/Navosa province. Therefore, the same paramount chief, *Turaga na Kalevu*, enjoys his authority in the District of Wai. Lomawai village is considered the main village where the *yavusa* (clan) chief resides and district meetings are normally held in this village.

4.5.2 Education

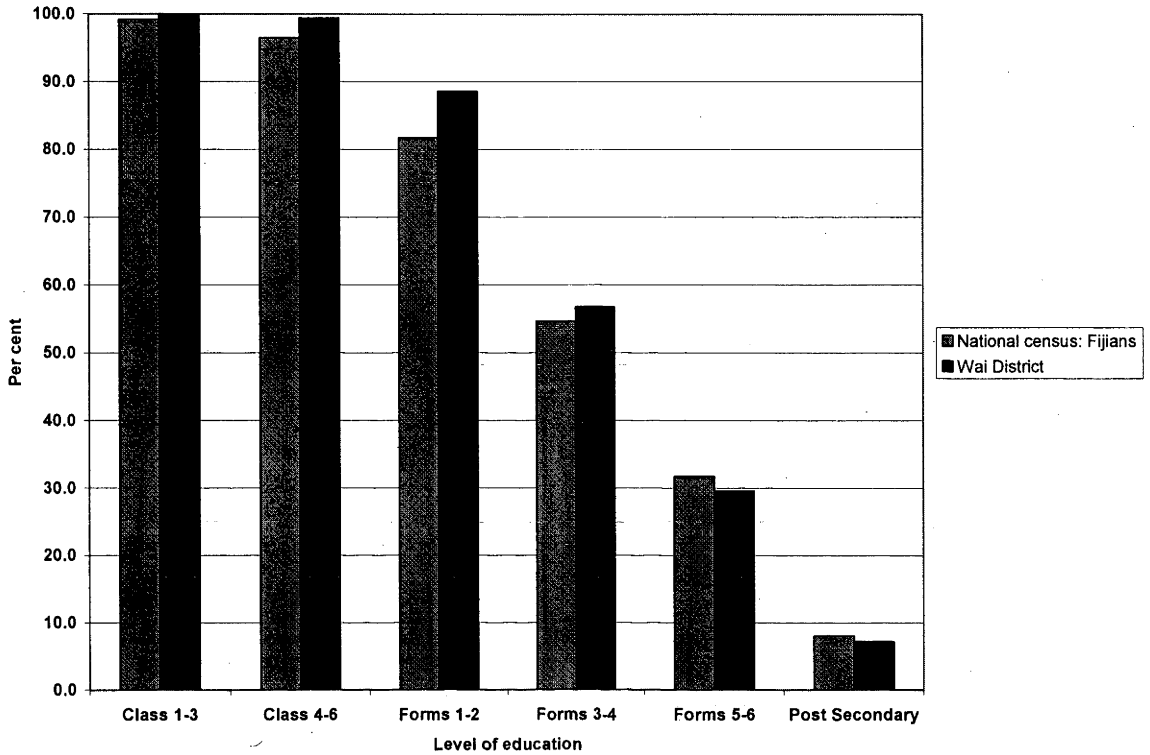
The level of education individuals completed could affect the degree of their understanding of rules in CBCRM. Overall, the levels of education in the two districts are relatively high and children in both districts seem to have similar educational opportunities. Although education is not compulsory in Fiji, almost all children in both districts between ages of six and fourteen attend schools. Most children go to local primary school and middle school, while some parents send their children to boarding schools in larger cities, such as Suva and Lautoka. Depending on their academic performance and preference, as well as finances, students decide whether to go on to higher education, such as university or vocational schools, to obtain a job, or to stay with their family. In addition, children

between the ages of four and five in Cuvu have easy access to a kindergarten that was constructed with support from the Fijian Resort located in the district and which also pays the salaries of the kindergarten teachers.

Although the District of Wai does not have external support in early childhood education like Cuvu, children in the villages of Wai have good access to primary level education. According to a socio-economic assessment of the villages in 2002 (Areki 2002), all persons who are above the age of 15 surveyed in the Wai District have received some formal education. Approximately 43 per cent of them finished at a Class 8 or Form 2 (final year of primary school) or lower level of education, while seven per cent went on to the tertiary level. It is interesting to note that women received longer and higher education than men: the average number of years in school for females is 9.4 years (SD=2.4) while for males it is 7.9 years (SD=2.9) (Areki 2002: 11).

Figure 4.2 presents a comparison of education levels in Wai with the national Fijian population. Although the percentage of the population going on to a higher level of education is slightly lower than the national population, residents have received a better education than that of the Fijian population as a whole, up until Form 4.

Figure 4.2 Levels of education for age of 15 or older in Wai District



4.5.3 Religion

Like every other Fijian village, Christianity is the main religion in all the villages of Cuvu and Wai, with the dominant denomination being Methodism. All villages in both districts have a Methodist church building in the centre of village. In the case of Wai, 87 per cent of the villagers are Methodist (Areki 2002: 12). Other villagers belong to denominations including All Nation, Assembly of God, Christian Outreach Centre, Church of Christ, Seventh Day Adventist, Pentecostal Church, Every Home for Christ, the Evangelist, and Christian Outreach Centre.

A Methodist Church is in the centre of each village and services are held on Sundays four times from 6:30 a.m. to 5:00 p.m. Since there are only Methodist churches in the villages, some of those who belong to other denominations in the Wai District regularly go to church outside of the district. In general, these denominations have been recently introduced to the villages.

4.5.4 Living standards

An important selection criterion for my study sites was proximity to a market economy. Access to a market economy is expected to affect the level of the two types of social capital within the two districts. In this section, I explain how the living standards of the two districts differ and how their access to a market economy affects this.

Job opportunities and income

The villages of Cuvu District have a solid economic base both at the community and individual level. The residents of Cuvu District have better job opportunities in comparison with some other parts of Fiji due to the presence of tourism and proximity to Sigatoka town. In particular, the Fijian Resort provides the main source of income by employing villagers both on a part-time and full-time basis. Income is also generated by employees of the Outrigger Reef Fiji Resort, Pacific Green, and other work places in and near Sigatoka town. It seems that women have relatively better opportunities in finding a job position at the Resort, as they can work as a housekeeper or baby sitter without having specific vocational education or training. Thus, women are often the primary income earner in the family.

The participants in my survey in Cuvu indicated that their monthly income from a paid job ranged from US\$ 68.40 to \$352.26 (N=11, Mean=153.9, SD=89.51). In addition,

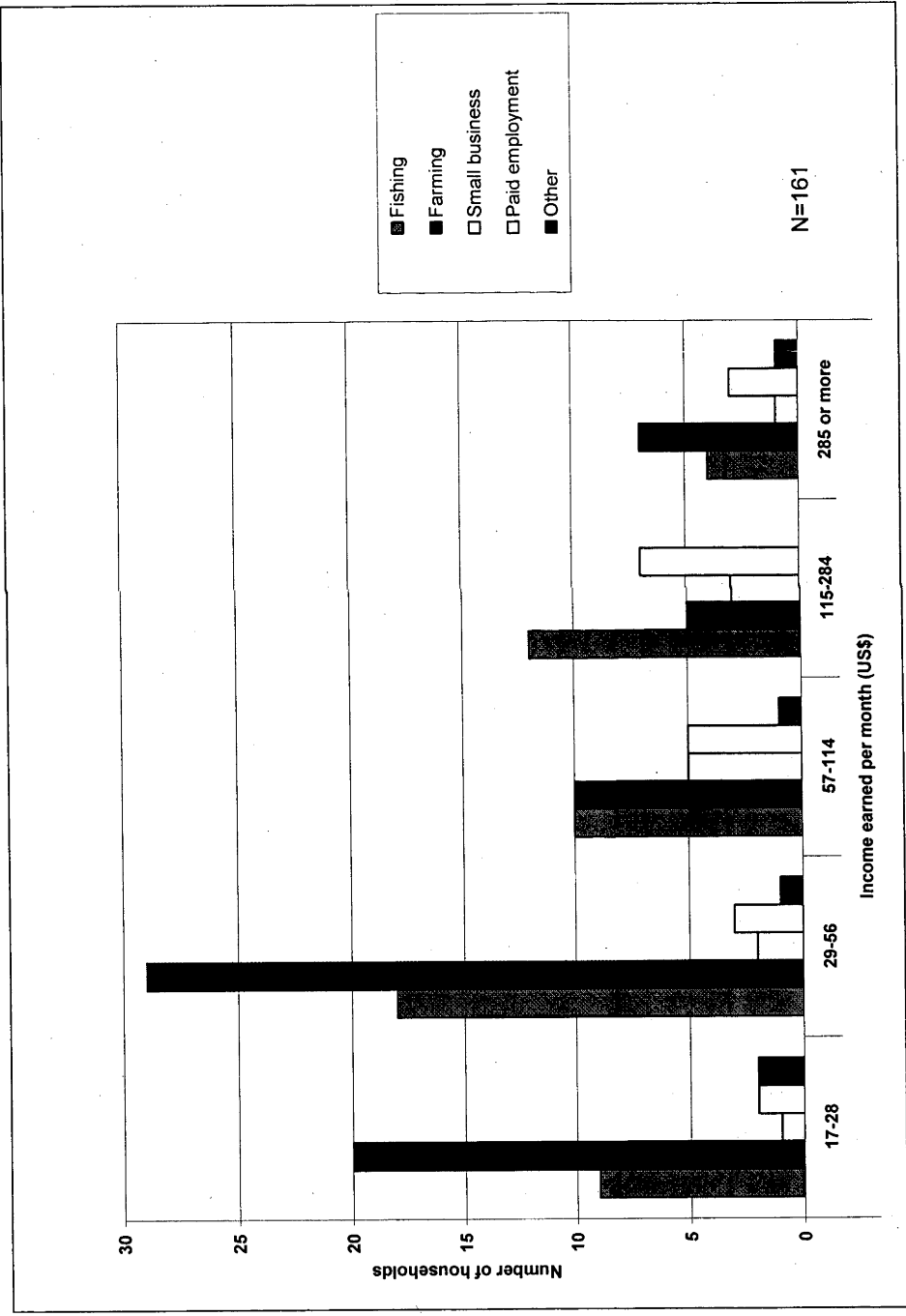
many villagers also received remittances from family members working in other parts of Fiji and overseas. However, it was not possible for me to obtain data on this during the fieldwork because the villagers sometimes were unwilling to state their exact income. At the individual household level, income is spent on: basic food commodities; monthly bills for electricity and water; children's education; weekly church donations; and traditional obligations to clan and village (PCDF 2003: 19).

Compared to Cuvu, Wai residents have fewer job opportunities. Sugar plantations provide employment for male residents of Wai, mainly from March to December. Physically, the south western coastal area of Viti Levu is characterised by a relatively humid climate and moderate dry season favourable for growing sugar cane. Approximately 85 per cent of land in the Wai district has been put to use cultivating sugar cane or pine trees. The remaining 15 per cent include mangroves, grassland and scattered remnants of dry forests (Areki 2002: 1). According to the villagers, a weekly wage for cane cutting is US\$28 (8 hours per day for 6 days a week).

Given the fewer job opportunities, Wai residents have lower monthly incomes, ranging from US\$17.10 to \$262.20 (N=7, Mean=102.6, SD=151.53). However, this statistic may be biased because the size of my sample was small. Only seven of 62 survey respondents answered that they were employed at the time of survey. More comprehensive data can be found in the socio-economic survey done by the WWF (Areki 2002). This survey covered monthly household income as can be seen in Figure 4.4 presents monthly income at the household level. Families who depend on local natural resources as their major source of income make up approximately 77 per cent (33 per cent depends on fishing while 44 per cent depends on farming). More than half (54 per cent) of families living in

the village earn less than US\$57 (equivalent to 100 Fijian dollars) per month, and 56.3 per cent of these low income families depend on the sale of agricultural products. Another 31 per cent of them depend on the sale of marine products. The remaining 46 per cent of the families have over US\$57 per month, 40.6 per cent of them earn cash from the sale of marine products while the numbers of families dependent on farming products is only 29.7 per cent.

Figure 4.3 Household monthly income in Wai by sorted by their major income source



Source: Areki (2002)

4.5.5 Housing

In Fiji, the type of house is often used as an indirect indicator of household wealth (for example, National Census). The types generally fall into four categories of building materials: concrete, wood, tin and thatch (Areki 2002: 14). More financially able households tend to have concrete houses, while tin houses are more common among lower income households. Although the distinction is not a direct indicator of wealth and some well off households are known to build wooden or thatch houses, in general, low income families use tin and thatch for their houses.

In Cuvu, approximately 95 per cent of the houses are made of either concrete or wood and properly partitioned to separate the bedrooms, living room, kitchen, bathroom and toilet (PCDF 2003: 15). The houses have a shower either inside or outside, although I did not observe any houses with hot water. Many houses have a flush toilet (70.7 per cent) (PCDF 2003: 17), and it is very rare to see pitfall toilets in the villages. Although the water supply is usually fine, it does sometimes stop. While some families use firewood for cooking, use of gas is also common. Most families possess radio and TV, and some have a CD player, video recorder or DVD player. Although possession of a vehicle is not common, a few families in every village do have a car. For example, during my stay in Yadua village, I observed only two families who owned vehicles.

Compared to those in Cuvu, houses in Wai are generally smaller. Low income families most commonly have houses with corrugated iron or tin built over a wooden framework. Forty-one per cent of the houses are built using tin, while nearly 36 per cent are cement (Areki 2002: 15). The rest falls into either the category of wood (16.2 per cent)

or thatch (6.8 per cent). The floors of those houses are either wooden or raised mud covered by layers of locally weaved mats. These houses normally have one room that serves the purpose of living room, bedroom and, in certain instances, the kitchen as well. However, in many cases, kitchens are also separate from the main house. These kitchens are usually built from tin, wood or both and the members of the family, most often women, use firewood for cooking.

In villages of both districts, well-built traditional thatch houses, or *bure*, are usually reserved for the chief and members of his family. These houses are constructed purely from local materials, such as native timber, bamboo, reeds and coconut fronds. They contain one very large single room where the floor is covered with thick layers of mats and, in most cases, are completely devoid of furniture. Although this traditional style of house remains in the villages as a symbol of authority, it is considered less favourable among villagers as a residence. One reason is that the time and effort necessary to build and maintain such houses requires community assistance (Areki 2002: 15). Moreover, cement houses are preferred because they are considered to be a symbol of wealth.

Overall, the villagers of Cuvu are considered 'rich' due to the relatively high standard of living. Cuvu district is considered to be an example of modernised village life, clearly reflected in the overall standard of housing. A resident described the economic influence of the Resort thus:

The Fijian is the first hotel since around late 1960s, and the hotel started helping the local people in the district by offering job opportunities, so you don't see normal Fijian *bures* here, but people live in concrete houses. I see the change in standard of living, which is getting better. We have land, other sources of income and people work for their families. (Villager3 of Cuvu)

On the other hand, houses in Wai reflect the lack of a solid economic basis for residents.

4.5.6 Resource dependence

For the purpose of my thesis, the important reason for understanding resource use patterns is because it affects on people's cooperative behaviour. A concern about the 'rough proportionality' of management costs and benefits (Ostrom 1998b: 7) means that villagers generally perceive it to be fair that those who contribute more to maintaining the management system should be the ones who receive the most benefits from the system. Gibson (2001) argues that more resource dependent individuals find greater value in the long-term sustainability of resources. If this is correct, then I expect to find that, with the higher level of dependence on coastal resources and the same set of rules restricting fishing activities, the people of Wai should be more willing to pay higher costs. In contrast, Cuvu residents should be less cooperative with regard to MPA or *tabu* management. Let me first explain how the resource use patterns in the two districts differ.

As explained above, the residents of Cuvu have better opportunities to find a paid job due to the geographic location of the district. While Wai residents sell fish and other marine products for their income, Cuvu residents only catch them for own food²⁸. This difference reflects the frequency of fishing, as shown in Table 4.7. Both men and women of Cuvu go fishing less frequently than the residents of Wai. Box 4.1 presents a typical week for a woman living in Lomawai village of Wai district.

²⁸ Although it does not happen often at all, a buyer from Suva visits the Cuvu villages upon request and buys dried sea cucumbers from the villagers.

Table 4.7 Frequency of fishing

	Cuvu			Wai		
	Male	Female	Total	Male	Female	Total
1-2 days per week	17 (70.8%)	21 (61.8%)	38 (65.5%)	13 (50.0%)	14 (46.7%)	27 (48.2%)
3-4 days per week	5 (20.8%)	9 (26.5%)	14 (24.1%)	10 (38.5%)	15 (50.0%)	25 (44.6%)
5-6 days per week	2 (8.3%)	4 (11.8%)	6 (10.3%)	1 (3.8%)	1 (3.3%)	2 (3.6%)
Everyday	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (7.7%)	0 (0.0%)	2 (3.6%)
Total	24	34	58	26	30	56

Box 4.1 A typical week of a village woman

This is a typical week schedule of a woman who lives in Lomawai village. She has a husband who does not have a regular paid job and five children whose ages range from 6 to 22.

Monday	Attend community regular meeting and work for common benefits
Tuesday	Attend women's group meeting
Wednesday	Go fishing
Thursday	Go fishing
Friday	Go fishing
Saturday	Go to town market in Nadi and sell her catch
Sunday	Attend church service

She normally takes another villager's boat when she goes fishing and spends five hours at sea. She pays US\$0.57 per trip to the boat owner for the ride. The owner can accommodate five women in his boat. The main fishing equipment she uses is a spare, and she does not own a net. When the tide is low, she also collects shellfish and sea cucumbers. On Saturdays, she takes a public bus at 6 a.m. to go to Nadi and sells her catch of the week at the town market. On one Saturday in November 2004, she did not sell finfish and only sold shellfish, sea cucumbers and sea weeds in the market. She earned US\$49.42, which was the total income for the family for the week. The family spent the income on the following items:

Some food items and necessities obtained in Nadi market (flour, garlic, onion, toilet paper and washing powder)	17.10
Community fee	5.70
Bus fare to Nadi	3.42
<u>Boat fare</u>	<u>1.71</u>
Total	US\$27.93

The family kept the remaining US\$21.49 for further needs, such as school fees, church donation and food.

In addition, Wai residents are more dependent on marine resources, not only as their income source but also for their food, compared to Cuvu residents. Table 4.8 presents the

sources of food in the two districts. Both in Cuvu and Wai, the respondents identified gardening as the major source of food. Many families grow food crops, such as cassava, taro, yam, vegetables, banana and pawpaw in a private family garden and harvest when they eat. Fishing is also important in both districts, as a similar percentage of survey respondents stated fishing to be the major source of their food, 65.5 per cent in Cuvu and 65.6 per cent in Wai. Despite the fact that fishing is not a major income generating activity in Cuvu, the residents consider marine resources to be important for their life. A resident described the importance of coastal resources:

Even people in the village who work, they go fishing for their food. It is not only for people in this village [on the coast], but even for some people living inland, fish is important. I mean, something from the sea or river. (Villager6 of Cuvu)

Table 4.8 Sources of food

Most important food source	Number of respondents (Multiple responses permitted)	
	Cuvu (N=58)	Wai (N=61)
Fishing	38 (65.5%)	40 (65.6%)
Gardening	54 (93.1%)	50 (82.0%)
Food from shops	40 (69.0%)	14 (23.0%)
Livestock	2 (3.4%)	3 (4.9%)
Supply from relatives	4 (6.9%)	5 (8.2%)
Other	0 (0.0%)	1 (1.6%)

A difference is found in the percentage of people who answered that food from shops is important. Sixty-nine per cent of Cuvu villagers answered that food from shops is the major source of their food, while only 23 per cent of respondents in Wai consider this to be so. Since Sigatoka town is close to Cuvu villages, it is logistically easier for the residents to obtain food. Furthermore, with a small cash income, many of the residents of Cuvu are able to purchase food from shops. Also in the Wai District, there are some small

shops, mainly owned by Indians. These are close to the villages and the villagers buy food items, such as milk, tea and flour. Some Fijian families residing in villages also run small businesses, selling other residents limited food items, such as tinned tuna and sugar. However, although it is possible to buy the food items from these local shops as well as markets in Sigatoka and Nadi towns, for the majority of the residents who do not have a regular income, farming and fishing remain the major sources of food for their day-to-day life. Thus, even though the percentage of the respondents who consider fishing to be their main source of food is almost the same in both districts, people's dependency on fish for their own food is higher in Wai than Cuvu because Cuvu residents buy more food from shops.

Although it was difficult to measure, all my interviewees in both districts indicated that they were satisfied with MPA, or *tabu*, and showed their willingness to continue in the future. The common reason for residents' satisfaction in both districts is the perceived increase in their fish catch. Due to the benefits, both Cuvu and Wai residents think that it is worth having *tabu* in part of their customary fishing ground or *qoliqoli* to maintain their marine resources:

We've seen a lot of changes in *tabu*, like the abundance of fish. So, our future should be alright with our *tabu*. (Villager13 of Cuvu)

If all places are well protected and properly managed, the resources will come back. (Villager17 of Cuvu)

It [the condition of marine resources] is going to be better. In our village, our life is from the sea. Cost of living is very high. We plant our cassava, we eat fish, we catch fish and sell fish. I think the marine resources will be better because of the *tabu* area and we need *tabu*. (Villager2 of Wai)

Marine life there is depleting. Now we have *tabu*...we stopped fishing [inside the *tabu* area]. By the time we will open, we will have plenty fish then. That's the main purpose of *tabu*, to increase the fish population. It is important. (Villager3 of Wai)

This overall satisfaction may indicate that perceived costs and benefits of *tabu* are roughly balanced. In other words, although the level of resource dependence differs between the two districts, the residents show the same levels of willingness to cooperate in their conservation actions.

4.5.7 NGOs involved in CBCRM

An NGO called the Partners in Community Development in Fiji (PCDF) has been actively involved in CBCRM in Cuvu. PCDF is under the Foundation of the Peoples of the South Pacific International (FSPI), the largest civil society organisation in the Pacific region and working at the grassroots level in nine nations: Fiji, Kiribati, Papua New Guinea, Solomon Islands, Samoa, Tonga, Tuvalu, Vanuatu and East Timor. The FSPI Secretariat is based in Suva, serving as the regional nexus for the FSPI network. The organisations belonging to FSPI are engaged in various types of awareness programs and advocacy work, aiming at increasing stability and reducing poverty throughout the region.

PCDF focuses on development at the local community level, although targets of their projects are not limited to environmental issues. In fact, when it was founded in 1978, the primary concern was with nutrition. Its projects currently encompass health and community awareness, the sustainable management of marine and forest resources, small-business development, disaster relief, human rights and good governance. According to the description provided by PCDF, they provide technical support to the local communities through a participatory approach that encourages community members to take

responsibility for their own development. This involves assisting them to identify self-determined priorities and goals and to assert their right to influence and access public services and decision-making processes. PCDF has assisted Cuvu communities under the framework of the Fiji LMMA Network²⁹ on their coastal management activities.

In Wai, on the other hand, the WWF Fiji Country Programme has been involved in the CBCRM activities since 1999. Their activities are also based on the framework of the Fiji LMMA Network, like PCDF. As part of WWF International, the WWF South Pacific Programme was established in 1990 in Suva and organises a series of conservation projects, policy reviews and campaigns in Pacific Island nations. Having over 100 staff in various regions throughout the South Pacific, it covers conservation issues in the South Pacific region, while country programme offices are in other countries, such as the Cook Islands, Solomon Islands and Papua New Guinea. The Secretariat in Suva guides support to conservation activities in the field and maintains financial accountability, communications and administrative procedures. The programmes based in the Suva Secretariat include Finance, Human Resources, Administration, Communications, Capacity building and Sustainable livelihoods, Regional policy, Climate change and the Regional marine programme. PCDF employs international staff while staff members who visit Cuvu for project implementation are mainly from Fiji.

As one of the country offices of the WWF South Pacific Programme, the Fiji Country Programme Office is also in Suva. It employs nine staff members either in Suva or in field offices in Vanua Levu. The employees are both internationally and nationally recruited and those who work on the Wai district's project are all Fijians. While the Fiji

²⁹ District of Cuvu and PCDF withdrew from the Fiji LMMA Network in 2004.

