

REVIEW ESSAY:

Caring for the Environment and the Mitigation of Natural Extreme Events in Gau, Fiji Islands: A Self-help Community Initiative

Joeli Veitayaki

*International Ocean Institute - Pacific Islands
School of Marine Studies, Faculty of Islands and Oceans,
The University of the South Pacific
Suva, Fiji Islands
veitayaki_j@usp.ac.fj*

Abstract

Since 2001, the villagers in Vanuaso Tikina, Gau Island, Fiji, have collaborated with the University of the South Pacific to manage their environmental resources to prepare them for difficult and challenging times ahead. This review essay seeks to publicize this island community-based experience by illustrating a range of resource management initiatives, and some of the challenges of their implementation. The experience is instructive to the rest of Fiji and other island and coastal societies where similar initiatives can be tried or further promoted.

Keywords: Community-based resource management, coastal habitats, integrated coastal management, coastal communities, Vanuaso Tikina, Fiji.

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Introduction

With low undulating relief, island coastal areas are subjected to constant changes as a result of the interaction of elements of the physical environment. Superimposed over this dynamic environment are the impacts of communities that have lived in this physically challenging location for hundreds of years. Hence, island coastal areas are intricately shaped by the physical and anthropogenic forces at play in this transitional area between the land and sea. For their survival and sustainability, island coastal communities living within this complex environment have had to adapt to changing conditions. This calling is more prominent now as the sustainability of coastal settlements into the future will be influenced by their success in addressing the challenges to reduce their impacts within the coast and surrounding areas and ensure that useful survival lessons are learnt and shared widely.

Small islands have extensive coastal areas and settlements. They can be excellent sources of information and knowledge about living in such trying conditions with extensive restrictions. However, small islands often disappear from global maps and may tend to be insufficiently covered in “conventional studies by ‘foreign experts’, whose agendas are

dictated by the urgent but essentially ephemeral priorities of international agencies” (Waddell, 2005:354). These studies raise questions about the suitability of the global sustainable development initiatives that are pursued in the quest to effectively manage resources. This is the reason why the predicament of settlements in small islands must be taken into consideration to better understand how the ocean and coastal processes influence human existence in these islands. Some of the initiatives being undertaken in small island developing states (SIDS) include the emphasis on community-based resource management, articulation of integrated coastal management, adaptation to change and variability, and the use of traditional knowledge (LMMA, 2006; Johannes, 1981a; 1981b; 1989; Veitayaki, 2003; Veitayaki *et al.*, 2005a; 2005b).

SIDS in the Pacific Islands are vulnerable to the effects of climate change, sea level rise, extreme natural events and are currently facing many of the challenges that some other people in the world still plan about. Given their size, proneness to natural disasters and limited adaptive environmental capacity, small islands are critical indicators of what changes will impact on life in coastal communities into the future. In addition, survival in these islands in the short term will depend largely on local, social, cultural, economic and political conditions. Small islands therefore provide ideal study sites and early indicators to the rest of the world, because the consequences of climate and environmental changes are already felt and addressed in them. The resilience and adaptability in these islands must be carefully studied and assessed.

Most Pacific Islands support subsistent societies that depend on their surroundings for their livelihood. These small islands are resilient to social and environmental upheavals and support communities that have learned to live with local environmental conditions. Some of the key adaptive practices include traditional knowledge, social institutions, customary practices and resources tenure. People have traditional calendars and resource management lore and practices that dictate the use of the resources. In addition, the islanders know how to use the resources that are not normally used except in times of great need (Veitayaki, 2002).

Coastal developments are resulting in widespread environmental changes. These developments had started in the past but are gathering momentum. In Fiji, colonial administrators and medical personnel had instructed the clearing of mangroves from village fronts to ensure that fresh air flows through the villages (Nunn *et al.*, 1999). These developments have resulted in erosion and increased sedimentation that have direct and indirect effects on island ecosystems.

There is a need for urgent action at all levels to mitigate the impacts of events that threaten coastal communities. In a document prepared by the Council of Regional Organizations in the Pacific Working Group on Sustainable Development (CROP, 2004), the extreme vulnerability of small islands to disasters that result in short and long term social, economic and environmental hazards was highlighted. To reduce the impacts of such events, adaptation strategies and self-reliant activities are required to build community capacity. Moreover, integrated coastal management which incorporates the close-knit

social units, institutions and the community's resource use practices can provide working arrangements that contemporary systems can learn from and adopt.

Young (1995: 38) has argued that any real improvements to people's living conditions are realized only in cases where the policies and strategies are economically viable, environmentally sustainable, consistent with social values and institutions, and encourage 'grassroots' participation. This position is consistent with Cicin-Sain's (1993: 15) contention that sustainable development entails a continuous process of decision-making in which certain questions are asked and where the "right" choices and decisions are made. There is never an end-state of sustainable development since the equilibrium between development and environmental protection must constantly be readjusted. Accordingly, regular adaptations in management decisions are expected, as the inhabitants gather more information on what is best for them. Local participation is critical because local people can be the basis of the integrated approaches and innovations that incorporate biodiversity and other environment aims, livelihood and economic needs, social and cultural concerns, strong organizations and moral leadership (Equator Initiative, 2005: 6).