Country Programme Office has been involved in a number of environmental issues, such as climate change, a strategic environment assessment of tourism development and wildlife species conservation, one of their major activities remains marine conservation through a community-based approach. The officer of the Fiji Country Programme states:

We recognise livelihoods, customs and traditions in the communities are closely connected to natural resources. Capacity building in the communities is important for them to manage natural resources in a sustainable way and we believe that it will lead to well-being of the people.

4.6 Conclusion

To summarise, this chapter described the methods to be used in the thesis. I use a mixed research method involving both qualitative and quantitative techniques of data collection and analysis. The information and data were collected through semi-structured interviews, observations, individual surveys and relevant documents. The interview guides and questionnaires used in the field operationalised the concepts discussed in the theoretical framework presented in Chapter 2. I made every effort to maximise the reliability and validity of my data.

This chapter also described the two study sites, Cuvu and Wai in Nadroga/Navosa province, providing socio-economic information on local life. While there is no significant difference between the districts regarding general demographic features, such as population, village structure, education and religion, differences in geographical proximity to an external market economy are one possible reason for their different standards of living. Resource use patterns also differ between the two districts as people in Cuvu use coastal resources only for their own food while Wai depends on coastal resources for their income

generation. However, I observed similar levels of satisfaction with the management activities in both districts. The NGOs involved in the CBCRM projects both work within the framework of Fiji LMMA³⁰.

In sum, although I recognise how my research design limited data collection during my fieldwork, I conclude that my two study sites possess similar characteristics, except for variations in the level of economic development and marine resource dependence. It is hypothesised that this economic difference is the causal factor explaining the difference in the levels of social capital. In short, Cuvu district is expected to show a relatively low level of bonding social capital and a high level of bridging social capital. In contrast, Wai is expected to show a higher level of bonding social and lower level of bridging social capital. While the theoretical literature argues that resource dependence affects users' cooperation behaviour, my field data suggest that the levels of satisfaction in both districts with the presence of MPA or *tabu* are similar.

In the following three chapters, I present the results and analyses of this study in answering the research questions posed in the Introduction. In Chapter 5, I discuss those CBCRM institutions in Fiji that constrain villages' behaviour regarding the use and management of their resources. I found that villagers in the two study sites have similar levels of understanding on fishing rules while they perceive different levels of rule compliance in their own districts. Chapters 6 and 7 then explore possible reasons for the differences between the two districts regarding rule compliance by focusing on bonding and bridging social capital respectively.

³⁰ Although Cuvu is no longer part of LMMA, the earlier stages of the *tabu* establishment followed LMMA Framework.

CHAPTER 5

CBCRM institutions of Cuvu and Wai

5.1 Introduction

The purpose of this chapter is to examine the variable that we seek to explain. Through an analysis of resource use rules in the study sites, I explore the operation of CBCRM institutions that constrain villagers' behaviour regarding their use and management of resources. Let me recall how I measure long-lasting CBCRM as a CPR in this study. Since the challenge of CPR management is to get people to collaborate to maintain their institutions, this study examines:

- (1) whether the resource users share a common understanding of the rules; and
- (2) whether they then follow these rules.

These were derived from the theoretical discussions presented in Table 2.5. In the semi-structured interviews I asked the villagers their understanding of the rules used in CBCRM, and the questionnaire survey asked the villagers their perceptions on rule compliance in their villages. I recognise that the use of villagers' perceptions rather than actual rule infringements is an imperfect measure of our variable of interest. However, due to the absence of long-term data on actual MPA or *tabu* operation I do believe that asking interviewees directly about their behaviour is the most valid measure available.

This chapter consists of three parts. First, I discuss the rules currently used in CBCRM of Fiji and related issues. These rules include resource boundaries for management and rules of appropriation. I also discuss how the local rules are made and how conflicts are resolved so as to gain a greater understanding of how the rules operate day-to-day. The first section will end with a discussion of how the residents understand the rules — the first indicator of long-lasting CBCRM. I found that the residents of both study sites have a general understanding of the rules in use.

Second, I present how these institutions are operationalised in day-to-day resource management through an analysis of rule enforcement. The aspects of rule enforcement covered in this section are monitoring and sanctions. Then, the discussion will proceed to the second indicator of long-lasting CBCRM. My data show that the villagers' perceptions on the level of rule compliance in their own districts differ. Finally, I conclude the chapter with a summary of my findings.

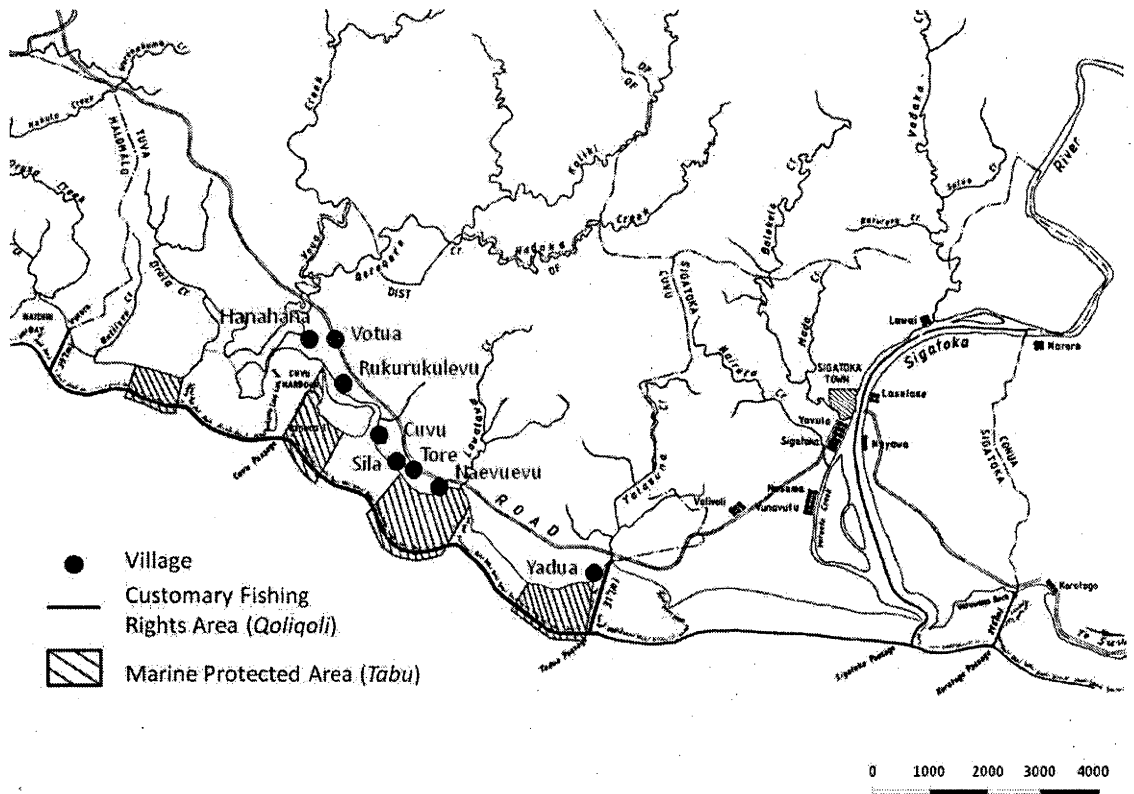
5.2 Rules related to CBCRM and villagers' understanding

5.2.1 Resource boundaries for management

The type of rules that this thesis is most concerned with is that of resource boundaries. Understanding boundaries is important to clarify what is being managed and for whom. In short, defining the boundaries of CPRs is the first step in any kind of collective action (Ostrom 1990). By reducing uncertainty as to who will benefit from management practices and who will pay the costs, clearly defined boundaries increase the chances of success.

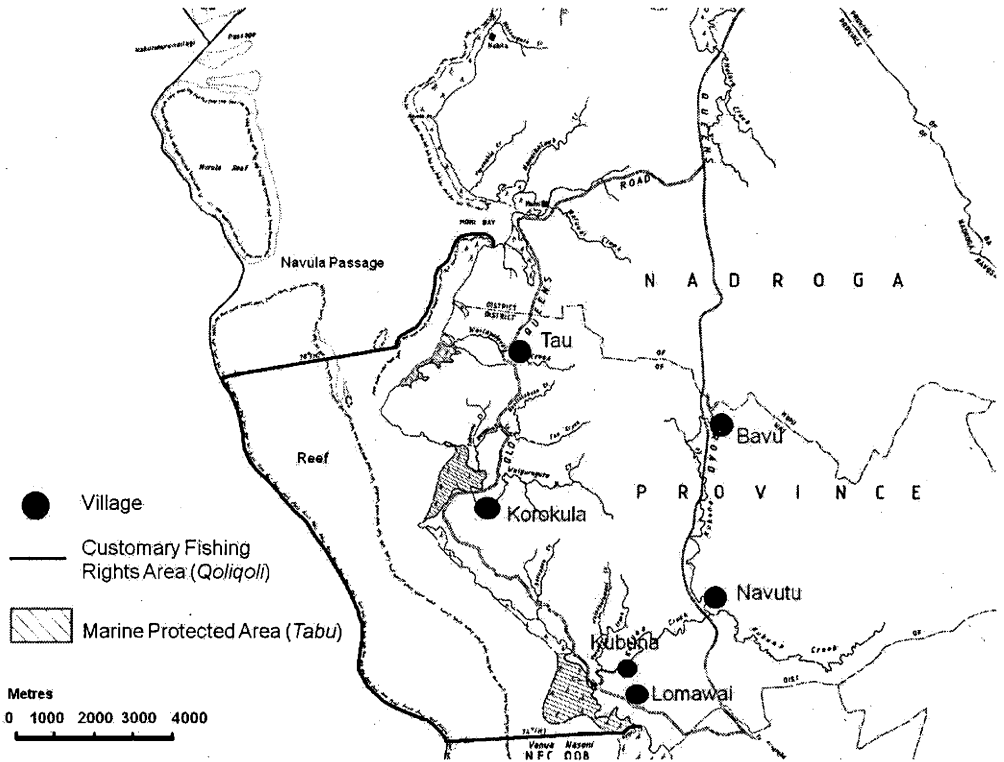
In CBCRM cases in Fiji, two types of CPR boundaries exist. These are the boundaries of Customary Fishing Rights Areas or *qoliqoli* and the boundaries of MPA or *tabu*, used as the main tool in the conservation of resources in coastal areas. Figure 5.1 shows how these boundaries are defined on maps based on an official map of *qoliqoli*.

Figure 5.1 Map of *qoliqoli* and *tabu* in Cuvu³¹



³¹ The original *qoliqoli* maps produced by the Ministry of Fijian Affairs were modified by the Author.

Figure 5.2 Map of qoliqoli and tabu in Wai



Before proceeding, some historical background is necessary. The starting point for any discussion on the boundaries of *qoliqoli* must refer to the cession of Fiji to Britain signed in 1874. The Deed of Cession (1874: Clause 1) gave the Queen possession of, as well as full sovereignty and dominion over, all Fijian islands. This included possession of the adjacent waters such as all ports, harbours, rivers, estuaries, and reefs. It also recognised the rights and interests of the High Chiefs, the ceding parties, so far as they were consistent with British Sovereignty, and the colonial form of government (The Deed of Cession 1874: Clause 7). The result of these two clauses was a dispute in interpretation.

Does ownership over coastal water and underwater resources belong to the Chiefs or do they only maintain the right to use the resources?

An official view intended to clarify this confusion was addressed in the Rivers and Streams Ordinance (1880), which is now revised as Chapter 136 of the Laws of Fiji:

‘All waters in Fiji which the natives have been accustomed to traverse ... shall, with the soil under the same, belong to the Crown and be perpetually open to the public for the enjoyment of all rights ...’

The Birds, Game and Fish Protection Ordinance also confirmed the position that the Chiefs and their sub-clan or lineage groups should enjoy user rights only in their *qoliqoli*. Furthermore, according to the State Land Act of 1946, the State holds control over the littoral zone, foreshore and submerged sea floor.

When Fiji became independent in 1970, the Fisheries Act Section 13 confirmed that Crown ownership over coastal waters and resources was passed over to the State while the traditional owners retained their exclusive fishing rights in each *qoliqoli*. The boundaries of each CFRA claimed by a particular clan, or *yavusa*, as their *qoliqoli*, is clearly shown on maps and defined by the Native Fisheries Commission of the national government. In other words, *qoliqoli* is managed at the district level. The Commission has determined and registered 410 *qoliqoli* in total and, according to Cooke *et al.* (2000), it makes Fiji the only country with legal recognition of Customary Fishing Rights Areas marked on accurate maps.

While *qoliqoli* is officially recognised, MPA or *tabu* is voluntarily set at the village or district level for resource management purposes as part of the CBCRM projects. As explained in Chapter 3, the idea of *tabu* originated from Fijian custom. Usually for 100

days after a chief dies, a portion of *qoliqoli* is set aside as a no-take zone as a token of respect (Ravuvu 1983:75). When a memorial feast is held on the 100th day after the death, the *tabu* is revoked and people harvest from the reopened area. The on-going conservation projects that use *tabu* as the main conservation measure borrowed this traditional practice and then extended it for one or more years. Kunatuba (1994: 92) argues that such traditional practices are not necessarily evidence of a culture of conservation. Johannes (1994) states that uncritical appreciation of traditional ecological knowledge should be avoided without examining their validity. While ecological research to assess the conservation effectiveness of *tabu* is necessary, the evidence collected for this research shows that existing local practices could be tailored to make them efficient in relation to current social conditions. The Fijian people whom I spoke with generally showed their respect for, and willingness to keep, their traditional way of life. Here is one example of a villager that I talked to:

We would rather keep our tradition. We wouldn't like to be like Hawaii going with the new trend forgetting tradition and custom, then we would lose our identity. That is what some of us are looking at now. (Villager 3 of Cuvu)

Since tradition plays a strong role in the politics of Fiji, the effects of conservation efforts should be strengthened when resource use rules are in line with social customs. If culturally acceptable practices are regarded as important, then resource management projects are likely to avoid disruptive side effects (Klee 1980: 274).

5.2.2 Appropriation rules

In addition to definitions of boundaries, rules of appropriation are also important in CBCRM. These rules constrain the resource users in many aspects of their fishing

activities, including limiting the species, sizes and amounts of fish they can catch, as well as the types of fishing gear. At the national level, the Fisheries Act, Section 9 allows the Minister of Fisheries and Forests to make the following regulations related to appropriation:

- prohibiting any practices or methods, or use of equipment or devices or materials, which are likely to be injurious to the maintenance and development of the stock of fish;
- prescribing areas and seasons within which the taking of fish is prohibited or restricted, either entirely or with reference to a named species;
- prescribing limits to the size and weight of fish of a named species which may be taken; and
- prescribing limits to the size of nets or the mesh of nets which may be employed in taking fish either in Fiji fisheries waters or in any specified part.

Table 5.1 shows a list of fish species whose harvest is restricted with size limits by the Fisheries Act. In addition to these fish species, the Act prohibits harvests of the following animals:

- swimming crab, *Scylla serrata* or *Qari Dina*, of less than 125 mm measured across the widest part of the carapace:
- turtle eggs and turtles less than 455mm measured in length, any turtles seen in the months from November to February:
- some species of shell fish: and
- porpoises and dolphins.

The Fisheries Act also restricts fishing equipment. For example, the mesh of cast nets and nets for catching sardines and whitebait cannot be less than 30mm. All other kinds of nets must not be less than 50mm, wet and stretched. Destructive fishing methods, such as the use of chemical compounds, poisonous plants and dynamite are prohibited for the purpose of taking, stupefying or killing any fish.

Apart from the national legislation, village authorities have set informal rules to restrict fishing activities in their waters. In the *tabu* areas of Cuvu and Wai, the common appropriation rule is that no one is allowed to fish for a period the villagers agreed among themselves. This is a community's voluntary rule, as the Fisheries Act and other national legislation do not require a total ban of fishing in any parts of customary fishing grounds. It is also known that totemic and other taboos, such as those that restrict particular clans, families, age groups or a specific gender from eating certain types of fish, are practiced in Fiji. As an example, Veitayaki (1995: 79) states that marine fish, except for trevally (*saqa*), are for the warrior clans while freshwater fish are for the chiefly clans in Gau island and many other areas of Fiji. Although this custom may contribute towards marine stock maintenance by limiting demands for a certain species, I did not observe any such totemic taboos in Cuvu and Wai.

Table 5.1 Minimum size limits for fish

Common Name	Fijian Name	Family	Genus	Minimum Length (mm)
Barracuda	<i>Ogo</i>	Sphyraenidae	<i>Sphyraena</i>	300
Crevally, Trevally, Pompano	<i>Saqa</i> (excluding <i>vilu/Saqa</i>)	Carangidae	<i>Caranx</i>	300
Grey Mullet	<i>Kanace</i>	Mugilidae	<i>Mugil</i>	200
Glassperch, Aholehole	<i>Ika Droka</i>	Duclidae	<i>Dules</i>	150
Ketang, Spinefoot Rabbitfish	<i>Nuqa</i>	Siganidae	<i>Siganus</i>	200
Long-jawed Mackerel	<i>Salala</i>	Scombridae	<i>Rastrelliger</i>	200
Longtom, Garfish, Greengar	<i>Saku Busa</i>	Belonidae	<i>Belone</i>	300
Milk Fish	<i>Yawa</i>	Chanidae	<i>Chaos</i>	300
Mojarra	<i>Matu</i>	Gerridae	<i>Gerres</i>	100
Parrotfish.	<i>Ulavi</i>	Callyodontidae	<i>Scarichthys</i>	250
Pouter, Slimy, Soapy, Peperek	<i>Kaikai</i>	Leiognathidae	<i>Gazza</i>	100
Rock Cod, Grouper, Salmon Cod	<i>Donu, Kawakawa, Kavu</i> (excluding small red spotted cod)	Serranidae	<i>Serranus</i>	250
Sea Bream, Pig-faced Bream	<i>Kawago, Dokonivudi, Musubi</i>	Lethrinidae	<i>Lethrinus</i>	250
Small Sea Bream	<i>Kabatia, Kake</i>	Lethrinidae	<i>Lethrinus</i>	150
Small Sea Bream	<i>Sabutu</i>	Lethrinidae	<i>Lethrinus</i>	200
Surgeon Fish	<i>Balagi</i>	Hepatidae	<i>Hepatus</i>	200
Surmullet, Goatfish, Whiskercod	<i>Ki, Ose</i>	Mullidae	<i>Mulloidichthys Pseudupeneus Upeneus</i>	150
Snapper	<i>Damu</i>	Lutjanidae	<i>Lutjanus</i>	300
Unicorn-Fish, Leather jacket	<i>Ta</i>	Hepatidae	<i>Naso</i>	300

Source: Fisheries Act, Sixth Schedule, Regulation 18

5.3 Arrangements for rule making

5.3.1 CBCRM governance at the local level

CPR cases have greater chances of success when appropriators use locally devised management rules which allow for a discussion of common problems so as to enhance their cooperation (Baland and Platteau 1996: 344; Ostrom 1990: 93; Wade 1988: 216). Ostrom (1990: 93) states that participation in revision of rules is particularly important because appropriators are able to maintain a fair set of rules as conditions change. From this, she derives her third principle of long-enduring CPR management (Ostrom 1990: 90): ‘most individuals affected by the operational rules can participate in modifying the operational rules’.

In both Cuvu and Wai, although the traditional chief of the district always has the final say in decision making, the process of decision making differs between the two districts. One of the major foci of Cuvu’s coastal management project is structuring local governance regarding environmental issues and so a new decision making system has been introduced (Figure 5.3). The key elements of this new process are:

- (1) Clarification regarding who makes decisions and how; and
- (2) Existence of Environment Committee to allow villagers as well as other stakeholders to participate in decision making.

All environmental concerns are discussed in the committee following village meetings, which all mature residents must attend. The decision making system requires the Paramount Chief hold a District Council meeting when he makes decisions on fishing and

tabu rules. Supported by NGO involvement, the participatory decision-making process in Cuvu is in keeping with collective choice arrangements in the model of CPR management as suggested by Ostrom and other researchers (Baland and Platteau 1996; Wade 1988). In fact, 45 per cent of survey participants in Cuvu answered that they make decisions concerning fishing rules in village meetings (Figure 5.4). This answer implies that residents have a sense of participating in decision making. The following Cuvu villager understands the importance of the Committee and perceives it to be a ‘bottom-up’ decision-making process:

We now respect the bottom-up approach. People voice out their opinions, rather than someone decides. We leave the decision making to the people, their voice and opinion, whatever they want. (Villager 13 of Cuvu)

Figure 5.3 Decision-making process for environmental issues in Cuvu District

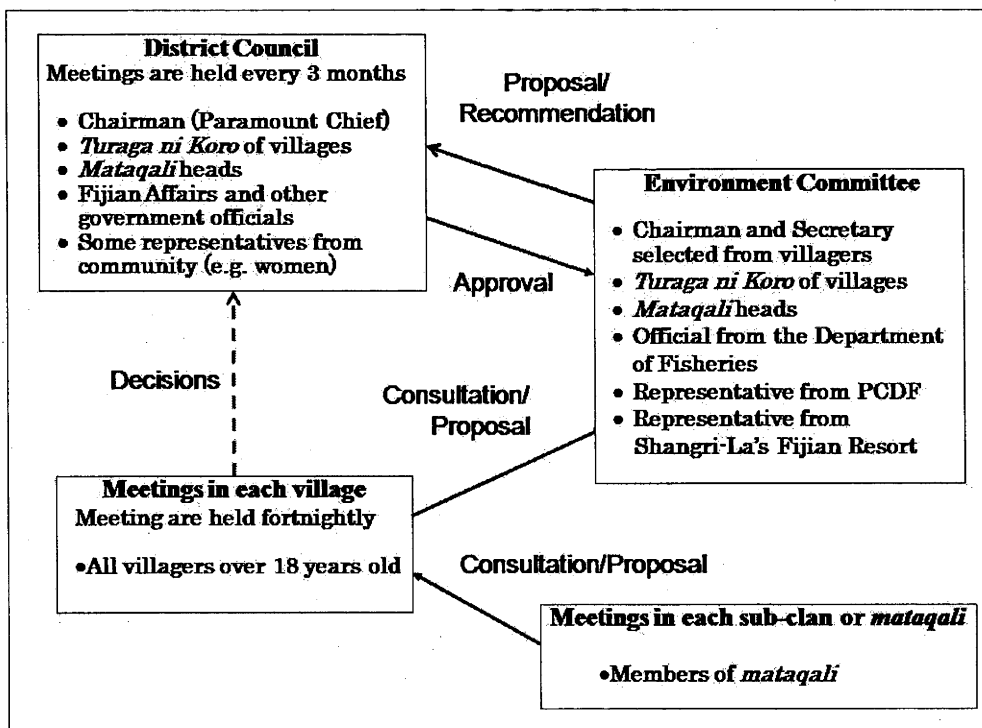
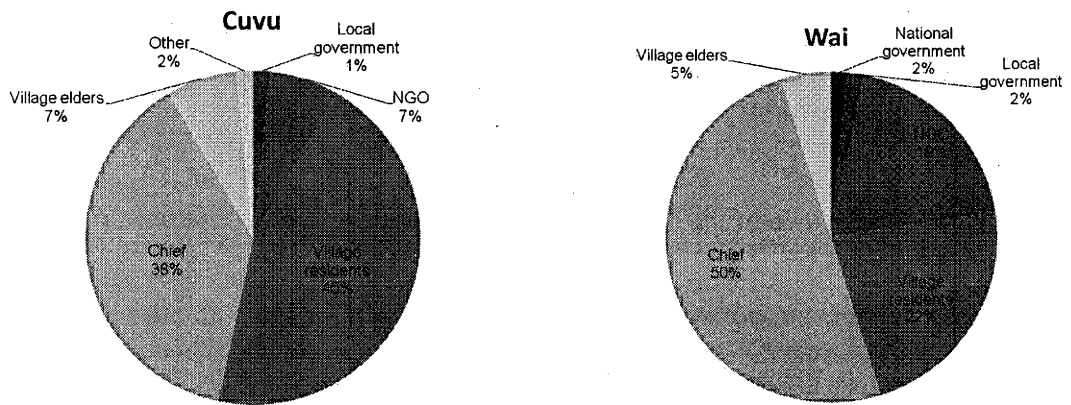


Figure 5.4 Decision maker

Who makes decisions about changes to the fishing rules?



Cuvu: n=60, Wai: n=62

Having this well organised decision-making system should make *tabu* management more transparent for the Cuvu residents. It seems, however, that in practice this is sometimes not the case. The Paramount Chief of Nadroga Province resides in Cuvu Village of Cuvu District, and his power is recognised among all community members. Even with the ‘bottom-up’ decision-making process, the Cuvu villagers respect the Paramount Chief as an authority figure and if they want to harvest in *tabu*, they directly approach him and ask him for permission by presenting a bundle of *yaqona*. In fact, 38 per cent of the respondents in the survey stated that the chief makes the decision regarding fishing rules (Figure 5.4). Even when the Paramount Chief makes decisions without holding a meeting with the Environment Committee and District Council, residents consider this to be the traditional Fijian way and culturally acceptable:

People could go to him [Paramount Chief] and ask if they could go fishing in the area and he could open without consultancy, the [Environment] Committee's consultancy, he is able to open up a certain area. (Villager 3 in Cuvu)

On the other hand, the dual decision-making system seems to have caused discontent, as some residents stated:

.... they come from other villages and ask the Paramount Chief to open [the *tabu*]...... we were the ones who sacrificed for two years, since they started *tabu*. But when those people [from other villages] saw the abundance of fish in our *tabu*, they wanted to open it. Sometimes we feel frustrated, but we cannot do anything. (Villager 8 of Cuvu)

Whether open the *tabu* or not should be discussed in the Environment Committee. But people go to the Paramount Chief and ask him to open it. This is not good. (Villager 15 of Cuvu)

As in Cuvu, the villages of Wai District also hold regular village meetings on Mondays to discuss issues and concerns. As shown in Figure 5.4, however, 50 per cent of the respondents answered that decisions are made by the chief, while 22.6 per cent of them answered that decisions are made during village meetings. The interview results are consistent with the survey results:

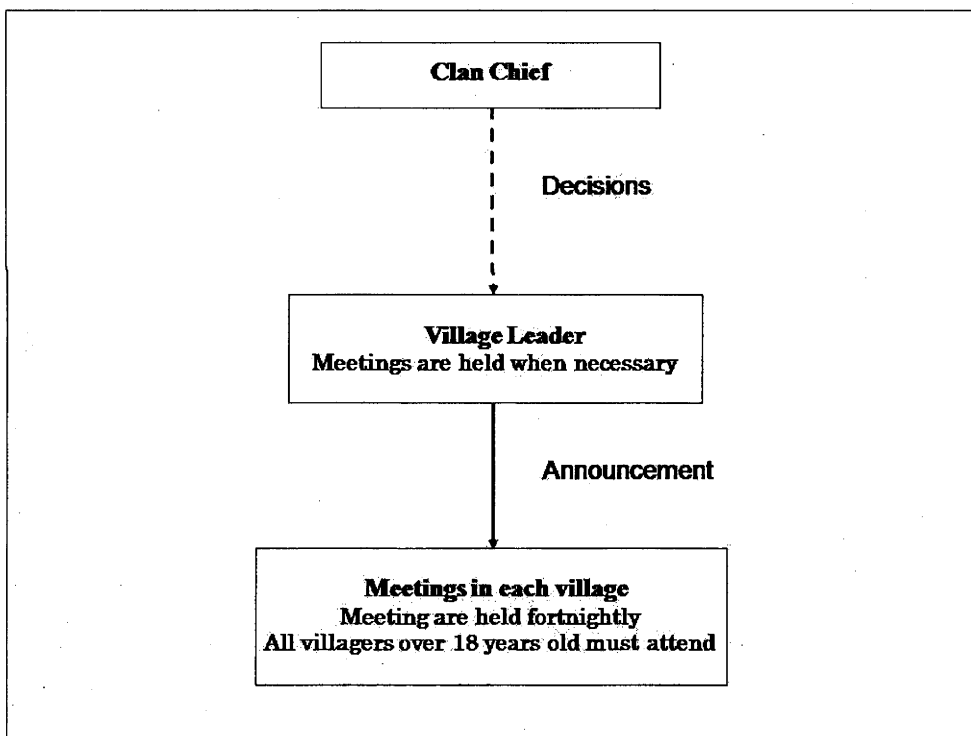
The rule is that we cannot touch anything in the *tabu* area, except if the chief says and then we go and have a look. (Villager 1 of Wai)

I cannot say my opinion here, because all decisions are made by the *yavusa* chief. We won't say anything. My own opinion, I can't say anything. (Villager 3 of Wai)

The interviewees unanimously stated that the chief had decided on the establishment of *tabu* and makes decisions about any changes in *tabu* rules. These results imply that Wai District maintains a stronger hierarchical decision-making system, where their chief of clan is at the top. Although the same Paramount Chief enjoys his authority

over Wai District as the head of Nadroga/Navosa province, it seems that people in Wai do not acknowledge his presence in their everyday life, since none of the interviewees named him as a decision maker in the interviews and conversation with me. In Wai District at least, it seems that the chief of the clan has more substantial power than the Paramount Chief regarding *tabu* management. The decision making process in Wai is presented in Figure 5.5.

Figure 5.5 Decision-making process for environmental issues in Wai District



Although it is not a decision-making body, the Salt-making Committee was created in Wai District in 2000 as part of the WWF-led CBCRM governance structure. Lomawai village used to be known for its quality salt. Saltwater was collected from a pond dug in

the tidal flat area of the village and the villagers boiled the water for a 24 hour period to extract salt. According to Lomawai villagers, the salt production technique is used only in Lomawai and neighbouring Kubuna villagers. They also believe the saltwater in the Lomawai area and the type of wood used in the production process as key to its high quality. In addition to producing salt for barter with other villages, it used to be an important wedding gift for when one villager married someone from another part of the country. However, salt production was discontinued about 50 years ago when commercially produced salt became available and the village was gradually integrated into the market economy. In Lomawai village, only a 70 year old elderly woman remembers the salt making process. The CBCRM project saw the potential to use salt-making as a tourist attraction, and the Salt-making Committee was created with the purpose of reviving the salt-making skills of the village. The Committee is made up of three villagers from Lomawai village and, with the support of WWF, has built salt-making facilities, including two ponds and a hut. The Committee holds a regular meeting on Sundays and is responsible for the maintenance of the facility. Although the committee is a distinctive feature of the Wai CBCRM project, it does not possess actual authority. Decision making remains the prerogative of the traditional clan chief.

5.3.2 Government recognition

In order to sustain community-based CPR management, Wade (1988) and Ostrom (1990) argue that the rights of appropriators to devise their own institutions should not be challenged by external governmental authorities. According to Becker and Ostrom (1995: 119), under this condition, participation empowers individuals to take the necessary steps to

protect their resources. Furthermore, it prevents others who want to evade local systems from undermining these efforts by appealing to the state because legitimacy is lacking.

The presence of appropriator institutions, together with government inattention or support, suggests the presence of rights of self-governance. These rights can be both at the constitutional and collective choice level. Indicators include:

- (1) the existence of appropriator generated institutions acknowledged by the government;
- (2) legal and/or material support from the state for the development of appropriator organisations and institutions; and
- (3) formal mechanisms for translating appropriator decisions into binding rules.

As previously discussed, customary marine tenure is recognised in the Fisheries Act. Villagers have participated in coastal management activities setting the rules-in-use within their *qoliqoli*. Government officials, such as those from the Ministry of Fijian Affairs and Fisheries Department, have been involved in the management of coastal resources in the villages. Both agencies recognise the role of villagers in management:

Without their participation, I don't think that the projects can go ahead... We believe, with their participation, at the same time they can improve their life, improving resources they have in the area. It will help their survival in the future. (Government Officer 1)

Because in Fiji, the fishing grounds belong to the State but there is an agreement between fishing ground owners and the government. We have to work together. We listen to the *qoliqoli* owners. (Government Officer 2)

Moreover, the former ruling party, Soqosoqo ni Duavata ni Lewenivanua, led by ex-prime minister Laisenia Qarase drafted the Customary Fisheries Bill (*Qoliqoli* Bill) seeking

to return foreshore resources to indigenous Fijians in order to protect their proprietary and usage rights. This was expected to strengthen recognition of the legitimacy of local rules. However, after the military coup d'état the 5th of December 2006, the interim government withdrew the bill.

5.3.3 Mechanisms for conflict resolution

Since applying rules involves some discretion, conflict is bound to occur. In many CPR situations, local resource use rules are not always written down and even one simple rule could be interpreted quite differently by different individuals. Thus, Ostrom (1990: 100) states that there needs to be some mechanism for resolving what is or is not a rule infraction. In the context of Fijian coastal management, as an official arrangement for conflict resolution, the fisheries extension officer will become involved as a representative of the government in any dispute between individuals over *qoliqoli*.

As Ostrom (1990: 101) explains, these mechanisms can be informal. As shown in Figure 5.3, Cuvu District has developed a clear decision-making process involving the Environment Committee for any resource management concerns among villagers including conflicts. In Fiji's case, the presence of a chief also functions as a conflict resolution mechanism. A Fijian term, *vakaturaga*, is commonly used to describe ideal behaviour, one's actions and characteristics befitting the presence of a chief (Ravuvu 1983: 103). People are expected to respect and comply with the chief. Although the District of Wai does not have such an organisation working specifically for resource management issues, the Environment Committee of Cuvu District does. However, traditional decision making

with the *yavusa* chief at the top serves as a mechanism for discussing and resolving conflicts.

Furthermore, the generous attitude of most Fijian villagers plays a role in avoiding unnecessary conflicts. Although his book was published two decades ago, Ravuvu (1983: 109) describes Fijians as generally gentle because anger and hatred are subversive to group living and solidarity. In my own research, I also found that lapses were usually overlooked, while villages have a number of rules and norms that residents are expected to obey. Residents often use expressions to indicate that they cannot change others or cannot force others to act as they would like. For example, although drinking *kava* is a common activity in village gatherings and considered an important social obligation, the decision to accept a bowl or not is often left up to individuals. Another example can be found in the decision to attend church services. Though all village residents are Christian and frequently attend church, some occasionally missed Sunday services. Although Ravuvu (1983: 98) states that some people go to church to avoid such labels as '*setani*' (of satan) or '*tawa lotu*' (atheist), I also found many residents accepted the decision of whether to attend or not as a personal choice.

Although it is hard to prove, this generous attitude may reduce conflicts regarding resource use and work as a proactive conflict resolution mechanism. One example is the attitude of villagers' toward fishing by Indo-Fijians. Indo-Fijian residents in the district do not possess customary fishing rights in the *qoliqoli* and many Fijians perceive their fishing as illegal. However, even when they observe fishing activities by Indo-Fijians, Fijians normally do not stop them if the fishing is only for home consumption. In case they are found in the *tabu* areas, they are merely given a reprimand:

They [Indians who come to the *tabu*] are neighbours around our place; we just give them a warning and tell them to make sure [there is] no next time. (Villager 3 of Cuvu)

As an explanation for this, a resident of Cuvu said that the villagers know that the fishing is only for providing food for the family. Since Fijians also consider family to be important, they do not hold any grudges against their neighbours.

5.4 Residents' overall understanding of the rules

To this point, I have provided a discussion of the resource use rules and related issues. The challenge to sustaining a CPR is to maintain these institutions through collaboration. Therefore, the important question to ask is whether the residents who use the coastal resources understand these rules and norms. In this section, I will discuss how the residents of the two districts understand resource boundaries and appropriation rules.

5.4.1 Residents' understanding of resource boundaries

The dual ownership system under which the State registers the coastal waters and natural resources to be shared by the Fijian people is complex. Lagibalavu (1994) reports that it is commonly not well-understood by the people. However, it does seem that villagers in Cuvu and Wai are well informed on this issue and clearly understand how property rights are assigned. The villagers showed me their *qoliqoli* boundaries on a map with reference to actual landforms and what they pointed out was consistent with the boundaries on the official map of *qoliqoli*. In my interviews, the villagers discussed the boundaries of *qoliqoli* and *tabu*, as the CPR boundaries and property rights they possess:

[The boundary of our *qoliqoli* is] up to the end of the reef. That's where we protect. (Villager 1 of Cuvu)

We, Fijian people, only have usage rights for local people in our *tabu*, not ownership but usage rights. (Villager 3 of Cuvu)

The government has power so anything to do with the water, the government should know, business or we make things there like *tabu*, then the government must know. (Villager 1 of Wai)

As part of the NGO assisted conservation projects, the residents of both districts were given the chance to learn the property rights arrangement regarding their fishing activities in the *qoliqoli*. During workshops organised by the NGOs, officers of the Fisheries Department discussed on how property rights were assigned. The result was that village residents gained knowledge on the legal arrangements of the coastal resources.

While the villagers generally share understanding of the *qoliqoli* boundaries, the official understanding does not necessarily capture the more detailed division of rights in the communities in Cuvu District. In her case study of Ucunivanua village in the northeastern part of Viti Levu, Vunisea (1994) explains that smaller social units could have fishing rights over specific areas within the district level customary fishing rights area. I observed similar nested rights in Cuvu District. Although all Fijians of the district have the right to access any part of the district water, individual villages in the district maintain the right to restrict the entry of people from other villages into their areas. As a result, villagers maintain a norm to go fishing only in adjacent waters:

If you talk about fishing at the village level, each village has their own rights. Tore village's water is up there, that's theirs. Also, ours is straight in the water just adjacent to our village. That's how *qoliqoli* usage goes in our villages. (Villager 3 of Cuvu)

If people from another village [in the same district] come and want to fish here, then they have to go through traditional protocol to get permission. (Villager 13 of Cuvu)

After the introduction of the government definition of *qoliqoli*, which is managed at the district level, and the publication of official maps, discontent spread among some villagers, because it reduced village autonomy and increased pressure on marine resources by people from outside the village. This concern is described by the interviewees:

Before, the village had [its] own *qoliqoli*. For example, this village had [its] own *qoliqoli* and Yadua [village] had [its] own *qoliqoli*. If someone from other villages wanted to fish in this area, then they came and brought grog [*yagona*], asked elders [for permission]. But now it is changing. Now *qoliqoli* is for *tikina* [district]. A particular *qoliqoli* which used to belong to *tokatoka* [extended family] became a *qoliqoli* of the whole tribe. (Villager 13 of Cuvu)

The concept of marine management is changing. It has been managed by the *tikina* [district] these days, but every village used to have own *qoliqoli* and if someone wanted to come they went through the village. (Villager 15 of Cuvu)

We want to go back to traditional ways of fishing, like you fish in own area. There will be more fish. There will be more stability of the fish. Nowadays, for some people, they want to sell fish and those people go to the other village's area, and those people go and dive there. But before, people went fishing to only their own area and fished there and ate it. (Villager 17 of Cuvu)

The villagers of Wai District were able to show me their *qoliqoli* boundaries on a map and what they pointed to was also consistent with the boundaries on the official *qoliqoli* map. However, in contrast to Cuvu, nested rights, such as village level ownership, were not found in the Wai waters. The Wai residents recognise collective ownership over the district waters which coincide with the governments' defined boundaries:

Our fishing ground is owned by a *yavusa* [clan] which consists of six villages. It is not owned by individual villages, but owned by a *yavusa*. (Villager 3 of Wai)

Like *qoliqoli* boundaries, MPA or *tabu* boundaries are clear among villagers in both districts. All the interviewees could show me the boundaries of their *tabu* on a map.

Physically MPA boundaries are the boundaries that separate the villages, and people know where the boundaries are. Our MPAs are marked by buoys in the water and it uses basically traditional landmarks. Everyone knows it. Buoys are outside of reef breakers. (Villager 3 of Cuvu)

It [*tabu*] is up to the edge of reef. We don't use physical buoys but everybody knows where the *tabu* is. (Villager 8 of Wai)

Although residents of both districts know the physical boundaries of *tabu*, their sense of resource ownership is slightly different. As explained above, some of the residents of Cuvu District showed their discontent over official demarcation of *qoliqoli* at the district level. Interestingly, at least regarding *tabu* management, the residents of Wai suggested their preference for collective resource management at the district level. A villager showed his willingness to share the resources in his village's *tabu* with other villages:

Tabu area is not only for a particular village, it's for all of us, six villages. ... The six villages, that is our family. (Villager 1 of Wai)

In sum, the boundaries of CPRs, both *qoliqoli* and *tabu*, are well defined in both districts, although there is a difference between two districts in the recognition of nested rights. Through workshops and training organised by the NGOs, the villagers have had a chance to learn what rights are given to them and developed their common understanding of the *tabu* locations.

5.4.2 Residents' understanding of appropriation rules

The residents of Cuvu and Wai districts also have a good understanding of those rules regarding appropriation. All villagers know that all fishing is prohibited in their *tabu* and the use of certain types of fishing gear is not allowed. It seems that though villagers do not

have accurate knowledge regarding mesh size restricted by the Fisheries Act, they understand that they are not allowed to use fine nets for fishing.

An interesting point to note is that residents consider the rules on fishing equipment to be that of their own community. They explained that they made the rules for their own resources, while the national law actually restricts the use of poisonous plants and fine nets. Although this may be based on a misunderstanding among the residents, the fact that they believe themselves involved in the decision making process seems to convince them of the importance of the appropriation rules and give them an incentive for compliance.

5.5 Rule enforcement and compliance

5.5.1 Monitoring

CPR researchers emphasise the necessity of monitoring. Gibson *et al.* (2005) demonstrated that rule enforcement by the local group is significantly correlated to CPR conditions. According to Section 3 of the Fisheries Act, the government may appoint honorary fish wardens in order to prevent and detect offences, enforcing the provisions of the Act. The honorary fish wardens may require any person engaged in fishing to exhibit his licence, apparatus and catch. Furthermore, where there is reasonable suspicion that any offence has been committed, they may take the alleged offender to the nearest police station or port and confiscate the vessel, apparatus and catch, without summons, warrant or other process (Fisheries Act of Fiji Section 7).

As part of the process of *tabu* establishment, the appointment of fish wardens was facilitated in Cuvu and Wai Districts. The Fishery Department sent its officials to train the

nominated fish wardens and gave them an ID card. As a facilitator of the CBCRM in Cuvu District, PCDF officers consider the involvement of government agencies in their project as important:

That [the fish warden training] was to teach knowledge and skills to the fish wardens, like what their rights are, if they use the rights what the consequences are...that's Fisheries Department, that's their role...When we come to these [training] workshops, we invite the [government] officers to present. Workshops, like awareness raising, can be done by ourselves, but we also invite reps from the Fishery and Environment so that we can have the integrated approach. This is necessary, because once we will pull out, the government will be still responsible for the project. (PCDF officer)

Every coastal village in both districts now has a few residents to monitor the *tabu*. Although monitoring is not implemented on a regular basis, the objective of the fish warden is well understood by the residents and their management is considered effective. The residents of Cuvu describe the role of fish wardens thus:

Fish wardens always tell them [rule breakers] not to fish in *tabu*, and now they come only to open area. (Villager 13 of Cuvu)

Not anymore [rule breakers]. Before the *tabu*, they [Indians] always came and fished, but not now. When we started the *tabu*, we told Indians not to come. We have fish wardens, checking and always looking after the *tabu*. (Villager 15 of Cuvu)

However, some monitoring concerns were identified from the interviews. Lack of time and money is the major constraint in monitoring activities in Cuvu. Most of the fish wardens in Cuvu District have a paid job and it is not easy for them to spend time patrolling. Another problem identified in Cuvu is that there is no fund specifically dedicated to monitoring. The effectiveness of fish wardens is limited by a lack of necessary equipment such as a motorised boat.

Since fish wardens of Wai monitor their fishing ground while they are fishing, no interviewees, who are mainly subsistence fishers, raised the issue of time as a significant opportunity cost of monitoring activities. In one of the villages, a person who owns a boat was chosen to be a fish warden and is also expected to supply his boat for the common interest. He indicated his pride in being selected as fish warden and expressed his willingness to work for the community. Since the lack of monitoring equipment was also recognised as a problem, the villagers intended to negotiate with the WWF and/or the government for provision of a boat.

I have to talk to the Fisheries [Department] for a boat. In Wai, we have own security guys. The fisheries from Suva gave us ID card, and the only thing left is a boat. (Villager 1 of Wai)

An article in the Fiji Times (December 20, 2004) reported that, in the case of *tabu* management on Moturiki island, where PCDF has assisted the CBCRM activities, a challenge for fish wardens would be in apprehending their own family and relatives in cases where they broke the law. Since kinship is the basis for the structure of Fijian communities, this poses a serious problem. However, none of my interviewees in Cuvu and Wai raised this concern. The fact that the residents understand the rules and the objective of the fish warden may have helped reduce concern among fish wardens. In addition, villages have adopted graduated sanctions, as described in the next section, and it is not always the case that all rule-breakers are immediately apprehended by the fish warden. In other words, the presence of graduated sanctions seems to increase the effectiveness of monitoring at the community level.

5.5.2 Sanctions

In addition to monitoring, sanctions are also considered necessary in CPR management (Gibson *et al.* 2005). Successful CPR cases use graduated sanctions depending on the seriousness and context of the offence (Ostrom 1990; Wade 1988). The formal assessment procedure for offences against the Fisheries Act involves government agencies. In fish warden training organised by the NGOs with the Fisheries Department, the wardens are told to report trespassers to police and the Fisheries Department. However, according to Ruddle (1995: 10), sanctions are a sensitive issue due to the legal uncertainty regarding property rights of *qoliqoli*. The legal uncertainty discussed by Ruddle exists due to the dual ownership of the coastal resource. The actual ownership belongs to the state while Fijian people possess access rights to the resources. Thus, the state has law enforcement power and should monitor resource use. However, the lack of the state's capacity to police is often a problem. The result is that, local Fijians occasionally try to exclude or punish outsiders who fish in their customary or *qoliqoli* often without any legal basis. According to Zann (1983: cited in Ruddle 1995), high chiefs have been taken to court and charged with the illegal confiscation of poacher gear. The Customary Fishing Bill being introduced in Parliament before the military coup d'état of December 2006 was to transfer the proprietary ownership of *qoliqoli* from the state to local Fijians. Once it passes, the bill will decrease the uncertainty over legal ownership, or so it is hoped.

The interviews revealed that, before proceeding to the formal assessment procedure, the villages assess trespassers based on informal graduated sanctions. The sanctions in villages of both districts vary from a verbal warning to physical punishment and are applied to both internal and external violators. When someone is found in a *tabu* area, fish wardens

or other villagers first advise him/her to get out. If the case is more serious, such as repeated intrusions by an outsider or the mass taking of fish, the rule breakers' equipment and catches are confiscated and they are sent to a village meeting. While elders make decisions on sanctions in the meeting, merely being present when all the villagers are together may be sufficient to remind the rule breaker of the importance of compliance:

For breaking the law in the village, we have a village meeting where all the village will be there, the person who broke the rule will be there, it is a big meeting that everybody can talk. It's embarrassing. (Villager 11 of Cuvu)

Though the threat of physical punishment continues to exist today, it is rarely applied:

In the old days, under the traditional rules, if you broke the rules in the village, you would be whipped in the front of whole village. The chief will sit there, in front of the whole village, people stay outside or inside the house, the traditional warriors there with a big stick and whip. Men, women or even family members of the chief, if you broke the rule, you would be whipped... We still have this [physical punishment], but we don't really do it now. (Villager 1 of Cuvu)

While graduated sanctions are used in the villages, the fear of supernatural punishment also plays a role in deterring *tabu* violations. People continue to respect customary beliefs and such threats are actually feared more than sanctions imposed by modern laws (Vunisea 1994: 203). As mentioned earlier, the concept of *tabu* itself comes from the idea of sacredness and prohibition (Ravuvu 1983: 91). As a result, violation of such rules is thought to invite divine punishment. While I found no respondents in Wai admitting to such a fear, one villager in Cuvu told me how superstitious punishment works in the village:

He went across [*tabu*]. He caught octopus, then he got sick. Then he came here to me, because I

am a churchman and I got a gift from God: when you pray, something like sickness, God does show me why. When he came here and prayed I saw him crossing the *tabu* area, so I said to him 'maybe you went to the *tabu* area and you touched something that we were not allowed to touch.' Then the boy said 'yeah, I did.' He then went and asked the chief for his forgiveness. (Villager 12 of Cuvu)

5.5.3 Residents' overall compliance with rules

When the *tabu* were established, the basic rule the residents agreed upon regarding appropriation was not to fish inside the designated area. Under similar regimes of monitoring and sanctions, Cuvu and Wai districts have implemented this conservation measure for about five years. As I have explained, all the residents have an understanding of this rule. The next question, in order to examine the sustainability of CBCRM as CPR management, concerns whether the residents who use the resources follow the rules. If the number of the residents actually following the rules is small, then the institution is unlikely to be stable. Despite the fact that rule compliance is an essential factor for enduring resource management, neither of the NGOs had collected data on whether the villagers actually follow the local rules. Given the difficulties of directly measuring rule compliance, my individual questionnaire survey asked respondents their *perceptions* of rule compliance in their particular village.

Figure 5.5 shows villagers' perceptions of their compliance with rules in their waters. It shows that only 40.4 per cent of Wai respondents 'always follow,' or, 'most of the time follow,' the fishing rules. Fifty-six percent of them answered that either 'some don't follow' or 'most of us don't follow' the rules. As a reason for the low rate of compliance, one interviewee stated:

We stay in the village at night but we know that some people go to *tabu* - some Indians and

some Fijians. (Villager 1 of Wai)

The resource owner is the whole *tikina* [district], I mean, the *Yavusa* [clan] chief and *Turaga ni Mataqali* [sub-clan head]. They made *tabu* for the *tikina*. But some people never mind. I don't think they agree with the *tabu*. Those people did not join the meetings. (Villager 8 of Wai)

In contrast, Cuvu residents showed better compliance with the *tabu* rules: 72 per cent of the Cuvu respondents answered 'we all follow' or 'most of the time we follow' the *tabu* rules. The interviewees emphasised the importance of participation in workshops:

[The workshops are] the only way to be able to get things done here, and to get people motivated here. That's why we had awareness workshops. (Villager 3 of Cuvu)

We learned a lot from them [PCDF], like how to keep our environment clean and how to protect our marine resources. That's why we decided to do the *tabu* and we follow it. (Villager 11 of Cuvu)

However, other interviewees revealed that there were some people who broke the appropriation rules. Those rule breakers are both those from outside of the villages and the villagers. Some interviewees argue that Indo-Fijians in the district go fishing in *tabu*:

Only Indians come and break the rules. People in the village, they go to *tabu* only when they have *Kalevu's* permission. Then they go fishing. (Villager 14 of Cuvu)

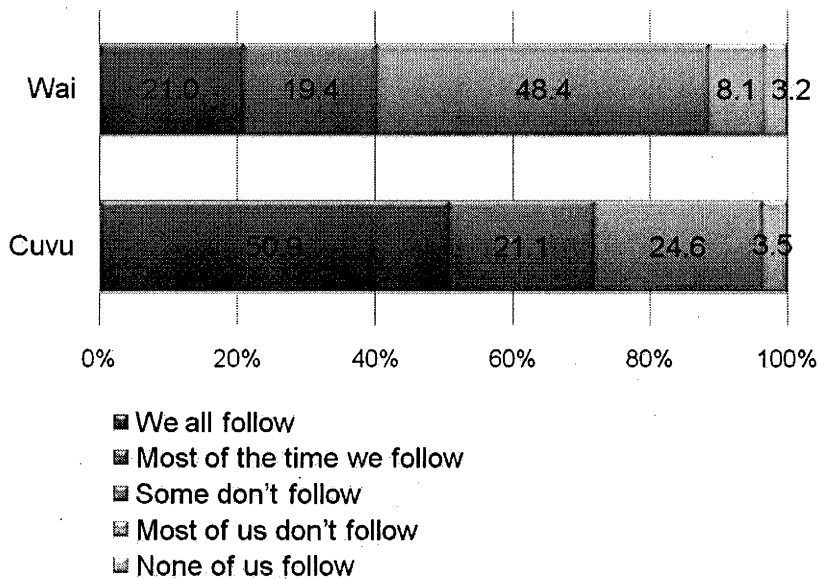
Although there were some Indo-Fijians who fished in *tabu* as the villagers have caught some of these Indo-Fijians, it seems that Indo-Fijians are not the only rule breakers but Fijian residents of the district do break rules:

Some of the young boys here in this village, they went fishing in *tabu*. They were attracted to *tabu* because of the abundance of fish. They were too greedy. It is hard to stop them because plenty of fish is there. (Villager 10 of Cuvu)

Interviewees also identified other reasons for rule breaking as lack of awareness of the importance of conservation (Villager 6 of Cuvu) and decreased respect for other residents by younger generation (Villager 2 and 15 of Cuvu).

Figure 5.6 Perceptions of the level of compliance with *tabu* rules

Would you say that fishing rules in the village waters are followed by the residents?



Cuvu: n=57, Wai: n=62

5.6 Conclusion

In this chapter, I have discussed how the concept of institutions is operationalised in CBCRM in Fiji. I have presented how villagers in the two districts collaborate in long lasting CBCRM by discussing the level of villagers' understanding of rules concerning

resource use and their perceived levels of compliance. To summarise, my findings are as follows:

- (1) the result of my semi-structured interviews suggest that the residents who use the coastal resources in both districts equally understand the following rules concerning resource use: boundaries of resources; and appropriation rules; and
- (2) the result of individual surveys suggests that perceived residents' compliance with the rules in their own waters is higher in Cuvu District than in Wai District.

These findings suggest that CBCRM in Cuvu District is more enduring than in Wai District. My data show a tendency of a perception among residents of Cuvu that they collaborate more in their action concerning resource use. Furthermore, while seven of 19 interviewees in Wai reported cases of rule breaking in their villages, a smaller portion of my interview respondents in Cuvu (two out of 17) acknowledged cases of rule breaking by village residents. Although I acknowledge the limitations of my data due to the small sample size, the consistency with the results of my survey showing that 72 per cent of the Cuvu respondents say that they follow rules, supports my argument that sustainability of CBCRM in Cuvu District is likely to be higher than Wai District.

In the following two chapters, I will analyse the bonding and bridging social capital of the two districts and examine how social capital has contributed to the difference in the level of compliance with rules.

CHAPTER 6

Norms in Fijian Village Life and Sharing Information for CBCRM

6.1 Introduction

Bonding social capital in this study is defined as those ‘social ties which cement somewhat homogenous groups.’ The theoretical literature posits that bonding social capital helps the rationalisation of rules and norms within a group by facilitating the flow of information so as to encourage the members to conform. Fijian society has placed traditional obligations and demands on individuals, especially those living in villages, thus producing some dominant characteristics, including a sense of strong bonds that has implications for long-lasting CBCRM. This chapter will examine what types of bonding social capital relate to CBCRM and how they function. More specifically, it explains how bonding social capital influences the operation of CBCRM institutions discussed in Chapter 5.

This chapter is divided into three parts. First, I discuss different features of bonding social capital in the villages of Cuvu and Wai. The indicators used to examine this are the number of social groups in village, reciprocal relationships regarding coastal resource use and a sense of solidarity. By comparing these features, I examine similarities and differences in bonding social capital between the two districts. Second, I analyse the

functions of bonding social capital in CBCRM. Along the theoretical functions discussed in Chapter 2, I examine the roles of bonding social capital in CBCRM in the two districts. Third, I discuss how bonding social capital has changed in recent years in relation to changes occurring in the Fijian way of life.

6.2 Bonding social capital in Cuvu and Wai Districts

This study employs three concepts to examine the level of bonding social capital (see Figure 1.3 in Chapter 1):

- (1) Number of social groups in villages;
- (2) Norms of reciprocity regarding coastal resource use; and
- (3) Sense of solidarity among villagers.

Using these concepts, I first analyse the similarities and differences in bonding social capital between the two districts.

6.2.1 Number of social groups in villages

Most of the social groups in Cuvu are church related, such as Sunday School for children, the Youth Group (Methodist Fellowship), the Women's Group and the Men's Group (Table 6.1). Membership of these groups is open to all the residents and there is no special requirement, to join a group, except gender and age. As a result, most people join one of these groups unless he/she belongs to a denomination other than the Methodist church. All these groups regularly hold meetings, generally once a week.

Table 6.1 Social groups in Cuvu and Wai Districts

District	Social groups	Type/Membership	CBCRM related?
Cuvu	Sunday School	Methodist church/children	No
	Youth Group (Methodist Fellowship)	Methodist church/Youth (18-40 years old)	No
	Women's Group	Methodist church/Mature women	No
	Men's Group	Methodist church/Mature men	No
	Mothers' Club	Primary school/Mothers of school children	No
	Elders' Group	Elder men	Yes, as decision maker
	Rugby team	Men	No
	Meke Group	Youth in Rukurukulevu village	No
Wai	Sunday School	Methodist church/children	No
	Youth Group (Methodist Fellowship)	Methodist church/Youth (18-40 years old)	No, except in Kubuna village.
	Women's Group	Methodist church/Mature women	No
	Men's Group	Methodist church/Mature men	No
	Mothers' Club	Primary school/Mothers of school children	No
	Elders' Group	Elder men	Yes, as decision maker

Apart from the church based social groups, villagers identified some social groups in the villages of Cuvu. Mothers of children in the villages join the Mothers' Club at a primary school to help with school activities. Elder men form an Elders' Group, but elder women stay in the Women's Group if they would like to join a social group. A rugby team is organised exclusively for men in Cuvu, while there is no sport group or team for women. The villagers say that this reflects better job availability for women in the tourism sector near the villages. Although I was unable to collect women's views on sport groups, one male villager told me:

Most of ladies are working, so ladies don't have time for sport teams. (Villager 1 of Cuvu)

Rukurukulevu village also has a *Meke* Group consisting of only young residents that occasionally performs *Meke*, a traditional Fijian dance, for tourists in the nearby resorts.

In the case of Cuvu, none of these social groups, except the Elders' Group, are involved in CBCRM related activities. Elders' opinions are highly respected in village life and decisions made in elders' meetings may affect CBCRM related activities. A resident explained the involvement of social groups in CBCRM:

We have social groups in the village. They don't do activities for *tabu*. But, each member is also a member of the village. So, indirectly those groups are involved in *tabu*. As a member of the village, they have responsibility in the *tabu* management. (Villager 11 of Cuvu)

Like Cuvu, social groups in villages of Wai District are mainly church-based. The groups the villagers identified were the Youth Group, the Women's Group, the Men's Group, the Elders' Group and the Mothers' Club at a primary school. Most of these groups have a meeting once a week. These groups have no direct relationship with the CBCRM project except possible influences by the elders' grouping decision making.

In addition, although it is not aimed at CBCRM, the activities of the Youth Group of Kubuna village are closely related with marine resource use. The Youth Group of Kubuna village is comprised of 21 residents who are aged 18 to 40 years old. The group keeps a large freezer in the community hall and runs a small business selling fish in the village. The freezer was funded by the Ministry of Youth, Employment Opportunities and Sports in December 2000, while the Mothers' Club donated US\$58 as an initial operation fund. When villagers catch fish, they can sell it to the Youth Group at US\$2.03/kg. Designated members of the Youth Group keep the fish in their freezer until outside buyers, mainly Indo-Fijians who own a small shop near the village, come to purchase. The buyers pay US\$2.32/kg and the Youth Club receives approximately US\$0.30/kg to be used for the payment of electricity and telephone for common use in the community hall. The purpose

of this business is not to manage the resource but to raise funds for group activities as well as for the community. Although the business is run for the common benefit of the community, a resident of Kubuna village and some residents of neighbouring Lomawai village recently started exactly the same style business in order to gain personal profits. The Youth Group continues to explore different business options to raise funds.

6.2.2 Reciprocal relationships

The literature suggests that Fijians generally have strong kinship-based ties and these ties have fostered their reciprocal relationships. Fijians seem to commonly recognise the presence of high levels of reciprocity, as all Fijians I interviewed emphasised how strong their kinship ties are and how they help each other in their day-to-day life. In formal and informal conversation, many respondents often mentioned the significance of family and his/her responsibility to other family members. Furthermore, Fijians recognise a high degree of reciprocity even between different clans or tribes. A villager described their reciprocal relationship over generations thus:

All our ancestors before were like, you come and ask us for help here, then we help out and we expect you help us back. Everything is like, you do your matter and we do our matter. You make your contribution and I make my contribution, like that. If you are a chief and come now asking us for advice, then you go back and bring back one of your people and we eat them.
(Villager 3 of Cuvu)

In order to examine the reciprocal relationships among villagers in relation to marine resource use, the survey asked the participants what they would do when first, they borrow fishing gear, and second, when they have extra fish in their catch.

Obligations for borrowed fishing gear

Table 6.2 shows whether the residents borrow fishing gear from other residents and Table 6.3 shows what obligations they have for the borrowed fishing gear. In Cuvu District, 24 of 59 respondents (40.1 per cent) answered that they borrowed fishing equipment. For men, 60 per cent of the respondents answered that they borrowed fishing gear, while this was only 26.5 per cent among women. Although most women go fishing, many of them do not use equipment for fishing and they mainly glean the sea bottom to collect animals such as sea urchins and octopus. Thus, the ratio of women who need to borrow fishing gear is low relative to men.

Among those who answered that they borrowed fishing gear, 75 per cent of them would give part of the fish catch to the owner of the gear. In my interview, the Cuvu villagers explained how reciprocal relationships worked and all of them emphasised that they did not pay money among themselves:

When we come back [from fishing], and if we got a lot of fish, we have to give part of the catch to the net owner, so that they can give [lend] a net to you every time you ask, otherwise very bad. ... People never pay in our village. You just give some fish when you come back, because we are all like cousins (Villager 1 of Cuvu)

In Wai District, females borrow fishing gear from others more often than males. While 43.3 per cent of female respondents answered that they borrowed fishing gear, 66.7 per cent of the males owned fishing gear and did not borrow equipment from others. Since many residents of Wai depend on fishing for their income and fishing equipment is important, more people own gear than the residents of Cuvu. This particularly applies to

males, because they need to use relatively large nets and a boat to catch enough fish to sell³².

Table 6.2 Use of borrowed fishing gear

Cuvu District

	Male	Female	Total
Use borrowed fishing gear	15 (60.0%)	9 (26.5%)	24 (40.1%)
Don't use borrowed fishing gear	10 (40.0%)	25 (73.5%)	35 (59.3%)

Wai District

	Male	Female	Total
Use borrowed fishing gear	9 (33.3%)	13 (43.3%)	22 (38.6%)
Don't use borrowed fishing gear	18 (66.7%)	17 (56.7%)	35 (61.4%)

Table 6.3 Obligation for borrowed fishing gear

Cuvu District

	Male	Female	Total
No obligation	5 (33.3%)	1 (11.1%)	6 (25.0%)
Pay money	0 (0.0%)	0 (0.0%)	0 (0.0%)
Give part of fish catch	10 (66.7%)	8 (88.9%)	18 (75.0%)
Total	15	9	24

Wai District

	Male	Female	Total
No obligation	0 (0.0%)	0 (0.0%)	0 (0.0%)
Pay money	3 (33.3%)	1 (7.1%)	4 (17.4%)
Give part of fish catch	6 (66.7%)	13 (92.9%)	19 (82.6%)
Total	9	14	23

³² For example, a fisher in Lomawai village had invested US\$464 on a boat ten years prior to the interview and US\$348 for a net (2m in height and 200m in length) six years prior to the interview.

In contrast to those in Cuvu District, three of the nine Wai male respondents who borrow equipment from others, stated that they pay money to the owner for its use. As an explanation of the payment, the villagers stated that men sometimes borrowed a motorised boat and the money they paid to the owner is to supplement the cost of fuel, rather than for its use. For females, they do not usually pay for borrowed fishing gear, such as nets. While the sample size may not be large enough to draw any definite conclusions, 13 of 14 female respondents (92.9 per cent) who borrow fishing gear from others reported giving part of the fish catch to the owner. However, although none of the female respondents of my survey answered that they pay money, I learned in my informal interviews with female that they usually pay US\$0.58 per person per day for fuel when they take a boat ride for fishing. Wai women travel longer distances and spend longer time for fishing compared to Cuvu women. If her family does not own a boat, a female will get a ride from male villagers who own a motorised boat. The typical boat owner goes fishing on his own from Monday to Wednesday for three hours each day, and, on Thursdays and Fridays, he takes with him up to six women in the village for fishing. One boat owner stated that the reason he charges a small fee for providing a ride in spite of the prevailing norms of reciprocity without paying in the village is that:

I always help other people in the village. We are all related, like family. But I have to pay for fuel and I need money to pay it. I bring village women to fishing and they can sell the fish [that they caught]. The money they pay for the boat, it's just enough for fuel only (Villager 9 of Wai)

Use of extra fish in their catch

Table 6.4 shows how the villagers distribute the extra fish they catch. The residents of Cuvu do not sell fish they catch, except for a few cases as explained in Chapter 4, such as

sea cucumbers. Instead, the majority of the survey respondents (86.4 per cent) give away the extra to their relatives, who then share it among their other family members.

Like Cuvu, the residents of Wai also reciprocate, sharing fish they caught with others. For example, when I visited the villages, my host family received complementary fish from a cousin and other relatives and served it for me. When there was a ceremony for the 100 days after the death of her brother, her relatives and neighbours provided a feast and shared the cost. She would do the same for relatives and neighbours on future special occasions. However, in day-to-day life, fishing is an important income source for the Wai villagers. After they save the necessary fish for their own family, the majority of respondents (75.5 per cent) either sell their catch to middle persons in the village, such as the Youth Group, as explained in the Section 6.2.1, or sell it in the town markets.

Table 6.4 Use of extra fish in catch

	Cuvu District			Wai District		
	Male	Female	Total	Male	Female	Total
Sell in village	1 (4.0%)	1 (2.9%)	2 (3.4%)	17 (63.0%)	12 (40.0%)	29 (50.9%)
Barter with other residents	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (3.7%)	0 (0.0%)	1 (1.8%)
Give to chief	2 (8.0%)	1 (2.9%)	3 (5.1%)	1 (3.7%)	1 (3.3%)	2 (3.5%)
Give to relatives	22 (88.0%)	29 (85.3%)	51 (86.4%)	5 (18.5%)	9 (30.0%)	14 (24.6%)
Give to other residents	0 (0.0%)	1 (2.9%)	1 (1.7%)	0 (0.0%)	1 (3.3%)	1 (1.8%)
Sell in market	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (7.4%)	7 (23.3%)	9 (15.8%)
Other	0 (0.0%)	2 (5.9%)	2 (3.4%)	1 (3.7%)	0 (0.0%)	1 (1.8%)
Total	25	34	59	27	30	57

6.2.3 Sense of solidarity among villagers

In order to examine residents' sense of solidarity, the survey asked respondents who they thought would act to deal with a situation in which there was a sudden decline in fish catch in their waters. Nearly 83 per cent of respondents of both districts answered that they would collectively solve the problem, although different levels of action were suggested (Table 6.5). In Cuvu, nearly half (48.3 per cent) of the respondents answered that the entire district would work together to solve the problem, while about one third (32.8 per cent) of them thinking the entire village would work together.

Table 6.5 How to solve a resource problem

If there were a sudden decline in fish catch in village waters, who do you think would act to deal with the situation?

	Cuvu	Wai
Each household would deal with the problem individually	1 (1.7%)	1 (1.7%)
Members of sub-clan among themselves	4 (6.9%)	0 (3.4%)
The entire village working together	19 (32.8%)	18 (30.5%)
All village leaders working together	4 (6.9%)	13 (22%)
The entire district work together	28 (48.3%)	10 (16.9%)
NGO	1 (1.7%)	14 (23.7%)
Government official	1 (1.7%)	3 (5.1%)
Total	58	59

My interviews also found that the residents of Cuvu generally consider solidarity at the district level to be important for *tabu* management, although, as explained in Chapter 5, some villages of Cuvu claim nested property rights at the village level. The following quotations suggest that the villagers' attitude that unity leads them to better ideas and solution in resource management:

These things, like *tabu*, are a community-based project. You can't do it by yourself, but you have to work as a community. ... What we are trying to get now is proper resource management. If we can get together and have the forum of the chief in the whole district, we will be able to solve all the problems at the district level. If you are isolated at the village level, we may have individual problems and it's difficult to solve them. (Villager 3 of Cuvu)

If every village does conservation individually, then there could be problems. But if we have the whole district work together, anybody fishes in the area work together, conservation will become stronger, because everyone will respect the MAP ideas. (Villager 16 of Cuvu)

In Wai, the ratio of people who answered that they would collectively solve the problem was lower. While 30.5 per cent of respondents chose the village level as the level where problem solving action actually occurs, 16.9 per cent chose the district. In addition, 22 per cent answered that all village leaders work together. An interesting finding was that 23.7 per cent of respondents in Wai answered that the NGO would be able to deal with the problem, a far higher percentage of respondents than in Cuvu (1.7 per cent). Although it is difficult to draw a definite conclusion from this data, the possible explanation for this is that Wai residents shared a common belief that someone else would solve the problems they face.

To summarise, both districts possess a similar set of social groups in the villages. Most of them are related to the Methodist church and the residents belong to one or more of these groups depending on their age and gender. As the residents respect elders' opinions, the Elder Group may affect decisions regarding CBCRM activities, while other groups have no clear relationship with the CBCRM.

Fijians generally argue that reciprocal relationships are an important feature of their village life and they prefer reciprocating rather than paying money among themselves. The

residents of the two districts generally show similar kinds of reciprocal actions such as giving food to relatives and neighbours, assuming that others would do the same in the future. Kinship is the foundation for their reciprocity, as extra fish are likely to be given to only relatives. However, in the case of Wai, as the commercial value of coastal resources is important and many residents are engaged in fishing in order to obtain cash income, the scale of fishing activities is larger than that of Cuvu in terms of the volume of catch, time, and equipment. Accordingly, service providers in the village, such as boat owners, expect to receive a return paid in cash.

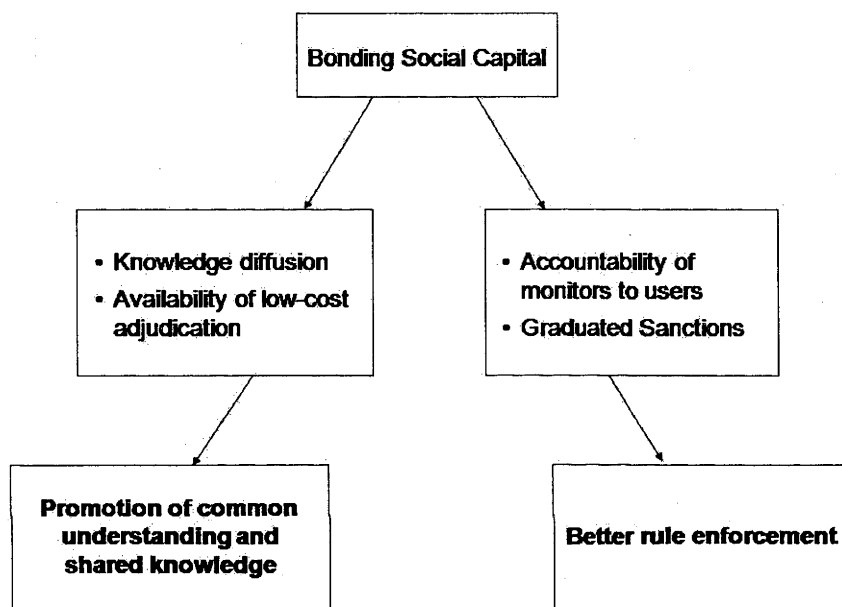
Although both districts show some levels of solidarity for problem solving, the level of solidarity the villagers perceive differs between the two districts. While Cuvu villagers consider solidarity at the district level to be important, Wai villagers recognise strong solidarity at the village level and some consider it the responsibility of leaders or NGOs to solve resource problems they may face.

6.3 Functions of bonding social capital in CBCRM in Fiji

As discussed in Table 2.5 in Chapter 2, the major theoretical functions of social capital are: (1) to facilitate common understanding and knowledge among resource users because the strong ties among the villagers make knowledge diffusion easier; and (2) to make rule enforcement easier because reciprocity can be used in social dilemmas involving an assessment of the likelihood that others are conditional co-operators. Drawing on material gained from my interviews, I present an analysis of the functions of bonding social capital in CBCRM of Cuvu and Wai District. I argue that bonding social capital plays the two critical roles to make institutions work: promotion of common understanding and shared

knowledge; and better rule enforcement. However, I also argue that strong ties in the villages have some negative impact on CBCRM in the case of the two districts.

Figure 6.1 Major functions of bonding social capital in CBCRM



6.3.1 Bonding social capital and knowledge sharing

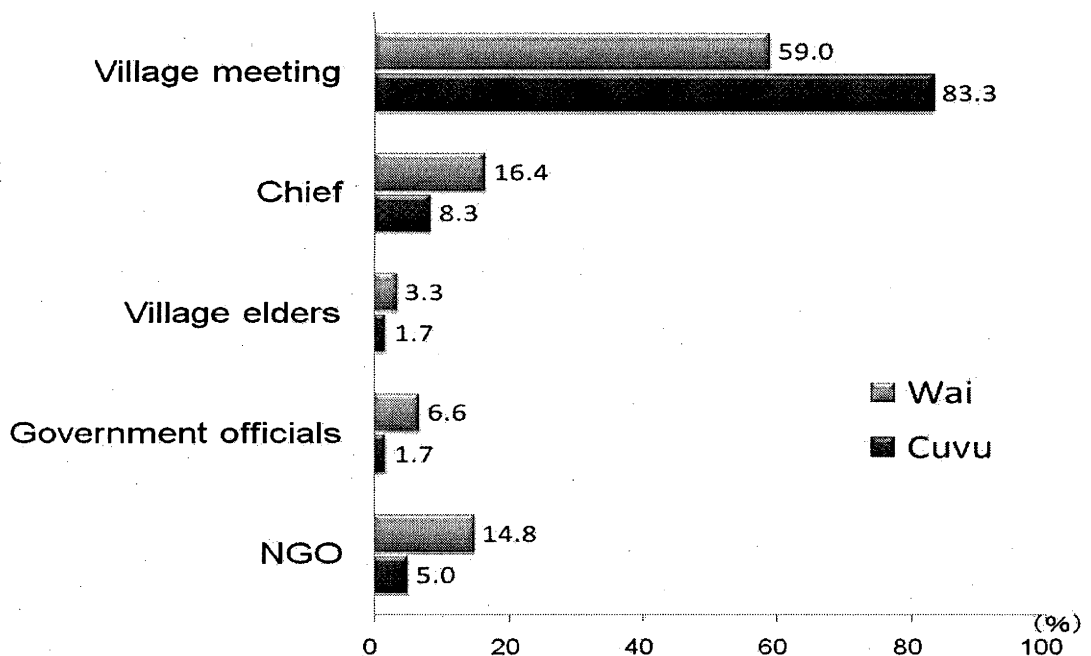
Knowledge diffusion

Bonding social capital in the context of CBCRM facilitates the diffusion of knowledge and information among the villagers. Due to the strong bonds, information and knowledge are smoothly disseminated among villagers. An example of this was found in well-organised village meetings. In every village of Cuvu District, meetings are held fortnightly and all adults attend:

Everyone, 18 year old or above, must attend the village meetings. All men and women. *Turaga ni Koro* [village leader] yells out ‘everyone must come down to the meeting!’ No grog [*yaqona*] party, but you must come. That’s our law. (Villager 1 of Cuvu)

According to the survey, 83.3 per cent of the respondents in Cuvu answered that when there is any change in fishing rules they obtain information in village meetings (Figure 6.2). If necessary, additional meetings are held. Every village has a building large enough to accommodate all the villagers and in many cases the traditional style of architecture, *bure*, is used for the community hall. Although women and youth are normally quiet in discussion at the meeting due to custom and hierarchy, all villagers hear and know about both the content and the process through which decisions are made.

Figure 6.2 Information source in village



Cuvu: n=60, Wai: n=61

Even when one is absent, due to the high level of bonding social capital based on the close relationships with family and relatives in the village, it is not difficult for him/her to receive information. In addition, all the respondents of the interview answered that village leader is responsible for information dissemination in the village. For example, when the *tabu* is open for fishing for a short period, the village leader is responsible to *let all* the village know:

I announce the village, shouting out in the morning. I walk down the village and tell everyone 'now ready to go!' or 'the *tabu* will be open on this Monday only, not on Tuesday!' (Villager 2 of Cuvu)

Since villages in the two districts are relatively small, villagers are able to share information.

Like Cuvu villagers, the villages of Wai District hold meetings in their community hall every other Monday and all mature residents must attend. In the survey, although more chose an NGO and the Chief as an information source compared to Cuvu, 59 per cent of the respondents of Wai answered that they would know in the village meeting if there were any change in the fishing rules.

Wai village leaders suggest that they have strong connections with other leaders and sharing information among them is easy. Important information from other villages, such as *tabu* openings, is then passed to village members in the Monday meeting and shared. According to one villager:

If we decide to open the *tabu*, I go to other villages and tell them the *tabu* will be opened so that, from all the six villages, they will come and fish because the *tabu* area is all of ours. ... So, everyone in six villages must know that we open the *tabu*. (Villager 1 of Wai)

The following villager emphasised the significance of information sharing in order to make the *tabu* effective:

It's better to tell people where *tabu* is so that no one will go in. In each village, *Turaga ni Koro* [village leader] has to go through the process [of information sharing] to tell people that they can just go fishing in the village water, but they cannot go in the *tabu* area. (Villager 3 of Wai)

Provision of low-cost adjudication

Effective internal mechanisms based on strong bonds can work for conflict resolution. Although neither of the two districts has experienced serious internal conflict over resource use, it is expected that reciprocal relationships should reduce rivalry in resource harvesting activities and mitigate conflicts as they arise. In the case of the two districts, a sense of reciprocity and solidarity helps the villagers consider the coastal resources common for the entire community. The following quotation is from a village leader of Wai who showed his willingness to share the resources in his village's water with other villages:

We have to work together. ...We want to bring [representatives of] six villages to sit down in one village so that they all know about *tabu* area. *Tabu* area is not only for Korokula village and Lomawai village, but it is for all of us - six villages. I want to follow our Fijian way, I mean, bringing the six villages together, because that's our way, Fijian way. (Villager 1 of Wai)

In addition, the idea of inter-generational sustainability seems to be a reason to pursue conservation and, as a result, reduce rivalry in current resource use. While immediate improvement in livelihood is a common concern especially in Wai, the majority of interview respondents in the district stated that they considered their children's future to be important and that the purpose of CBCRM was to ensure benefits for future generations:

... it [resource management] is not just for me but for future generations, for my children, for

my children's children. If I don't protect [the resource] now, we will have a difficulty in our life. The price of living is very high. One tinned fish nowadays costs one dollar eighty cents. If you protect the environment, then you can just go and fish. You don't have to buy [food]. You can save one dollar eighty cents. That's why we protect the environment. (Villager 3 of Wai)

Many families in this village depend on the environment at sea for their life. They sell fish every Saturday so I think that's why we all must protect our environment so that everyone in this village will be happy in the future. (Villager 6 of Wai)

It is interesting to note that all interviewees in Cuvu mentioned consideration for the future generations in their village as the major reason for them to agree with *tabu* establishment.

The following villager says that benefits for their children are the most important factor:

We believe that the resources in this area are owned by everybody. We have every right to tap into those resources to accommodate daily-needs. Also, we prioritise our children. We are considering next generations and we have obligations to do thing for their future. (Villager 3 of Cuvu)

6.3.2 Bonding social capital and enforceable institutions

Accountability of monitors and availability of graduated sanctions

Rule enforcement is necessary for long term CPR management (Gibson *et al.* 2005), and bonding social capital is important in the provision of appropriate monitoring and sanctions. In the Districts of Cuvu and Wai, fish wardens, selected from villagers for the purpose of monitoring, are accountable to other villagers for keeping a watchful eye on resource conditions and user behaviour. The villagers personally know the wardens well, as they are locally chosen from the community and understand their roles in CBCRM. As Ostrom argues (2000: 151), trust based on the strong bonds among fish wardens is a necessary

condition for enduring CPR management. The result is that the rest of the village can be motivated to cooperate without fear that they are being taken advantage of.

Villagers' sense of reciprocal obligations also helps the villages keep sanctions graduated. The bonds based on villagers' kinship allow for local sanctions to be nothing more than a simple warning because the level of trust and reciprocity among the villagers is high and mistakes tend to be forgiven. In economic terms, the cost for rule enforcement remains low. As Ostrom (1990) argues, low cost rule enforcement is a necessary condition for long-lasting CPR management. Particularly in Cuvu District, this seems so far to apply to even outsiders, such as Indo-Fijian residents in the districts. However, in the case of serious repeated infringements, external support, and its relationship with bridging social capital, may be necessary to exclude the intruders.

The suggestion of past literature that trust among resource users is the key in CPR management support the argument that bonding social capital is significant in CBCRM because it makes low cost rule enforcement possible. It is indeed important to understand ties among villagers that have been fostered over generations as part of their social system and how they are relevant to CBCRM activities. However, although there is no difference in bonding social capital between the two districts, the level of rule compliance in the districts is different. To summarise, the levels of bonding social capital in the two districts were not noticeably different and are therefore an unlikely factor in explaining the variations in the functioning of institutions presented in Chapter 5. In addition, my field data suggest that there is actually a negative aspect of bonding social capital in the context of Fijian CBCRM.

6.3.3 Negative impacts of bonding social capital

While bonding social capital has positive effects on CBCRM, both in facilitating information sharing and the enforcement of rules, existing strong bonds, in certain instances could also have a perverse affect on CBCRM. For example, strong internal bonds may lead residents to exclude outsiders, preventing the villages from learning new ideas. The residents of Cuvu stated that it took about six months for the entire village to understand the meaning of marine conservation and reach a consensus to have the *tabu*:

At the beginning, we tried to convey new idea of marine conservation to people [in the villages] through *tikina* [district] meeting but they could not take it as their advantage. ... They gradually understood and found out what was *tabu* like, reason and the way to protect marine life. What they used to do [overfishing] is not good for future. They finally realised that it was not good.
(Villager 15 of Cuvu)

This may be due to the low education level of the villagers, particularly among the decision-makers who are relatively old and have no formal schooling. However, the following quotation suggests that education is not the only problem. Tradition requiring strong internal ties could be an obstacle to introducing new ideas:

Maybe Fijian mentality is a big problem. It pulls a lot of people back in and they seem to be relaxing sitting there most of the time. That's Fijian style, village life. ... We are proud of our traditional ways of life but sometimes hard to go beyond. (Villager 3 of Cuvu)

A villager of Wai District also cited similar negative effects of bonding social capital:

It was just difficult for people in the village to understand what WWF was saying: the idea of *tabu*. It was very new to them. Fijians have own culture and it is tough in Fijian villages to have new things, like new ideas, from outside because the village has own life and own rules in own ways. (Villager 19 of Wai)

The reciprocal relationship based on the strong bond could also threaten natural resources that are limited. Reciprocity, which is often extended to a relationship with someone outside the village, is an important principle in Fijian life and Fijians consider it an important custom. However, CPR management basically requires the exclusion of outsiders who seek benefits from the CPR. A villager stated that it was difficult to balance the sharing system and resource management:

People in Fiji are so bound traditionally. I feel bad to say this, but people have so much obligation that they have to provide. ... We cannot say "No" to others, as long as we want to be happy living together as big family. ... I hope the good nature of Fijian people won't be the problem, but some people come here and try to get things out of this good nature. Some people take it granted for, but we would rather help people in need. (Villager 3 of Cuvu)

Moreover, a number of ceremonies and cultural functions in the villages, including weddings and funerals, require harvesting marine resources. Every Fijian who I interviewed claimed that these ceremonies with the use of natural resources were traditional and important for village life. The following villager describes the need for fish for cultural events in the villages:

Every year, we clean the graveyard for our ancestors, our grandfathers and great grandfathers. When we clean the grave yard, we have to eat fish together. So we open *tabu*, that's our culture. Then after that, we close it again. (Villager 2 of Wai)

In my interview with the above villager (Villager2 of Wai), he stated that he believed that *tabu* should remain closed for better conservation achievements. However, he argued that their custom demands natural resources and it was unavoidable to open the *tabu* to provide marine resources for the ceremonies.

Villagers of Cuvu District raised the same kind of problem. In Cuvu, as explained in Chapter 5, the Paramount Chief makes decisions to open their *tabu* without consulting the Environment Committee. To satisfy the demands for cultural and traditional ceremonies, requests for opening *tabu* have been repeatedly submitted. As a result, during the three months I conducted my fieldwork in Cuvu District, Cuvu's *tabu* areas were opened at least once a month.

From the perspective of durability of natural resource management, the problem is not only that ceremonies and functions demand fish in *tabu*. Rather, tradition gives an excuse for individuals in the villages to fish in *tabu* for short-term personal benefits. When the opening of *tabu* is approved for a particular reason, such as a wedding for a particular family, anyone else in the village can go fishing. Due to the norm of reciprocity there can be no discrimination of who goes to fish on the opening day. Indeed, on these opening days, there is no restriction on the amount, species or size of fish to catch. As a result, the entire village goes in *tabu* and harvests as much as they wish. CBCRM experts in Suva, such as academics, criticise the repeated opening of *tabu*, because it reduces conservation effects.

If you want to have a good *tabu*, you need to make sure that you keep it closed for the period you decided. People have to understand that. People should not break the rules they decided. Otherwise, they can't protect the resources for the future. (NGO Staff 8)

However, although it could ruin the sustainability of the institutions when people keep opening *tabu* to harvest resources despite that they have agreed not to, one of the Cuvu residents stated that opening the *tabu* can have a good effect since the villagers are able to see the increase of marine resources in *tabu*. This gives them hands-on learning

experience of the effectiveness of the conservation efforts. He argues that giving the villagers the opportunity to go in *tabu* is part of the learning process for them:

We started opening-up of certain areas [of *tabu*] only five years after we started marine management. [That was] three years after [we established] the *tabu* areas. After the three years, we found, when we open the area, that people would know what are in there. That helps them make own decisions on the resources whether we catch all now or sit until another phase.
(Villager 3 of Cuvu)

This positive effect of opening *tabu* was also identified by a villager of Wai District. He had a first-hand experience in the increase of fish in *tabu* when it was opened for fishing:

We had Korokula Day [a fund-raising event in the village] on the 8th of September. That was last month. We opened the *tabu* for that day, and we had big fish and *qari* [crabs]. That was a good change we found after we made the *tabu*. ... We all know that *tabu* is working well.
(Villager 1 of Wai)

6.3.4 Changes in bonding social capital

Weakened bonds

As discussed, Fijians commonly have a sense of strong bonds among themselves, and their actions in the context of marine resource use indicate the strong sense of reciprocity in village life. However, although the residents of Cuvu and Wai Districts claim the strong ties, it seems that the ties are becoming weaker and the degree of reciprocity is decreasing. An example of weakened bonds in Cuvu was found in community work required of the villagers. In all villages in Cuvu and Wai, Mondays are considered community work days. All adult villagers are expected to contribute to activities and events for the village's common interests, such as village cleaning or construction of public buildings. On one Monday during my fieldwork in Cuvu, a village planned to plant pine seedlings provided

by PCDF on hilly land near the village as part of their environmental activities to reduce erosion. According to the village leader, he announced this community work in advance and all villagers knew that they were expected to attend. However, only two villagers attended the work on the day. While it might be difficult for those who have a paid job to attend community work during the daytime, elders and other villagers consider it to be individualistic behaviour displaying a lack of respect for others:

For example, people do not listen to even *Turaga ni Koro* [village leader]. When he called community work today, only two attended. People were not like this in our time. People used to respect *Turaga ni Koro* and of course worked for the community, but today only two came. (Villager 7 of Cuvu)

A 68 years old interviewee compared this with the time he was young and stated that villagers of the district tend not to follow the rules of the village:

When I was a child, marine resources were in good condition because we were not allowed to use *duva* [poisonous plant to kill fish]. We followed the village law. Now, people always pound *duva*. They put it into a plastic bag and then they go to the sea. When they don't see anyone, they put it into the water slowly, like pretending they are fishing, but they put *duva*. ... People have changed a lot. Before, people were afraid of elders, and if elders said something, people just followed. But now, a lot of people hide and cheat elders. (Villager 15 of Cuvu)

Others said that the villagers are becoming independent from their community and show a lack of reciprocal altruism even within their families:

We can feel that people are becoming more individualistic here. In the past years, like the time I was little, if someone died in my family, the rest of family supported, but nowadays, no. People still support others, but not much. People just do their own thing. They can support you, but not like before, I mean, the way they support is different from the past. (Villager 16 of Cuvu)

Normally in Fijian villages, we work together. If you have to clean up your farm one day, everybody is coming and finish it. But recently, no, we do our own. They do their own. Many

things are changing. (Villager 12 of Cuvu)

In every village of both districts, a number of interviewees, especially elders, criticised people's individualistic behaviour. Their common concern is that individualistic behaviour ruins the quality of life in the village and leads to the loss of Fijian tradition and culture. Some villagers cited the increasing urge among villagers for individualistic profit making as the main cause behind the degradation of natural resources. In particular, they expressed concern over overexploitation and increasingly destructive fishing methods:

I believe that fish is given to us for eating only by ourselves but not to sell. But now, people just catch fish for selling. Maybe that's why fish's gone. That's why things that we used to see are not left with us now. (Villager 11 of Cuvu)

It [resource depletion] occurred because of misuse of the resources, such as overfishing. People go fishing day and night for making money. (Villager 16 of Cuvu)

However, while younger generations admit that they have negative perceptions towards individualistic behaviour, many interviewees did state that a certain amount of independence from the community was necessary:

In previous days, if you had a television here, the rest of people didn't have to. When you own it, everybody just comes and watches it. That was how things worked before. But now, we also need some time only for family. Just for us. So, sharing is good and bad. (Villager 12 of Cuvu)

The following quotation suggests that earning money is a major reason for the changing behaviour of villagers:

People go to catch fish because they have to sell. Sometimes some people catch too much and others cannot have enough. We, Fijians, share things in the village, but we also have to take care of own children. Nowadays, we need money for school, food, fuel and other stuff and have to catch fish more. (Villager 15 of Wai)

6.3.5 Factors affecting bonding social capital

The content analysis of the interviews identified three factors that influenced bonding social capital. While some identified education, tourism and political change at the national level as the reasons for changes in bonds of the community, all the interviewees acknowledged the presence of a market economy as the major factor contributing to the change occurring in bonding social capital. When people are involved in a market economy, it is difficult for them to allocate their time and efforts to community work because of other commitments they may have. In particular, relatively younger generations raising children of school age were often direct and pragmatic about what they wanted for themselves and their families. I found a common desire among those people, both men and women, to increase their standard of living and increase the opportunities for their children's education. The following quotation explains the low attendance in community work for the tree planting event mentioned above:

I have a job at the resort and I had to work on that Monday. People have different plans nowadays and busy. I have children and I have to send them to school. It's just hard to do things for the community. (Villager 4 of Cuvu)

Like Cuvu, the market economy seems to also be an important factor affecting bonding social capital in Wai. Villagers, especially the younger generation, commonly acknowledged the importance of gaining income particularly for children's education. Apparently, improving the level of education is a common concern:

I have four children. My second daughter just finished Form 4 [the second year of secondary school] and she will start going to nursing school. I am very happy with this, because education

is important for my children. After finishing school will find a job and help my family. (Villager 20 of Wai)

When asked to identify the major obstacles constraining the villagers from achieving their goals of improving their standard of living and level of children's education, they were likely to label communal obligations. Distraction by social gatherings was a common complaint expressed by the villagers in both districts. The following interviewee in Cuvu District is one of the village leaders of the district. Although in my interview he acknowledged the significance of collective work to make marine resource management possible, he feels working for the community to be too much of a personal burden:

I don't like my position as *Turaga ni Koro* [village leader] because I have to spend so much time for meetings. Too many meetings and obligations, like long meetings in the village, meetings with the government. I myself have business for my family and I'm busy. I want to concentrate on my business because it is important for my family. (Villager 6 of Cuvu)

Others say that education affects the way people behave. The following quotation from a 64 years old interviewee argues that school education contributes to people's individualistic behaviour:

School nowadays does not teach what our tradition is, like how Fijians should be. We used to learn how we should act as part of the village. (Villager 7 of Cuvu)

A younger, 31 years old, interviewee held the same view:

Now we go to school and we learn that being an individual is easier, like we just do what we like. (Villager 12 of Cuvu)

The impact of tourism was also pointed out in Cuvu, where the country's first large-scale resort hotel, the Fijian Resort, was built in 1970, although tourism does not have much impact on life in Wai as there are no large scale facilities in the district. The life of

Fijians in Cuvu district is tied closely with that of the Resort. While the residents of Cuvu admit the economic contribution of the Fijian Resort, they also realise that it has brought some changes in their life and culture and some feel that many of these changes are not for the better:

Having tourism is good, first, for national economy as foreign money coming in. For the *tikina* [district], it is good because it brings job opportunities. But we have problems too. People working there have lost respect to others, especially for elders. And, because of the influence by the tourists, ladies now wear mini-skirt, short-sleeves, sometimes even trousers even in the village. Our culture is changing. (Villager 6 of Cuvu)

People in Fiji used not to be familiar with drinking alcohol, but nowadays many people get drunk in the village. I mean, drinking is still banned in this village, but they take it to the beach and drink. Before, our young girls, they had to wear long sleeves but now they see what tourist wear, like short skirt and sleeveless. (Villager 13 of Cuvu)

An elder, who was 66 years old, explained that social changes at the national level had affected their village life over the last 35 years:

In old days, there were a lot of forbidden. People respected Fijian laws a lot - traditional laws. Nowadays, no one really follows. They don't have a fear. ... I think I know the reasons. I was born in the colonial era. At that time, we were not given freedom. We were bonded by the laws of *vanua* [tribe] and colonial laws. People were afraid of these laws. But younger generations were born during the time of democracy. They are given a lot of rights and freedom. They have a lot of freedom. If we are going back to the same kind of law, which we used to have, and [if we are] to maintain that, there will be order in the community. (Villager 7 of Cuvu)

Some residents of the districts, particularly in Wai, have lived in farming settlements separately from their village. Although many of them still maintain their identity as part of their village and occasionally visit their families and relatives in the village, they seem to be less committed to communal demands. The following is a

quotation from an interview with a man who lives in a farming settlement. The interview was conducted on the day of the ceremony for the 100 days after his wife's death. He was visiting a village in Wai from his settlement:

We live in our settlement because our family's ancestor came from that land. We are still part of this village but we only come when a function like today is held. (Villager 15 of Wai)

He continued that there were difficulties in living in the village due to the balance between communal obligations and his own goal and particularly argued that problems occurred with the excessive consumption of *yaqona* in the village. For him, organising his sub-clan [*mataqali*] to achieve their goals is more important than contributing to the whole village:

We don't have any problem with our food [in the village]. We plant cassava, we have banana trees, and we can fish. But we have to earn money for other expenses, like medication, education, and other commitments that you have to have. ... I am very much concerned about my children and as a leader of *mataqali* [sub-clan], as a *Turaga ni Mataqali* [sub-clan head], I think of members of my *mataqali* rather than the whole village. My *mataqali* works together, instead of just sitting and drinking grog [*kava* or *yaqona*] in the village. ... Some people [in the village] are lazy. They drink too much *kava*. I mean, inside them, they are very supportive [of the community], but in reality they are not productive. I don't drink *kava*, I don't drink beer nor smoke. ... It is not our tradition, like people drinking *kava* until midnight or two o'clock in the morning then sleep the whole day. That's not our tradition. ... Poverty comes from laziness of people. ... I'm really against *kava*, because the influence spoils the future of our children. ... I used to go to other houses to drink *kava*. It was like I go to this house then another house. But now, I don't drink *kava*. Then, I have more time with my children. ... Lots of people spend more time for drinking *kava* than spending time with their children. Wives are waiting for them but they never come home. That is how problems come. Living in the village is tough because we cannot say to 'No.' ... I'm still connected to my village but I usually stay on my farm and only sometimes come to the village. Then, I can work for my family and I can think of my *mataqali*. (Villager 15 of Wai)

6.4 Conclusions

My study found that the villagers of both Cuvu and Wai districts are members of similar types of social groups and levels of reciprocal relationships. Thus, despite the suggestion of the existing literature that trust among resource users is the key in CPR management, my study argues that the levels of bonding social capital in the two districts cannot explain variation in the operation of institutions discussed in Chapter 5.

However, it is important to understand that these strong ties are built among villagers over time as part of their social system and that they are relevant to CBCRM activities. The villagers of the two districts recognise that they need strong bonds in the village in order to protect their resources. The common view expressed by the villagers, especially older generations, is that CBCRM is an activity that must accommodate village social and cultural commitments because the collective property rights to use the resources are given to the villagers and they believe that the stock of resources should be managed for future generations. In addition, the traditional and customary practices are still central to the life of Fijian people and they believe that keeping these practices saves their identity. Nevertheless, the common perception among the villagers of both districts is that people are becoming more individualistic and pursuing their own personal benefits and seeking greater privacy. They agree that bonds in their villages have been weakened and many of them recognise that it is inevitable that more people will seek to achieve their individual goals.

The theme of conflict between the community and the individual is not new to Fijian society, nor is it unique. National development policies have emphasised different

facets enabling Fijians to support both preservation and change by emphasising different elements at different times. In the context of Fijian economic development, Nayacakalou stated in 1975 that:

‘...many Fijians have felt themselves caught between two worlds in relation to economic projects - between the ‘communal approach’ which they understand to be favoured by the Fijian Administration and the ‘individualistic’ approach of the independent farmers’ (1975: 6).

This issue was also expressed by the villagers in comparison with Indo-Fijians’ way of life. In informal conversations, villagers sometimes noted the independence that Indo-Fijian residents in the districts have from communal demands, occasionally with a trace of envy. However, a more common view expressed by the villagers in the two districts was that because Indo-Fijians do not live in such a tight-knit community, they have more freedom to pursue individual benefits, such as keeping savings for themselves and their immediate family rather than for extended families. This argument is a stereotype and not necessarily accurate. Many Indo-Fijians live in settlements with appointed leaders and often participate in gatherings and other social events. However, most Fijians believe that these Indo-Fijian communities are not like Fijian villages, where the residents are expected to accept communal demands. Furthermore, they tend to consider the way of life of Indo-Fijians’ to be more suitable for achieving personal objectives. They equate this with levels of living standards and other important interests, such as education.

Requiring a balance between the pursuit of individual benefits and communal demands, the implementation of CBCRM in Fiji poses difficult, but not new, challenges to the residents of the two districts. Due to the nature of marine resources, particularly under customary marine tenure, villagers are required to take collective action in its management

while it may reduce personal benefits. In short, they are asked to follow fishing rules that can reduce the income of the individual fisher or the amount of food available for her and her family. Although current CPR theories explain that collective action for communal demands will turn to individual benefits, it is often tough for the villagers to strike a balance between their own benefits and communal benefits. As the following villager stated, it will take time to solve this conflict:

By the end of coming ten years, we hope that we are able to give people in the village better life, but it is always a competition. We are trying. But sometimes tradition is just on the way, but we are trying to find a way to go. ... It takes time to change things. Sometimes you just have to respect them [the villagers], you cannot rush them. You have to go slowly. (Villager 3 of Cuvu)

Another way to facilitate long-lasting CPR management by balancing group benefits and personal benefits in Fiji is to build bridging social capital like some NGOs have done under the Fiji Locally-Managed Marine Areas strategies.

CHAPTER 7

NGO Approaches to Information Sharing and Rule Compliance in CBCRM

7.1 Introduction

This chapter provides an analysis of the role of bridging social capital in CBCRM. As stated earlier, bridging social capital is defined as those ‘social ties which create bonds of connectedness across diverse groups.’ As ‘weak ties,’ it can provide a group with information, opportunities and technology that the group does not possess. Information flows can be facilitated by bridging social capital because of enhanced transparency and reduced transaction costs. Granovetter (1973) argues that less intense relationships with others are a source of strength because they provide access to new information or other kinds of resources that are unavailable to those who are locked into highly dense, self-contained networks. Guided by the theoretical literature, the following discussion will examine bridging social capital to determine its function in CBCRM of Cuvu and Wai districts.

This chapter consists of three parts. In the first section, different features of bridging social capital related to CBCRM of the two districts are discussed in detail. Following existing studies, the indicators used in this examination are the number of external assistance in development villages received, relationships with NGOs regarding

CBCRM, and relationships with government officials (Figure 1.3). That section compares the two districts, Cuvu and Wai, in terms of their similarities and differences in levels of bridging social capital and how it was developed. In the second section, I analyse the role that bridging social capital plays in the two districts in relation to CBCRM. In addition to the function previously discussed in the theoretical literature, promoting better understanding of resource management through transmission and the exchange of knowledge, I find that bridging social capital can affect rule compliance by members of the community. This is followed by the concluding section.

7.2 Bridging social capital in Cuvu and Wai Districts

7.2.1 Number of external assistance villages received

Neither of the two districts has received large-scale development projects. They have gained support only in building small-scale infrastructure from NGOs in addition to regular support from the national government with the provision of subsidies for the installation of flush toilets. In 1996, a Japanese NGO, the Organisation for Industrial, Spiritual and Cultural Advancement (OISCA), constructed a 100 cubic metre concrete tank connected to an artesian borehole in order to improve the water supply in Lomawai Village and Kubuna Village in Wai. Another Japanese non-profit organisation called, the Peace International Association, visited Lomawai village on the 6th of October 2004 for a mangrove plantation project. According to a villager who had discussions with the representatives of the organisation, the project planned to grow mangrove trees on 250 hectares along the

coastline of the village waters in five years. On that day, 10 villagers formed a team to collect and plant 1,000 propagules and received 1,200 dollars as donation to the village³³.

Wai District also received the attention of academic researchers in their development related project. The Department of Tourism and Hospitality of the University of the South Pacific implemented a project entitled 'GIS as a Planning Support Tool for Community Integrated Tourism Development Project' involving Wai District. The purpose of this project was to develop a database for tourism development and to examine its applicability for wider implementation both in Fiji and other developing countries. Its pilot study site was Wai because the district was identified as a priority tourism development zone by the Fiji Tourism Development Plan of 1998-2005. The primary focus was on the proposed Natadola resort development. In order to collect information for the development of a database using Geographic Information Systems, a community workshop was held in the district school from the 21st to 22nd of January 2004. A total of 60 residents from all six villages of the district attended. Rather than supporting the long term development of the district, the project seems to have resulted in relatively short term community involvement since the primary objective of the workshop was to collect information to build a database of the University's research project in a pilot study.

Assistance to Cuvu District for its development started slightly earlier than that of Wai District. In 1993, OISCA started their project to assist development in Cuvu, targeting

³³ Although the villagers of Lomawai seemed not to be fully informed, this mangroves plantation was part of a project entitled 'Low Income Community Mangrove Reforestation Project in Fiji' as part of the Clean Development Mechanism (CDM) and the Joint Implementation (JI) Feasibility Study Programme implemented by the Global Environment Centre Foundation with funds from the Ministry of the Environment of the Government of Japan. The overall purpose of the programme is to explore promising CDM/JI projects to achieve a country's targets of reductions in Green House Gas emission. According to the project report, with the 250 hectares of planted mangroves, the estimated amount of CO² removal during the 30 years period for this project is 112,608 tons. It is also expected that the mangroves will enhance ecotourism in the area.

mainly children and youth in the villages. The initial activity was known as the “Children’s Forest Programme”, an activity promoting tree planting at schools. Cuvu District School was chosen for this project as one of 2,825 schools attending the Programme in 25 nations. Following this school programme, OISCA also implemented mangrove planting in part of the customary marine area of the district. The mangrove plantation project targeted waters in Yadua Village and Tore Village and a few hundreds of propagules of *Rhizophora* sp. were planted by the residents.

Table 7.1 summarises development projects implemented by outside organisations in the two districts. If we take a raw count of the number of projects, Wai had a few more than Cuvu. However, a qualitative analysis suggests that these were small in scale and short in duration. Therefore, I conclude that the two districts possess similar levels of bridging social capital in terms of access to external assistance in village development.

Table 7.1 Projects in Cuvu District and Wai District supported by outside organisations

	Title	Target group	Year	Sponsor/implementing organisation
Wai	Installation of tanks for drinking water	Lomawai and Kubuna village	1996	OISCA
	GIS as a Planning Support Tool for Community Integrated Tourism Development Project	Representatives from all villages	2004 (2 days)	Department of Tourism and Hospitality, University of the South Pacific
	Mangrove Planting	Lomawai Village	2004 (1 day)	Peace International Association
Cuvu	Children’s Forest Programme	Students of Cuvu District School	1993	OISCA
	Mangrove planting	Yadua and Tore villages	1995	OISCA

7.2.2 Relationship with NGOs regarding MPA

The CBCRM projects in Cuvu and Wai both started in 1999 with assistance from NGOs, namely PCDF and WWF. My interviews with officers of these two NGOs revealed that both NGOs emphasised a bottom-up approach in promoting the conservation of coastal resources. The NGOs take residents' participation and initiative serious, as stated by two officers:

Community themselves are involved in decision making. All issues must come up from the community. It's a community management plan. That's why we conduct community workshops and we bring all stakeholders in the workshops, fisheries, environment, forestry and agriculture. (PCDF officer)

We didn't make the *tabu*. That was the initiative of the people. We facilitated talks in the villages and everybody agreed to it. (WWF officer)

Although both NGOs took participation-oriented approaches, opportunities given to the villagers were somewhat different between the two districts. In order to measure the degree of villagers' participation in MPA planning, my survey asked the respondents how many times they attended workshop or training on MPA. Table 7.2 shows that the number of attendance in workshops was different between the districts ($P < 0.05$, t-test). In short, Wai villagers had a relatively limited opportunity to attend workshops related to MPA management.

Table 7.2 Difference in number of attendance in workshops between districts

Mean		T-value	P-value
Cuvu	Wai		
2.47	1.98	2.516	.013

Codes: 1 Never; 2 Once; 3 Twice or three times; 4 More than four times.

Cuvu: n=55, Wai: n=60

It seems that the lower levels of participation in Wai owe at least in part to how the WWF planned the workshops. Management related workshops organised by the WWF were held in one of the villages of Wai and some residents selected from other villages travelled to join the workshops:

Since 1999, March this year [2004] was the first time they [WWF] went to all the villages one by one. Before, WWF paid the participants the fare to come to this village. Five people were chosen from each village. They chose the community reps from each village, *Turaga ni Koro* [village leader], maybe one or two women, and two youth from each village. (Villager 8 of Wai)

The following statement suggests that WWF preset criteria for selecting the workshop participants:

First of all, we see what we are going to want to give the people, who in Wai are the right people to come, so we write to the *Turaga ni Koro* [village leader], at this particular workshop, the people we would like to have or who is likely to benefit from the workshop, then he gives us a lot of information on this. Then we send it off to the provincial council and *Turaga ni Koro* of every village, they are the one who knows best who are the people to come. (WWF officer)

It is interesting to note that the villagers' perceptions of the NGO presence also seem to differ between the two districts. In my survey, 19.4 per cent of the Wai respondents answered that the NGO made decisions regarding fishing rules (Figure 5.3). In contrast, less people in Cuvu answered that the NGO did so (6.7 per cent). The difference of villagers' perceptions might have been caused by the different participation processes each project introduced. The residents of Cuvu had more frequent chances to attend the management planning workshops because they were held in five different villages in the initial stage of the project. This allowed a larger number of villagers to attend the workshops. Moreover, more frequent participation in the planning stage might have promoted the villagers' sense of ownership of the project and familiarity with the NGO. In

short, how to build bridging social capital of villages in terms of relationship with NGOs may strengthen the degree of participation in CBCRM projects. I conclude that the way the two NGOs built both formal and informal relations with the villages was different. The result was a difference in individual participation in CBCRM – the residents of Cuvu were more likely to become involved in CBCRM than Wai residents.

7.2.3 Relationship with government officials

According to the Provincial Officer, government officials from the Provincial Office of the Ministry of Fijian Affairs are expected to visit each of their assigned 22 districts in the province twice a month. During their visits, the officers see if there is any problem in villagers' life in general and discuss any specific issue raised. In addition, the provincial office is responsible to hold a district meeting once every four months. The Provincial Officer identified his major responsibility as:

To administer various activities that the provincial council is engaged in. That includes proposals of development in Fijian villages and districts. We are involved in the process of development. (Provincial Officer)

He continued to explain the significance of CBCRM in his province:

By encouraging better use of natural resources, their [villagers'] survival will be ensured in the future. (Provincial Officer)

As reported in Chapter 5, villagers understand the jurisdictional authority of the government regarding coastal areas, particularly the ownership of marine resources in the Customary Fishing Rights Areas. The following villager also recognises the role of the government in the importance of what we call bridging social capital in his district:

We have our own [resource] management structure here in Cuvu. It is based on the Fijian social structure – we have traditional chiefs and people in the village. Then, the Fijian Affairs at the provincial government coordinates our connections with outside. (Villager 3 of Cuvu)

For NGO officers, collaboration with government is the key in long-lasting resource management implementation. Both NGOs, PCDF and WWF, first made contact with the districts through the Provincial Office when they were in the process of project preparation. In village workshops, representatives of the government agencies, such as the Provincial Office, Fisheries Department, Forestry Department and Environment Department, are generally invited because the NGOs consider building a bridge between the villages and government agencies is important for sustainability of CBCRM. Explaining the reason for involving the government, a PCDF Officer stated:

When we hold workshops in the villages, we invite the officers to present. ... We invite representatives from the Fisheries and the Environment Departments so that we can have the integrated approach. This is necessary, because once we will pull out from the project, the government will be still responsible for the project. (PCDF Officer)

However, it seems that villagers do not always acknowledge government support in their CBCRM activities. There were only 1.7 per cent of Cuvu and 5.1 per cent of Wai survey respondents who answered that government officials would act to deal with the situation if there were a sudden decline in the fish catch in their village waters. No interview respondent stated that government was helpful in CBCRM. Most villagers seem not to have particularly great expectations for government:

I don't think we have had any support from the government in *tabu* management. ... The provincial government officers come, if there is any problem. I mean, they should come. But, for example, no help, even when big waves came to the beach and make big damage on village. Our sea walls have been damaged, but nothing has been done [by the government]. (Villager 1

of Cuvu)

The national government is from the colonial government, but the provincial government is with us because it is traditional. It's Fijian way. But they don't usually come because they are busy. (Villager 15 of Wai)

In fact, due to the lack of funding and expertise at the Provincial Office, the government are not able to implement their own projects on resource management, although they recognise the importance of resource management. Thus, the Provincial Officer has the responsibility for supporting NGO activities in his province:

The environmental projects were embarked on by NGOs or association called FLMMA. They try to improve the environment in our coastal area and promote the sustainable use of the resources. It is very important for the provincial office to facilitate these projects, because it directly involves the participation of our local community. Without their participation, I don't think that those projects can go ahead. That is why we came to involve with the coastal projects especially in Cuvu and Wai. We believe, with their participation, that they [the villagers] can improve their life. ... The NGOs provide training to the villagers, and the provincial office facilitates their training. (Provincial officer)

To summarise, the bridging social capital, operationalised as the formal and informal relations between the villages of the two districts and the provincial government, is weak. Due to a lack of resources, such as manpower and budget, it is apparently difficult for the provincial office to visit every district as instructed by the government. During the span of my fieldwork in the two districts for 116 days, no provincial officer paid an official visit to any of the districts except for one district meeting in Cuvu. In particular, there is no budget or staff in the provincial government dedicated to CBCRM, although the Officer is aware of its importance. Instead, the provincial government intends to facilitate NGO involvement in CBCRM, thus building bridging social capital in the villages.

7.3 Functions of bridging social capital in CBCRM

In this section, I analyse how bridging social capital functions in CBCRM in Cuvu and Wai Districts. As shown in Table 2.4, the theoretical function of bridging social capital is that it promotes stakeholders' understanding of CBCRM and its rules by: bringing new knowledge and technology from external groups; building links across neighbouring communities and other external actors; and organising consistent rules in multiple layers of nested enterprises.

The following analysis details how each of these theoretical explanations can be applied to my cases. In addition to this function that is conventionally argued by researchers, my research found that bridging social capital can also facilitate villagers' compliance with the rules of resource use.

7.3.1 Bridging social capital and villagers' understanding and knowledge of CBCRM

Knowledge transmission and exchange

Bridging social capital facilitated access to and the creation of knowledge of MPA or *tabu* in the villages. All the villagers in the two districts stated that the idea of establishing an MPA in their water as a permanent *tabu* was brought by the NGOs. Although the NGOs gave credit to the villagers themselves for starting the conservation activities in their villages, it is apparent that the knowledge and technology were transmitted from outside through the NGOs' activities for the villages. While an officer of WWF admitted that having *tabu* by enclosing only a small portion of Customary Fishing Rights Area is not

effective enough for biodiversity conservation from a perspective of conservationist, bridging social capital certainly contributed to the creation of knowledge in the villages in order for the villagers to take action in management of natural resources.

In Cuvu District, bridging social capital seems to have had clearer effects. Through the workshops organised by PCDF, villagers developed their recognition that conservation is important to sustain their life. A villager of Cuvu describes project's effort to involve the villagers:

There were management workshops going in the whole district trying to let the people bring out their problems and the [Environment] Committee looked into those problems. We had workshops and training in the villages. People could attend it and learned what they needed to do. (Villager 3 of Cuvu)

The NGOs also recognise that knowledge transmission from them to villagers is significant for long-lasting resource management. Officers of both NGOs expect the villagers themselves to act as a manager in resource management in their own village. Following Clark's argument (Clark 1995: 310) that resource users can be the day-to-day manager in implementing resource management, the NGOs consider that assisting villagers to organise themselves as monitors of resource uses is an effective strategy. In addition, the WWF Officer said that the villagers who are trained in their project are expected to disseminate their knowledge and experience to other villages in order to extend proper management of natural resources:

After we developed the management plan [with the villagers of Wai], they will be the one doing the monitoring, and WWF knows that it hasn't gotten staff and time to go and replicate elsewhere. These are the people we have earmarked to go to other community speaking their own language, showing the lessons they have learnt there to other people [in other villages].

We are training a man in Wai now in his status as somebody close to the chief by birth right. He is going to be the spokesperson for the Wai District. When we leave the work in the Wai District and come away, he will be the person that will work for resource management in Wai. There are also other people there [whom we train] Those are the people, after we leave the project, who will pass and use the knowledge we built up and do things so that it [the project] is going to be sustainable. We leave the knowledge and everything, like skills, with them, after we have done and pull away, and we let them do their own. That is their resources and things we have done for them. (WWF Officer)

An officer of another NGO based in Suva also involved in the FLMMA Network confirmed this dissemination effect:

After we made success in one district, people in other villages became interested in marine conservation and having *tabu* in their villages. They learned the success from the project leader in other village and asked us to work in their village. Sometimes the media, like radio and newspaper, helps information passed on, but the important point is local people who experienced a good practice in conservation tell other locals in their own words. (NGO Officer 1)

In Cuvu, bridging social capital has motivated the village to make resource deployment for the learning that contributes to environmental conservation in the village. An example was found in primary school education in the district. In the process of working with PCDF in resource management, environmental knowledge given and educational techniques demonstrated by the NGO affected education at schools in the area:

In primary schools, they started environmental education. ... Teachers are learning from the NGO [PCDF] that came in [the villages]. We have had some awareness workshops with the NGO, and what we learned has been passed on teachers. It really got into them, and they pass it to kids. (Villager 3 of Cuvu)

While environmental education is not included in the formal curriculum at primary schools in Fiji, the primary schools in Cuvu districts have activities regarding the environment, including lectures on conservation, the collection of mangrove seeds for plantation, and

rubbish collection on the beach and other areas of the villages³⁴. These activities are conducted irregularly when the teachers find extra time in the formal curriculum.

High levels of participation set by the PCDF for Cuvu village also provided its villagers with opportunities to attend activities outside of the village. When the PCDF held a public exhibition on their project activities in Suva on the 27th of October 2004 for its 25th anniversary, representatives of the Cuvu District, both elders and youth, were invited to attend. In the exhibition, the youth gave a presentation on CBCRM activities of their villages. A villager who accompanied the tour said that the youth performance had impressed the elders and made them aware that education is important:

After the day, the old people told me on the way back that it was the best trip they had ever had for a long time. I said, 'Sir how come? We just went to Suva, had lunch, had *kava*, and did a few things then came back.' They said 'We are happy to see our kids' performance. We are proud of them.' Then they said 'What you tell us about conserving the environment really hits us. Now, we have to acknowledge the young people, kids, and we should seriously listen to what they say. They are the ones who will be in our village in the future.' ... They realised the importance of sustainability in our life. (Villger3 of Cuvu)

Availability of low-cost adjudication

Internal mechanisms based on bonding social capital at the village level are significant for the villagers to make the local rules clear at their level. On the other hand, in case that a community has conflicts with an individual or group outside the community, links across

³⁴ I observed very similar change in primary school of Ucuivanua Village of Verata District where the Institute of Applied Science of the University of the South Pacific conducted its pilot project using the FLMMA method to encourage CBCRM. Teachers voluntarily conduct environmental education activities as extra curriculum in the afternoon of Fridays. The activities include beach clean-up, mangrove planting and building small scale sea walls to prevent erosion. As the reason they started, the teachers stated that they have learned the effectiveness of an MPA and the significance of sustainability in coastal resource use through the FLMMA project and became aware of the necessity of environmental education activities.

the community may be necessary to mitigate the conflict because they facilitate communication and knowledge exchange between the parties. The cases could include adjacent or neighbouring communities or other outsiders.

In Cuvu, external ties have been extended to solve potential conflicts with a neighbouring community. Due to the mobility of coastal resources, establishing rules in one village without rules in a neighbouring village will produce ineffective institutions that may not last for very long. Therefore, building networks among villages can provide them with opportunities for inter-communication with one another and sharing knowledge. Yadua village of Cuvu has started collaborative work with a neighbouring village, which has not been involved in the project. In order to make monitoring easier, Yadua village of Cuvu planned to relocate their *tabu* near the border of the neighbouring village, Volivoli. In September 2004, representatives of Yadua village visited Volivoli village, and asked for their support in *tabu* management. The chief of Volivoli village acknowledged Yadua's effort to conserve marine resources and agreed that his village would respect the rules of Yadua's *tabu*. This cooperative link between the villages should support sustainable use of the resources³⁵. The shared knowledge about conservation may eventually affect the neighbouring villagers in their use of the Customary Fishing Rights Area, *qoliqoli*, in the future.

However, the possibility exists that bridging social capital hardly solves problem of non-Fijian outsiders in the current Fiji situation. Although I observed Fijians' generous attitude toward Indians living in the same district who harvest coastal resources for family

³⁵ For the purpose of this thesis, bonding social capital is defined as ties among residents within a single district. The ties between Yadua and Volivoli is considered bridging social capital, although it involves neighbour relationships between people of the same type - indigenous Fijians.

consumption, 28 of the interviewees (75.7 per cent) complained that Indians infringe on their *qoliqoli* and threaten their resources. According to Fijian villagers, Indian communities had been informed about CBCRM in Fijian villages, such as *tabu*, and Indians are aware of rules that Fijians set. However, there is no data on how Indians perceive the presence of *tabu* in their residential district. Furthermore, given the population ratio of Indians to Fijians in the two districts³⁶, it is not a surprise even if Indians feel unfairness and frustration on local rules that are set by Fijians, and it leads them to exploit coastal natural resources in Customary Fishing Rights Areas rather than following the rules. Since CBCRM efforts in Fiji have been made exclusively for the benefit of Indigenous Fijians and have not included Indians as a stakeholder group, no ties have been built between the two racial groups to solve those conflicts in resource use in Customary Fishing Rights Areas and the existing system of customary tenure appears to block the development of trust between the groups.

Consistency of rules and management strategies at multiple levels

Rules at one level need to take rules at the other levels into account or the system may become incomplete and its sustainability uncertain. If bridging social capital transfers knowledge from government to citizen, it should help to organise rules and strategies of management at the grassroots level consistent with government policy. In other words, community rules made as part of the CBCRM project activities in the two districts should be consistent with the existing legislative framework if bridging social capital transfers knowledge of national laws to the villagers. For example, the nominated village personnel

³⁶ In Cuvu, Fijians make up 48.6 per cent of the total population while Indians are 49.7 per cent of that. Of the inhabitants of Wai, Fijians and Indians make up 56.8 per cent and 43 per cent respectively.

are appointed as fish wardens by the Minister for Agriculture, Fisheries and Forests and their duties are specified in the Fisheries Act. Through the NGOs' effort to involve government agencies in the project, the Fisheries Department dispatched its officer to the villages to train and certify the wardens. NGOs also provided the villagers information on the current national law regarding property rights of marine resources. As reported in Chapter 5, the villagers understand how the law regulates resource ownership between the nation and local resource users. This has helped to increase common understanding in CBCRM and to keep the management system consistent and stable.

Bridging social capital also functions to sustain consistent management strategies so as to facilitate sustainable use of the resources on a larger scale. Both Cuvu and Wai have conducted coastal management activities within the framework of LMMA, although Cuvu later left the Network. The LMMA Network has developed a 'Learning Framework' to share knowledge, skills, resources and information among participating projects. The participating projects use the framework for monitoring activities and expect to use the data and information for understanding factors contributing to the success or failure of project activities.

The NGOs that initiated CBCRM projects in Fiji are well recognised by the government officials at the provincial level particularly due to their better mobility and financial capability:

For *tabu*, we work with NGOs, FLMMA, like PCDF and WWF. They give some assistance to the villages, like floaters, buoys. ...The government now allows us to work together with these NGOs, because they have funds, they can give the people whatever they need, I mean assistance. (Government Officer2)

Everybody is quite satisfied with the involvement into the environmental project. Most of the people in the coastal area rely on seafood for their livelihood. Whatever NGOs are involved, we appreciate it. (Government Officer1)

The role of Fiji LMMA in marine resource management of the country is also recognised at the national level. At the International Meeting of Small Island Developing States in January 2005, the Foreign Affairs and External Trade Minister stated that at least 30 per cent of Fiji's oceans and customary marine area *qoliqoli* would become marine protected areas by 2020, with involvement of FLMMA (The Pacific News Agency Service: 17 January 2005). According to the LMMA annual report of 2006 (LMMA Network 2007: 3), the number of MPAs associated with the LMMA network has expanded to 213 with 345 square kilometres, including provisional sites.

7.3.2 Bridging social capital and rule enforcement

Supportive external monitoring and sanctioning institutions

Following the Fisheries Act that legally allows local resource users to nominate fish wardens as a monitor, NGOs facilitated the self-monitoring of resources in *tabu*. As explained in Chapter 6, due to the strong ties within the community, accountability of those internally selected fish wardens are considered high in the two districts. However, an important question is whether internally selected wardens are effective in protecting resources from poaching by non-members of the CBCRM. Existing studies (for example, Schmitt *et al.* 2000) suggest that this is often one of the major problems in sustaining CPR management. If rule breakers coming from outside the community are serious, higher levels of bridging social capital with support from an external sanctioning organisation, such as a government agency, might reduce or mitigate the conflicts.

To repeat, 75.7 per cent of my interviewees complained that Indians from outside of their village come in to their Customary Fishing Rights Areas, including *tabu*, to harvest marine resources. However, while such intruders are identified by villagers as a major concern in their self-monitoring (Chapter 5), it is difficult for the wardens and other villagers of Cuvu to provide effective policing without a motorised boat. Villagers in Cuvu may be able to ask the Fijian Resort for its voluntary, but irregular, support in monitoring. However, government officials are unable to provide services for day-to-day monitoring due to weak fiscal capacity. As a result, bridging social capital currently has no effects on monitoring and sanctioning in the CBCRM of Cuvu and Wai districts.

7.3.3 Effects of bridging social capital on rule compliance

Up to this point, my results are compatible with what the theoretical functions of bridging social capital suggested in the literature. What I would like to add in my empirical study to the study of the functions of bridging social capital in CBCRM in Fiji is that it can affect people's compliance with the rules of resource use. Ostrom (1990) states that the presence of good rules resulting from appropriators' participation does not ensure that appropriators will follow the rules. She argues that the monitoring of rule conformance could be more important than participating in decision making. However, in case studies, appropriators' attitudes were affected by the opportunity of participating in the rule making process.

All villages of both Cuvu and Wai have nominated two fish wardens each and the wardens conduct irregular monitoring activities. On the other hand, no regular external monitoring is implemented and no external sanctions are effective in both districts. Although there is no distinctive difference between the districts regarding monitoring and

sanctioning, the degree of compliance with local resource use rules is higher in Cuvu than Wai, as presented in Chapter 5, I argue that this is due to the difference in the degree of villagers' participation in rule-making between the two districts caused by the different project procedure and approaches of the two NGOs.

Before the project started, the WWF visited first to see the clan chief, *Turaga ni Yavusa*, in Lomawai village:

In 2000, WWF came to Lomawai village and they stayed in the village, because our big chief is from Lomawai [and lives there] so WWF came to Lomawai and talked to him. (Villager 1 of Wai)

It is commonly recognised in Fiji that visiting the chief to make a greeting and offer a gift of *yaqona* is the first step in making contact with the villages. The entire procedure is called *sevusevu* and outsiders require permission to even walk in and around the villages. In the case of Wai, *sevusevu* and the following discussion with the chief lead to a specific project activity:

We went [to Wai] to address the communities' concern of dying mangroves and use of mangroves for dyeing³⁷ [sic]. ... When the chief heard about what's happening in the mangroves and how it could affect the sea, he saw the problem his people were facing. And he knew why. ... He got a map...he sectioned the whole his *qoliqoli* to be all *tabu* area. Then we had a discussion. We asked where the people are going to go to fish, how they will sustain their lives if fishing is banned in the whole *qoliqoli* area. ... After so many deliberations and dialogues, he said, 'Ok it [*tabu*] will be this priority area, according to his tradition'. (WWF officer)

In short, the WWF project put an emphasis on the chief's opinions and the opportunity for villagers' participation in decision making regarding *tabu* establishment was quite limited. Few residents who actually engage in fishing activity were involved in

³⁷ The residents produce dye from mangrove plants and use it for making handicrafts.

the rule making and thus do not have much sense of participation in the rule making process. A fisher perceives the decision regarding the *tabu* establishment to have been made unilaterally by the chief:

When the *tabu* was put, only chief decided where to put it. Nobody else was involved. (Villager 9 of Wai)

According to this fisher, the deceased previous chief's decision on the location of *tabu*, is not sufficient in protecting juvenile fish. Although these fish are found in the river mouth, *tabu* cannot protect them sufficiently because it is set in a different place:

Tabu should be put in a place where fish grow. I have seen a lot of baby fish in the river mouth area, but people fish in this area. Now we have *tabu* in other place but it should be in the river mouth. The location should be changed. Other people, I mean fishermen, know this too. If the chance is given, I would like to raise this in the village meeting. (Villager 9 of Wai)

The current chief agreed with the fisher's opinion that participation was not enough:

My brother decided *tabu* when WWF came. I don't know how they decided. (Villager 13 of Wai)

Although the residents of Wai I talked to said that they respected the previous chief, I did observe some discontent about the rule that the ultimate authority lay with the chief and how his decisions may have affected the residents' compliance to the *tabu* rules. Specific attributes of the particular resource need to be considered in rules in CPR management as argued by Ostrom (1990) as one of the principles for long-enduring CPR:

Appropriation rules restricting time, place, technology, and/or quantity of resource units are related to local conditions and to provision rules requiring labour, material, and/or money (p. 90).

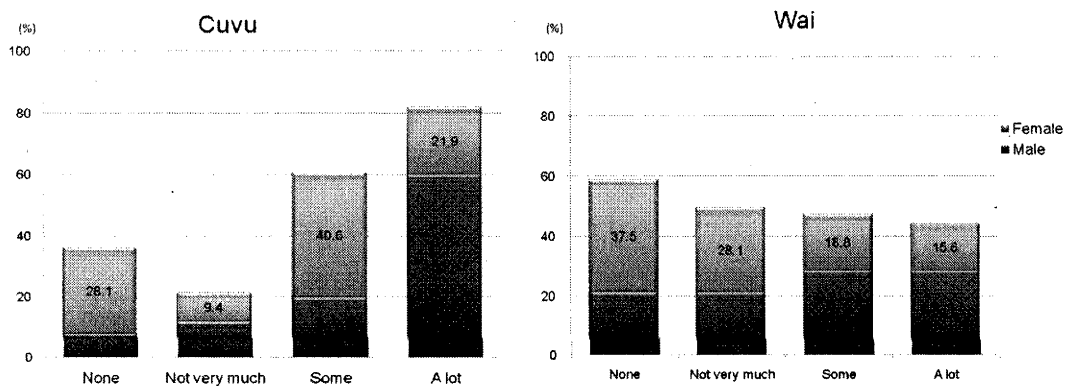
Detailed in her later work (Ostrom 1998b), and one of the important points this principle suggests, is that the rules must have a linkage with local ecological conditions. However, as Villager 9 and 13 of Wai stated, the specific attributes of the marine resources in these particular areas, which have been built up in interactions with villagers' resource use patterns, were not taken into account in designing rules-in-use. The ecological congruence between institutions and local conditions may not be as strong in Wai District due to the project process which failed to incorporate villagers' local knowledge, particularly in rule-making. This discourages the villagers in complying with the rules of resource use.

In order to measure respondents' perceptions of their influence in CBCRM, the individual questionnaire survey asked how much influence they think people in the village could have in making marine resource management in the village water better. The results showed that villagers of Cuvu have a stronger sense of empowerment than villagers of Wai (Figure 7.1 and Table 7.3). In short, 71.9 per cent of Cuvu respondents answered that they have a lot of influence in marine resource management in their village, while only 44.2 per cent of Wai respondents answered so. Males and females showed different trends in their answers: overall male residents seem to have a stronger sense of empowerment than female, although 62.5 per cent of Cuvu women answered that they have some or a lot of influence in marine resource management. Due to the lack of data caused by the limitations in research design, particularly the small sample size, it has not proved possible for me to reach a definite conclusion. However, the project activities that the PCDF facilitated, including greater chances to attend workshops and the establishment of the Cuvu Environment Committee, might have affected villagers' attitudes. Nevertheless, the

traditional dominance of males in village politics may be the reason for the stronger sense of empowerment in marine resource management even after the NGOs facilitated the opportunities of participation in *tabu* management regardless of gender.

Figure 7.1 Perceptions of empowerment

How much influence do you think people in the village like yourself can have in making marine resource management in the village water better?



Cuvu: n=60, Wai: n=62

Table 7.3 Perceptions of empowerment

Mean		T-value	P-value
Cuvu	Wai		
2.11	2.63	-2.523	.013

Codes: 1 None; 2 Not very much; 3 Some; 4 A lot.

Cuvu: n= 60, Wai: n=62

7.4 Conclusions

This chapter analysed the function of bridging social capital in CBCRM in Cuvu and Wai districts. By building bridging social capital between NGOs, villages of Cuvu and Wai gained access to knowledge and information on coastal resource management and MPA or

tabu that were new to them. Bridging social capital between Fijian communities can work to mitigate or avoid conflict between them by facilitating understanding of CBCRM objectives and its rules in another village. Furthermore, bridging social capital connects the village and different levels and types of organisations particularly government agencies. By providing not only knowledge to the villages, but also incorporating government agencies into the process of CBCRM, local rules, such as the village fish warden system, can be consistent with the existing legislative framework and leading to greater stability in the entire management system.

Higher levels of bridging social capital seem to increase villagers' compliance with the local rules. The two NGOs chose different strategies in their community-based projects and the results were different. When relationships were built that took into consideration the interests of each community member rather than considering the community as a homogeneous unit, rule compliance was higher. The 'individual approach,' which allowed individual villagers to participate in the process of MPA formulation, was more successful in the involvement of community members. This facilitated the sense of ownership among the villagers on the management practices. The lack of participation failed to incorporate resource users' knowledge and experience into management planning, resulting in the lower ecological congruence between institutions and local conditions. However, in order to generalise the effect of NGO approaches to CBCRM, further research is necessary to examine how other factors, such as attitudes of the chiefs or the degree of each villager's involvement in the market economy, is responsible to villagers' compliance with local rules.

Previous studies on Fiji argue that traditional practices that contribute to conserving coastal resources have been largely maintained (for example, Veitayaki *et al.* 2001).

Operations of those practices, such as imposing seasonal bans, temporary no-take areas or restricting particular types of fishing methods, are supported by strong bonds that have been formed in Fijian communities. Traditional norms of hierarchy restrict people's behaviour and require obedience to the community's rules. As my research shows, these rules are often arbitrarily imposed by the chief or other elders. Strong bonds that facilitate trust among the people in the community are necessary to maintain long-enduring CBCRM institutions. However, the effectiveness of those local practices is increasingly being challenged due to pressures of population growth and the related need to harvest more to feed household members. Pressures to earn money in an ever expanding cash economy are also responsible for increasing rates of change in these traditional communities.

My thesis aims to explain how different types of social capital function in CBCRM in Fiji and I do not make any assumptions of moral superiority or inferiority about a given type of social capital in Fijian society. However, whatever the characteristics of social capital in a particular community, rural Fijians are increasingly under pressure to participate in a global economy, bringing pressure on local natural resources. I argue that these changes in the lives of the Fijian people require higher levels of bridging social capital for the purpose of coastal management. This allows people in a small community to obtain new ideas, technology and funds that are necessary to improve the status of natural resources. In order to improve marine resource management at the village level, the challenge is to identify a strategy for building bridging social capital that is consistent with the bonding ties that already exist.

CHAPTER 8

Conclusions

8.1 Introduction

This thesis examined the issue of coastal resource management in Fiji as CPR management where cultural norms and traditional practices in a community have affected on its members' actions in resource use by constituting an institutional framework that requires strong bonds and cohesiveness within the community. However, as economic and social conditions change, a common perception among Fijians themselves is that they are becoming more individualistic and ties with other people in the community are becoming weaker.

In recent years, a new style of coastal resource management has emerged in Fiji with demand from both community members and outsiders to improve existing management practices for sustainable resource use. The CBCRM projects of Fiji attempt to provide the community with knowledge and skills based on science, while incorporating Fijian cultural norms and traditional practices into management. Since different donors and NGOs are involved, although all the projects are 'community-based', their implementation employs different approaches and strategies from place to place. In short, some projects encourage every single villager to participate in the project activities considering that individuals have different interest and objectives in their own life but improving shared

understanding on CBCRM through the participatory process would facilitate the construction of stable mutual expectations among villagers so as to increase rule compliance. Other projects assume that the whole community shares interests and concerns with their chief as a political leader and the project formulation may fail to incorporate ideas and needs of individual villagers who use resources for their day-to-day life so as to discourage the will to cooperate with one another.

A key focus of my research has been to investigate different types of social capital in CBCRM. The operational definition of social capital for this study is ‘a set of values, such as the norms of reciprocity, and social relations embedded in the social structure of society that enable people to act collectively and to achieve their desired goals.’ The theoretical literature on new institutionalism suggests that a certain level of trust among resource users is necessary to sustain institutions. This logically leads to the argument that social capital plays important roles in long enduring CPR management. In particular, since CBCRM in Fiji has involved different types of stakeholders, understanding how the ties within the community, as well as between the community and other stakeholders, affect management is important. Thus, the research question posed in this thesis was:

What are the different roles of bonding and bridging social capital in CBCRM?

Bonding social capital was defined as ‘social ties which cement somewhat homogenous groups, such as in terms of race or kin, and bridging social capital on the other hand refers to ‘social ties which create bonds of connectedness across diverse groups.’

My thesis examined the roles of these two types of social capital based on the following theoretical argument:

(1) As ‘strong ties,’ bonding social capital reinforces homogenous groups and facilitates common understanding and shared knowledge among members. By helping the rationalisation of rules and norms within the group, it encourages members to comply.

(2) As ‘weak ties,’ bridging social capital provides a group with information, opportunities and technology from the external world. It facilitates information flows and transmission and helps consistency of rules at different-levels

In this concluding chapter, I first review the results of my study on how social capital functions in CBCRM. Based on the findings of this research conducted in two districts in Fiji, I present some issues for consideration in the design of CBCRM in relation to social capital. Finally, I end the chapter with a discussion of some suggestions for future research on CBCRM in Fiji and other areas of the world.

8.2 Summary of findings

8.2.1 Role of bonding social capital in CBCRM

Rural Fijians are strongly tied to one another. The residents of villages are exclusively Fijian and their close kinship is the foundation of village social life. Cultural practices of gift exchange and reciprocity have historically been used as mechanisms to maintain and strengthen kinship ties. When resource management occurs within a context that uses cultural imperatives, rivalry in resource harvesting can be reduced due to the reciprocal

relationships based on strong bonds. Indeed, shared norms can mitigate potential conflicts in the village.

The strong bonds among village members help disseminate information and knowledge among residents in the village. Gatherings are one of the major social events in day-to-day village life and contribute to information sharing. Villagers get together for different purposes, such as for church, women's or men's club or mother's club. Regularly held village meetings allow all villagers to know what decisions are made and the process through which they are reached.

Existing studies (Gibson *et al.* 2005; Ostrom 1990) argue that low cost rule enforcement is necessary for long-term CPR management. As part of the CBCRM project activities, fish wardens were nominated as being responsible for the monitoring of marine resources, particularly in MPA or *tabu*. Villagers trust the fish wardens as they are part of the community. The strong bonds between them contribute to their high degree of accountability to other villagers. Although sanctions for rule breakers vary from a verbal warning to physical punishment, in many cases only minimum punishment is given. In their sharing and exchange based village life, anger and hatred are naturally controlled. As a result, the cost of rule enforcement in CBCRM remains low.

However, the reciprocal relationship as part of the strong bonds could impose pressure on natural resources because Fijians do not like to decline someone asking a favour, even when it is considered inappropriate. The basic local rule of marine resource use in the villages is that no one is allowed to enter into MPA. However, when a request follows the cultural procedure, Fijians, or more specifically a chief of the community,

normally offer a permit to harvest resources in MPA. Under the hierarchical social structure, the majority of villagers hardly objects to the chief and his family's decision. Although there is widespread recognition that modern Fijians pursue individual objectives rather than cultural obligations, people especially living in a rural village are expected to obey hierarchical orders and decisions, even if they are not consistent with management plans agreed to by the entire village.

8.2.2 Role of bridging social capital in CBCRM

The major role of bridging social capital is to transmit knowledge and information regarding coastal resource management to villages from outside. By building bridging social capital between NGOs, villages of Cuvu and Wai gained access to knowledge and information on coastal resource management that were new to them. All the villagers in the two CBCRM cases learned the importance of coastal resource management and advantages of MPAs as a tool for management through the NGO that was involved in the projects. In the case that a village has a conflict with another Fijian community, bridging social capital between the villages can work to mitigate or avoid the conflict altogether. Furthermore, bridging social capital between the village and different levels and types of organisations helps to keep consistency of rules in an organised system. In short, the CBCRM project explained to the villagers about the law and regulations regarding the resource ownership system of Fiji and facilitated the process of fish warden appointment in each village according to the Fisheries Act. This has helped not only to increase common understanding in CBCRM in the village but also to keep the management system consistent at the village level and national level.

Furthermore, in the cases of CBCRM of Fiji, bridging social capital affected villagers' compliance with local resource use rules. When the involvement of the villages was planned, the two CBCRM projects took different processes. The project in Cuvu that took an 'individual participation approach' considered a village as a group of individuals who have heterogeneous interests. It encouraged each villager to individually gain knowledge and experience of coastal management. This interactive approach facilitated an awareness of village members on the significance of coastal management and their sense of ownership over the project. On the other hand, the project in Wai that took a 'group approach' considered a village to be a group where individuals share common interests offered participation opportunities in management planning to only selected villagers. The assumption of those who planned this project was that the villagers were united following traditional decision making arrangements. However, this approach ended up with a lower sense of ownership and responsibility among villagers in resource management. As a result, villagers had low levels of compliance with local resource use rules mainly because the management plan failed to incorporate local ecological conditions possessed by resource users. In short, the Wai project failed to incorporate the diversity of personal concerns and individual interests.

Links through deliberate interactions can be particularly significant in relationships that are new and developing. Parties to the relationship need to secure their mutual expectation, build trust and be able to reduce uncertainty. In settings where arrangements for decision making have been traditionally authoritarian and top-down, an effort to change it to participatory and shared decision making would require multiple types of interactions that are directed towards creating trust by overcoming the unfairness, fears and doubts of

all parties in the relationship. It is indeed time consuming. However, relationships that are deliberate patterns of association among villages, and aimed at collective action, are crucial to the successful continuation of CBCRM activities.

While formal institutional arrangements that support customary marine tenure are set by an authoritative higher level body, informal rules and norms evolve through informal social interactions and social structures that produce social capital. Interactive processes through bridging social capital encourage residents of the community to create 'credible commitments' in the project. Externally facilitated processes of association and being part of the association help build trust and common understanding. Credible commitment among the residents is enhanced by connecting individuals and fostering collective interests that, in turn, lead to mutually reinforcing expectations among them (Miller 1992; North 1990; Ostrom 1990). These mutually reinforcing expectations encourage individuals to see long term, rather than short-term, interests. In short, whether or not interactive processes among the villagers are taken account during the project implementation can make the difference between building common understanding and mutual trust among interdependent individuals and the stagnation of cooperative arrangements in communities.

8.3 Issues for consideration in designing CBCRM in Fiji and relevance of the research

8.3.1 Participation

A widespread endeavour exists to incorporate participation in resource management projects in various parts of the world. In particular, managing systems where a resource is communally owned and historically managed by local residents with their shared norms

and rules require a high degree of their participation to achieve long-term management objectives. However, as the involvement of local residents becomes a common strategy, 'participation' has come to have different meanings and aims for different people in practice. It ranges from contributing to reduce implementation costs by letting community members voluntarily contribute to a project that is designed, funded and managed by external organisations, to a means of achieving political empowerment by re-establishing indigenous organisations and institutions (Buckland 1998; Oakley 1991).

As CBCRM becomes entrenched as a vital part of fisheries and environment management in coastal areas, management costs are shifted from the management authority to the communities and/or external donors. This offers support for the notion that resource management action through CBCRM should not only be to reduce management costs but also empower the community with an emphasis on its communal ownership of resources. In the case of Fiji, costs for the attempt to establish and maintain locally managed MPAs are largely shouldered by the villagers as their fishing activities are restricted in the MPAs. However, in most cases in the Pacific island nations, including Fiji, these costs can be offset by the presence of customary marine tenure, as it guarantees a certain level of property rights in addition to other incentives such as improved fish catch. In other words, communities involved in CBCRM should be the net benefactors of the management project so that there can be reinvestment of resources by the community, including the community's time and effort, into the CBCRM. In other words, it is important to promote bonding social capital as a strong tie within the community to be an owner of the project sharing common understanding and norms in CBCRM.

On the other hand, I argue that individual participation in management planning is the key to collective action in CPR management. While the significance of communal ownership remains in Pacific island nations, individuals in the community need to be given a chance to directly interact with external actors and to address their concerns and opinions. External actors must choose the process of institution development that encourages individuals in local communities to participate because it has profound effects on local democracy. The process of community-based resource management should not neglect the importance of individual participation because local democracy supported by participation shapes social and environmental sustainability necessary for long-term CPR management.

8.3.2 Roles of non-local organisations

In CBCRM, the emergence of collective action can be facilitated in a cooperative endeavour by external actors. By designing the project process to encourage resource users' participation, they can foster mutually recognised norms of behaviour and mutual expectations that can result in productive cooperation. This type of facilitation is particularly important where social structures and customs are in rapid transition from a system of communal subsistence to that of a more modern system.

It is important to note that the process of participation may take a long time and achieving cooperation among participants is a time consuming effort. Villagers stated that it had been difficult to accept new ideas brought by NGOs at the beginning of the CBCRM projects. Strong bonds in the villages may impede the acceptance of unfamiliar ideas and concepts from outside for the purpose of protecting the in-group. As de Soto (2000) explains, a lack of rigid institutions and trust in the relationship between the villages and

NGOs could be a possible reason why villagers do not feel they have incentives to invest their resources in building a relationship.

A great degree of incongruence of interests among the villagers, which requires an extended process of negotiation and compromise, could also be a reason for the time consuming process of CBCRM. However, in light of the importance of deliberate interactions as patterns of association that potentially generate trust and common understanding, facilitation can be conceptualised as a set of interactions between villagers as local resource users and non-local organisations meant to achieve effective, efficient and equitable coastal resource management. Given that intervention by non-local organisations can exacerbate existing asymmetries in communities and bypass or undermine existing social organisations, the importance of designing appropriate facilitative arrangements is magnified.

CBCRM in Fiji can be conceptualised as a cooperative endeavour between local resource users who are given communal ownership and non-local organisations, such as NGOs and government agencies. In this type of management arrangement, the interdependence in providing both common pool goods and public goods can be problematic for the provision of coastal resources. The costs involved to satisfy both management aspects are inseparable. For instance, on the one hand, villagers need fish and other marine products for their livelihood and subsistence, while on the other hand the project specific purpose is to ensure the provision of common pool goods to the villages. At least some non-local organisations would like to maintain ecosystem services from that coastal area, such as biodiversity and coastal protection. Even if the villagers invested their resources to organise themselves for a coastal area to produce enough products for villagers

themselves in a sustainable way, the non-local organisations may find that public good benefits from the coastal area are underprovided. However, villagers cannot be induced to sacrifice their harvesting for a public good unless the cost of obtaining such a good is somehow reduced. Non-local organisations may play a role as cost mitigators in the provision of ecosystem services or other such public goods produced by a communally managed natural environment. Beyond the current important role of bridging social capital, this could be one of the ways to conceptualise collective action for coastal management between villagers and relevant non-local organisations.

8.3.3 Nature of marine resources and scaling up of community-based management

The physical attributes of a resource affects its governance and management arrangements. Understanding the roles of bridging social capital also helps CBCRM solve its potential weakness in relation to characteristics of marine organisms. First, many coastal organisms, such as fish and invertebrates, are highly mobile. The currents and buoyancy support the different stages of their life histories, allowing a large number of plankton and nekton species to disperse. Second, habitats on the coasts, such as tidal flats, rocky shores and seagrasses, alter seasonally or sometimes even daily. Third, many species of marine animal groups, such as molluscs, echinoderms and crustaceans, morphologically change as they grow. As a result, different stages of their life history require different environmental conditions and physical settings. The heterogeneity of habitats provided by the diversity of coastal ecosystems needs to be considered for effective conservation planning. Moreover, larvae of many marine species can be dispersed away from their parent population, which

means that their recruitment can occur on a scale of hundreds of metres to tens of kilometres or even larger scale.

Due to these unique characteristics of marine organisms, the geographic scale of conservation is a debatable issue. In short, while the significance of involving local resource users is widely recognised and clear boundaries of CPR are argued to be one of the most important conditions in long-lasting management, a major criticism of community-level MPAs, like *tabu*, is that they are small in scale and, consequently, may have no effect on widespread marine resource problems. Foal and Manele (2004: 376) argue that, when a community chooses to close part of their territorial water as an MPA to fishing, the geographic scale of the MPA must be similar to, or larger than, the scale of stock-recruitment relationships in order to ensure conservation benefits for the community that pays the cost for resource conservation. In short, setting up a no-fishing zone does not assure the increase of their fish catch when the scale of larvae recruitment is larger than the area of their water.

A possible solution to this scale problem is to expand a network among the community projects because the community loses incentive to continue the MPA, unless other communities agree to implement MPAs in their water. For instance, by building a network, small *tabu* projects can scale-up their impacts so as to contribute to marine resource conservation in a larger area. This appears to be more realistic than setting up one large MPA that requires consensus among a large number of stakeholders at once.

When expanding the network among the community projects, non-local organisations concerned with specific conservation issues can affect local communities.

These allow for good communications but are also able to coordinate local/non-local actions important for larger scale resource management. Building effective bridging ties among these stakeholders facilitates better understanding and the sharing of knowledge of management practices. The common understanding and shared knowledge should lead to greater cooperation, including higher degrees of rule compliance. The involvement of stakeholders at different scales and building cross-scale networks offer some hope for addressing the great complexity of multiple-scale coastal resource management.

8.4 Suggestions for future research

Although I have attempted to examine the relationship between social capital and CBCRM, many issues, questions, and avenues for future research remain. In particular, the presence of non-Fijian resource users, the influence of migrants from villages and the issue of theoretical generalisability are problematic. The following sections briefly discuss these issues as possible research topics in the future.

8.4.1 CBCRM and non-Fijian resource users

This thesis examined the roles of social capital in CBCRM in Fiji focusing on its two dimensional nature, expressed by bonding and bridging social capital. Both the cases of CBCRM used involve Fijian villages of two districts and NGOs as non-local organisations. The strength of this research is that both cases are geographically close and the social structures are similar. Thus, the controlled comparison between the two cases allowed me to examine the impact of the differences in project processes implemented by the NGOs on villagers' participation and compliance with local rules.

Due to the unavoidable limitations addressed in Chapter 1, I could obtain data concerning only Fijians and their resource management. However, although they are not granted customary marine tenure, I realise that non-Fijians, especially Indians, are at least part of the existing resource use system comprised of harvesting, trading, marketing and consuming resources. It is reasonable to expect that their actions and behaviour in resource use somewhat affects the management of coastal resources on a larger scale. However, data are currently lacking. Understanding the possibilities of building bridges between different groups is one of the ways to improve larger scale, such as national level, resource management of Fiji.

8.4.2 Migrants from the villages

International migration is a common social phenomenon in Pacific countries, including Fiji. Emigration of Fijian citizens to metropolitan countries, mainly Australia, New Zealand and the USA, became common especially after the coup d'etat of 1987 particularly for the Indo-Fijian population. The annual average Indo-Fijian migrants to overseas was approximately 4,400 during 1987-1999 and it increased to 5,800 migrants a year during 2000-2003 (Mohanty 2001). While the number of indigenous Fijians migrating to overseas is far less - the annual average was approximately 300 during 1987-1999 and 470 during 2000-2003 (Mohanty 2001), internal migration or rural-urban migration is common in the country. The urban Fijian population has continuously increased from 23.8 per cent in 1966 to 44.5 per cent in 2007 (Table 8.1).

Table 8.1 Indigenous Fijian population 1966 - 2007

Census year	Urban population	Rural population	Total
1966	48,205 (23.8%)	153,971 (76.2%)	202,176
1976	79,314 (30.5%)	180,618 (69.5%)	259,932
1986	107,780 (32.7%)	221,525 (67.3%)	329,305
1996	161,335 (41.0%)	232,240 (59.0%)	393,575
2007	210,762 (44.5%)	263,221 (55.5%)	473,983

Source: Bedford (1988); Fiji Government (1996a; 2007b)

Li (2004) argues that it is not unusual for migrants to have high levels of bonding social capital among themselves. In particular, due to the customary land tenure system which constrains their identify in relation with a particular piece of land given to his or her clan, Fijians generally keep strong connections to family and relatives left in his/her home village even after migration. However, as the migrants go to school or work in their new home, they extend their networks beyond their kin-based relationships brought from the home village. Here, people start building bridging social capital. For families and relatives remained in the home village, migrated members of the family may bring new knowledge and technology besides remittances, building a bridge between the village and outside. In short, the migrants could play a role in building bridging social capital for rural residents.

This is seen in the context of CBCRM in Fiji, although I did not find any evidence of migrants' direct effect in my cases. From my interviews with MPA experts in Suva, I found that at least two other MPA sites in Fiji had strong influence from a former village resident who migrated to the capital city for education and job. In both cases, the idea of MPA and part of initial cost of its establishment were provided by or through those former residents. It is not clear if this tie should be categorised as bonding or bridging – the migrants are part of family who have connection based on kin but they apparently possess different links to sources external of the village. Understanding the nature of social capital

that is built by migrated villagers and its effect on CBCRM would contribute to policy implications for improving CBCRM operation.

8.4.3 Theoretical generalisability of the study

A key test of the utility of any theory is determined by its applicability across similar cases. However, due to high costs, time limits and other constraints, I chose to take a case study approach to this research, rather than conducting a large-N study. The main strength of this approach is that it offers the opportunity for in-depth descriptions useful for concepts we know little about. Although the generalisation of case study findings are usually limited to the case itself or to similar cases, my results may be applicable to other CBCRM projects in Fiji designed and implemented under the framework of LMMA. I expect this to be the case especially for those Fijian villages that have a social structure similar to the one described in this thesis. However, I recognise that this can only be examined through further research and so I wish to limit my conclusions. To examine further the theory of the importance of bonding and bridging social capitals on CPR management, it is essential that future research examine the problem of measuring social capital. Determining appropriate empirical indicators to measure social capital across geographic regions is a major constraint for this type of study.

Appendix A Sample Interview Guide - Village Representatives/Chief Interview

1. Background information

- Population, number of household, number of *yavusa* and *mataqali*
- When and why was the marine protected area (MPA)/*tabu* area established?

2. Marine resource use

- What are the value of marine product?
- What are the most important marine resources for home consumption? Income/exchange? Traditional ceremonies?
- How are the catch sold or distributed? e.g. home use, given away to other residents, sold to a buyer, sold directly to consumer. Is there any buyer regularly come to village?
- How stable is the supply of the products?
- What are major fishing techniques used among the village residents?
- Do usually people borrow fishing gear or any other equipment which allow them to access marine resources (e.g. boat)?
- What are their obligations when they borrow fishing gear?
- Are there any activities in village water other than fishing? Who is conducting these resource uses?
- In addition to marine resources, what natural resources do the residents have access to? (agricultural land, livestock etc)

3. MPA (*tabu*) management

- (On this map) Please indicate the fishing ground you/your village has access to and MPA/*tabu* area set in the water. Please explain resource uses in the village water.
- Within the MPA, what rules govern resource use?
- What are government regulations that affect resource use in the MPA?
- What are unwritten rules or customs that affect resource use in the MPA?
- What was the process that people went through to establish the MPA and how were these rules developed?
- Who was involved in the development of the MPA? Who initiated?
- What is your role in decision-making regarding the management of MPA?
- How did government agencies work with the village?
- How did NGO/University work with the village?
- How has management changed?
- How has it changed over the years? Any changes in players involved in management?

- Suppose there is a problem in marine resource use in the village (e.g. sudden decline of fish catch) requiring an immediate solution. What would be a process to make decisions?
- How have these rules affected resource use patterns?
- Is there any punishment for rule breakers?
- If yes, how is the punishment determined?
- What villagers usually do if they see somebody breaking the rules?
- How does your village get necessary resources for MPA management?
- What is the most important source of funding?
- What is the most important source of expertise or advice which your village receive?
- How do your village contact with NGO/University/government agencies?
- What for do your village contact with them
- How often do they visit to the village?
- Do you visit them in Suva? If yes, how often?
- How do you describe the relationship between your village and the NGO/University?
- How do the village residents share information regarding resource use?
- How do they know if there is any change in legal rules?
- How do they know if there is any change in unwritten rules?
- Is there anything you would change to improve the MPA/resource management?
- How many fishing licenses have your village approved? How much was the value?

4. *Social groups and networks*

- What types of organisations or groups do exist in this village? E.g. church, women, youth (use a Venn diagram to show the groups and the relationships among them)
- How are these organisations/groups involved in MPA management?
- How can people be a member of these organisations/groups?
- Are there any difficulties in being involved with the organisations/groups? Is there any membership fee (or donation) to the organisations/groups?
- Is there any other organisation (e.g. NGO, donor, university) that has had or is having any project in your village in the past 10 years? (e.g. health, education, infrastructure, conservation)

5. *Resource status and management effectiveness*

- How do you see the future conditions of the marine environment in the area?

Appendix B Code List

Master code	Code	Operational definition	Sub-Code/indicator
1. Background information		Background on the target marine resources, local communities and their resource use	
1.1 Resource conditions		People's Perception of the status and changes of the marine resources	<ul style="list-style-type: none"> ▪ Resource depletion when and why started ▪ Village reaction to resource depletion ▪ Before and after <i>tabu</i>
1.2 Resource use patterns		Ways people use or affect the marine resources, including techniques, commercial value	<ul style="list-style-type: none"> ▪ Importance of marine resources ▪ Use of catch ▪ Species and amount of catch ▪ Fishing location ▪ Gear used ▪ Other users ▪ Licenses ▪ Villagers view on Indians
1.3 Resource management		Background information on resource management activities in the villages	<ul style="list-style-type: none"> ▪ Price of marine resources ▪ Purpose of project ▪ Costs of project ▪ Village cost share ▪ User fee from tourism ▪ Benefits of project ▪ Qualified person in village ▪ Initiatives in community
1.4 Appropriators' characteristics		Characteristics of villagers and their life	<ul style="list-style-type: none"> ▪ Livelihood/other income sources ▪ Gender difference ▪ Christianity influence ▪ Time perspective ▪ Social structure and roles in village ▪ Living standard of village ▪ Peoples' general values ▪ Traditional/customary events ▪ Respect tradition
1.5 Changes in village life		Peoples' perceived recent changes in village life that can affect resource management	<ul style="list-style-type: none"> ▪ Economic disparity in village ▪ Struggle with tradition ▪ Individualism ▪ Different ideas in village

<p>2. Existing institutional arrangements as CPR management</p>			
<p>2.1 Resource Boundaries</p>		<p>Comments related to CPR institutions, including formal and informal rules and rule-making.</p>	
<p>2.2 Harvesting rules</p>		<p>Comments on the boundaries of customary fishing ground and <i>tabu</i> Formal or informal rules that regulate fishing activities</p>	
<p>2.3 Rule making</p>	<p>2.2.1 Congruency between rules and local conditions</p>	<p>Comments regarding the fit of rules to local conditions How the (informal) fishing rules were made or can be revised.</p>	<ul style="list-style-type: none"> ▪ Incorporation of local custom/knowledge
	<p>2.3.1 Decision making WHO</p>	<p>Power relations and perceived capability of people to participate in decision making regarding fishing rules.</p>	<ul style="list-style-type: none"> ▪ Historical power relations
	<p>2.3.2 Decision making PROCESS</p>	<p>The process they make decisions regarding fishing rules.</p>	<ul style="list-style-type: none"> ▪ Participation in resource management meetings
<p>2.4 Monitoring</p>		<p>Monitoring activities implemented in CBCRM and problems with them.</p>	<ul style="list-style-type: none"> ▪ Management cost - monitoring
<p>2.5 Sanctions</p>		<p>Existing formal and informal sanctions against offences in fishing rules</p>	
	<p>2.5.1 Degree of compliance</p>	<p>Perceived degree of compliance to fishing rules in the village</p>	
<p>2.6 Conflict resolution</p>		<p>How conflicts regarding CRM can be solved.</p>	
<p>2.7 Legal ownership of resources</p>		<p>Government recognition of legal rights over the resources.</p>	
<p>2.8 Emerged issues</p>		<p>Perceived problems regarding fishing rules in the village</p>	<ul style="list-style-type: none"> ▪ <i>Tabu</i> open to specific individual
	<p>2.8.1 Discontent with Decision-maker</p>		
<p>3. Bonding Social Capital</p>		<p>Ties to people within the villages that participate the CBCRM project.</p>	
<p>4-1. Group membership</p>		<p>People's participation in social groups in the village.</p>	
	<p>3.1.1 Kinship/family</p>	<p>Comments about their family and kinship which is fundamental to the social structure of Fijian villages.</p>	
	<p>3.1.2 Social groups in village</p>	<p>Comments on associations and organisations that exist in the village regarding their structure, membership and the way they function (e.g. youth group, church group, mothers' group).</p>	<ul style="list-style-type: none"> ▪ Number and types of social groups ▪ Frequency of participation

4-2. Perceptions of trust and shared norms and beliefs		<p>People's subjective perceptions of the trustworthiness of other people and institutions that shape their lives, the norms of cooperation and reciprocity surround them.</p> <p>Comments on the way exchange things with others in the village for mutual benefit. In particular, indices of reciprocity regarding resource use activities, such as allocation of catch and obligation to borrowed fishing gear.</p> <p>People's perceptions of social unity and togetherness of the community in CBCRM activities</p> <p>People's perceptions of the fact of being who.</p> <p>Comments on sources of information regarding resource management and means of communication.</p> <p>Ties between people in the village and external organisations that are involved in CBCRM</p> <p>Village's links with external organisations especially related to the resource management project</p> <p>Comments about CBCRM project process including roles and approaches of external organisations.</p>	<ul style="list-style-type: none"> ▪ Allocation of catch ▪ Compensation/obligation <ul style="list-style-type: none"> ▪ Work with whom? ▪ Perceptions on solidarity for better MPA management ▪ How to solve problems? ▪ Who solve the problem? ▪ Sense of 'community' ▪ As indigenous to the land
3.2.1 Reciprocity			
3.2.2 Social cohesion			
3.2.3 Identity			
3.2.4 Information flow in village			
4. Bridging Social Capital			
4.1 Networks with external organisations			<ul style="list-style-type: none"> ▪ Who initiated ▪ NGO approach ▪ Government approach ▪ Other projects in village ▪ Other activities of project ▪ Roles of NGO ▪ Roles of government ▪ Project input - Material ▪ Project input - Funding ▪ Expertise/knowledge
4.1.1 Project process			
4.1.2 Project input			
4.2 Perceptions of trust and shared norms with external organisations		<p>People's subjective perceptions of the trust between them and external organisations that participate in CBCRM</p> <p>Comments on of integrity of stakeholders in CBCRM activities</p> <p>Comments on learning process in the CBCRM project and people's understanding of what</p>	<ul style="list-style-type: none"> ▪ Opening door to outsiders ▪ Work together with other stakeholders ▪ Difficulty in integration ▪ Learning ▪ Villager's knowledge on conservation
4.2.1 Integration with other stakeholders			
4.2.2 Shared information between village and			

	external organisation 4.2.3 Villagers' view on external organisations	resource management is. Comments about different stakeholders in CBCRM	<ul style="list-style-type: none"> ▪ Why need workshops ▪ Villagers' view on NGO ▪ Villagers' view on government ▪ Villagers' view on resort
4.3 Emerged issues		Perceived changes in the village after the CBCRM intervention started	<ul style="list-style-type: none"> ▪ Positive change in villagers ▪ Positive change in decision makers ▪ Dependent on external actors ▪ Expansion of knowledge from village to village
5. Towards Better Management			
5.1 Views on future	5.1.1 Needed changes	People's perceptions of necessary changes in CBCRM related rules	<ul style="list-style-type: none"> ▪ Necessary change - decision making process ▪ Necessary change - hotel issue ▪ Necessary change - material for monitoring ▪ Necessary change - more fishing ▪ Necessary change - more <i>tabu</i> ▪ Necessary change - village autonomy ▪ Necessary changes - Location ▪ Necessary changes - nothing
	5.1.2 For future generation	People's perceptions of the need of resource management for future generations	<ul style="list-style-type: none"> ▪ Education for more children ▪ Environmental education at school
5.2 Management effectiveness	5.2.1 Future resource conditions	People's perceptions of future conditions of the resources	

Appendix C Sample Individual Survey Questionnaire

Bula!!

I am a student from the Australian National University in Canberra. I am visiting your village to gain some knowledge in coastal management of Fijian villages. My study is being implemented with cooperation from XXXXX, and supervised by Dr. Joeli Veitayaki of the University of South Pacific as well as Dr. Meg Keen of the Australian National University.

I would like to ask you some questions regarding marine resource conservation in your village, as well as village life. Your answers will help me write my research report. Before I start asking the questions, I would like to explain about my research.

Fiji is a prominent country in coastal resource management. There have been some great initiatives to make sustainable resource use possible, especially at a village level. My research attempts to investigate how people work together for better marine management. It is very important to know this because it helps others to learn lessons from coastal management in Fiji and improve marine management practices in other areas of the South Pacific. I came to your village for my research because this is a village that is with a strong commitment to locally managed marine areas and I can learn a lot from your experience.

The following is important information for you:

- It should take only 10-15 minutes to answer all the questions.
- Your responses remain completely confidential and I will not show/tell anyone what your answers are. You will not be identified by name in my thesis, or in any report or publication resulting from this study.
- You may skip any questions you feel you do not wish to answer. However, I would appreciate you answering all of the questions because I believe that each question is relevant to understanding people and coastal management in this village.
- A summary of the research results will be sent to your village.

If you have any questions about my research, please do not hesitate to ask me. Thank you in advance for your cooperation.

Vinaka vakalevu.

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1. First of all, I would like to know how you usually get food. What is the most usual way for you to obtain food? Please choose one.

- Gardening
- Buying food in market/village store
- Fishing
- Livestock
- Supply from relatives / neighbours
- Other

Please specify _____

2. Now I would like to know how marine resources are used in the *tikina* water. Please answer the following questions.

2-1. Do you go fishing (all activities to get any kind of marine resource)?

Yes No

If yes, please go to 2-2. If no, please go to 3.

2-2. For how long have you been fishing?

_____ years

When did you start fishing?

Since age of _____

2-3. How often do you go fishing?

- Less than once a week
- 1-2 days per week
- 3-4 days per week
- 5-6 days per week
- Everyday

2-4. What fishing gear do you most often use? Please check as many as applicable.

- Net
- Trap
- Hook and line
- Other Please specify _____
- Do not use gear

2-5. Where do you usually fish?

- Kanakana*
- Qoliqoli*
- Outside of *qoliqoli*

2-6. Do you use borrowed fishing gear from other people?

Yes No

If yes, please answer 2-7. If no, please go to 2-8.

2-7. When you borrow, what are your obligations?

- No obligation
- Pay money
- Give part of the fish catch
- Other Please specify _____
- Don't know

2-8. Do you usually go fishing with others?

Yes No

If yes, with whom?

2-9. What do you do when you catch too many fish to eat in your family? Please check most applicable answer.

- Sell in village
- Barter with other residents
- Give to chief
- Give to relatives
- Give to other residents
- Sell in market
- Dispose
- Other Please specify _____
- Don't know

2-10 Are there other activities than fishing that you do at sea?

- Boating
- Bathing
- Swimming
- Tourist guide
- I do not do any activity other than fishing
- Don't know

3. The following questions are about fishing rules in the *tikina* water. Your answers will help me understand how marine resources are managed in your village.

3-1. Suppose there is a problem in village water (*kanakana*) and rules for MPA use need to be changed. Who makes decisions about changes to the fishing rules in the *qoliqoli*? Please check most applicable answer.

- National government
- Local government
- Village residents
- Village chief
- Village elders
- NGO (WWF/PCDF)
- Other

Please specify _____

3-2. How would you know if any change is made in fishing rules? Who would tell you?

- Government officials
- Village meeting
- Other residents
- Family members
- Village elders
- NGO (WWF/PCDF)
- Other

Please specify _____

3-3. Would you say that fishing rules in the village water are followed by the residents?

- We all follow
- Most of the time we follow
- Some don't follow
- Most of us don't follow
- None of us follow
- Don't know

3-4. What aspect of marine resource management would you like to change? Please check all applicable.

- Size of fish allowed to catch
- Amount of fish allowed to catch
- Kind of fish allowed to catch
- Location of MPA/*tabu* area
- Size of MPA/*tabu* area
- Duration of MPA/*tabu* area
- Type of fishing gear allowed
- Other

Please specify _____

- No, no change is necessary

3-5. How much influence do you think people in the village like yourself can have in making marine resource management in the village water better?

- A lot
- Some
- Not very much
- None

3-6 How many times have you attended meeting/workshop/training regarding MPA management?

- Never
- Once
- Twice or three times
- More than four times
- Don't know

3-7 If there were a sudden decline in fish catch in village water, who do you think would act to deal with the situation?

- Each household would deal with the problem individually
- Members of *mataqali* among themselves
- The entire village working together
- All village leaders working together
- The entire *tikina* working together
- NGO
- Government official
- Don't know

4. Please tell me about your background and social activities in the village. Your answers will help me understand how life in this village is.

4-1. Do you belong to any of the following groups? Please fill a table below for me.

Church

Yes Name of church ()

No

Men's group

Yes Name of group ()

No

How often do you attend meetings/activities?

Less than once a month

Once to twice a month

3-4 times a month

More than 4 times a month

Women's group

Yes Name of group ()

No

How often do you attend meetings/activities?

Less than once a month

Once to twice a month

3-4 times a month

More than 4 times a month

If you belong to any other group, please specify ()

4-2. What is your gender?

Male Female

4-3. How old are you?

18-24 years old

25-34 years old

35-44 years old

45-54 years old

55-64 years old

65 years old and over

4-4. Are you currently employed?

Yes No

If yes, where do you work?

How much did you get paid last month? \$ _____

4-5. Where do you live?

Name of *Mataqali* :

Name of *Tokatoka* :

4-6. What educational level have you completed?

Primary school

Secondary school

Vocational school

University

Other

Please specify _____

Vinaka vakalevu!!!

A summary of survey results will be sent to your village. However, if you would like to receive a copy for yourself, please write your name.

Your name: _____

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