This Paper

Villagers in Vanuaso Tikina, Gau Island, Fiji are managing those environmental resources which they hope will provide for them in any difficult and challenging times ahead ([Figure 1](#)). These villagers are being assisted by researchers from the University of the South Pacific (USP) and are taking hard decisions today because they are convinced that their community-based resource management activities can support them when the ecosystem services become scarce and local conditions change. The villagers are using their traditional practices and an iterative approach to safeguard their interests in their island environment. The engagement process is discussed in earlier publications (LMMA, 2006; Veitayaki, 2003; Veitayaki *et al.*, 2005a; 2005b).

This review essay relates to the manner in which the island communities in Vanuaso Tikina are caring for their environmental resources and how they are using the adaptive and integrated coastal area approaches to manage their resources. The experience demonstrates the activities that are undertaken by the communities and the manner they meet their needs, which include mitigation of natural extreme events. The challenge in Vanuaso Tikina is to engage the dwellers in sustainable development practices and ensure that those who own the resources and have aspirations to benefit from these undertake development in a manner that safeguards the integrity of their environmental assets. The project involves the members of the Tikina in integrated resource management that enhances community livelihood and mobilizes them to pursue the sustainable development of their natural resources. The environment in Vanuaso Tikina is in relatively pristine conditions compared to most parts of Fiji because of the semi-subsistence existence of its people; but it is threatened by the impacts of development activities that degrade natural habitats. The construction of the road around the island and the airport in the 1970s were the largest shocks to which the island environment has been subjected. For a long time after these constructions, extensive silt was found in the coastal areas. In recent times, the villagers have increased land use activities which have resulted in more sediment

offloading into the marine environment. This project showcases rural development that respects the integrity of the natural environment and resources.

Figure 1: Map of Fiji Islands, showing Gau Island.



Vanuaso Tikina Context

Vanuaso is one of the 3 Tikina (districts) in Gau, the fifth largest island in the Fiji Group. Gau Island is about 70 km east of Suva and has an area of 300 km². The island has a cloud forest in its mountainous interior where the indigenous bird *Kacau* (Fiji Petrel *Pseudobulweria macgillivrayi*) is found. The forests in Gau Island have not been logged and provide the inhabitants

with healthy clear waters, wild foods and building materials. Semi-subsistence farming is the main activity and the practice of shifting cultivation has increased the islanders' impact on their surroundings. With better farming equipment and machines and the indiscriminant use of fire, villagers are rapidly progressing towards the virgin cloud forest that covers the mountainous interior.

The use of coastal resources in Vanuaso Tikina is evident in the villages and settlements. The people are now engaged in various resources management activities to control their exploitation of environmental resources. They are part of the Fiji Locally Managed Marine Areas network and have been undertaking resource management activities over the last five years to ensure that their environment resources are shared with their future generations (Meo & Radikedike, 2003).

Vanuaso Tikina has an average of 200 individuals in each of the 6 villages of Lekanai, Vanuaso, Nacavanadi, Malawai, Lamiti and Naovuka (Figure 2). The other two Tikina are Sawaieke, which has 8 villages and 10 settlements, and Navukailagi, which has 3 villages and one settlement. Gau has a total population of around 8,000.

Figure 2: Map of Gau Island showing the six villages of Vanuaso Tikina.



All the villages in Vanuaso Tikina are on the coast and are extending and modernizing. Residents have concrete and corrugated iron buildings. Villages have piped water, flush toilets and a public road. There is an airstrip in Lovu and a Government station in Qarani that provide connections to the outside world. The villagers keep domesticated animals such as pigs, cows, chicken and dogs. Some of the major impacts of human activities that are faced in Vanuaso Tikina include the change and degradation of marine habitats such as coral reefs, sea grass beds and mangrove forests; the alteration in coastal vegetation; and the pollution of rivers and coastal waters through all types of pollutants and nutrient enrichments associated with settlements. It is expected that this project will correct some of

the above-mentioned problems in the coastal areas where people live and rely on the goods and services of the ecosystem to support them.

The villagers in Vanuaso Tikina are working with USP researchers to undertake resource management activities that enhance the integrity of their coastal habitats. The initiatives are undertaken after the community representatives sought the advice and assistance of USP (Meo & Radikedike, 2003; Veitayaki, 2003; Veitayaki *et al.*, 2003). The target of the interventions is the rehabilitation of coastal habitats that have been most affected by the changes in those rural communities undergoing modernization.

Collaboration and partnership have been effective in planning and implementing the villagers' resource management activities. The funding and training are secured and provided by the USP researchers, while the locals take all the resource management decisions, conduct basic monitoring and undertake associated follow-up activities which are introduced to draw the attention of the villagers to all those of their activities that have environmental impacts. The community-based, integrated resource management activities aim to convince the people that care of environmental resources is fundamental and must be part of their rural development considerations. This is because the desire to modernize now drives many of these island communities which, despite their traditional environmental wisdom, pursue development as if that will allow them to become independent of their environmental resources. In Vanuaso Tikina, the resource management activities have commenced with the decision to manage their marine resources and declare their locally managed marine areas. The villagers have since then focused on their coastal habitats because of their importance to the ecosystem in the area. The project is benefiting the communities who are very supportive of the initiative. Project

activities will benefit future generations through the improvement in people's lives, protection of critical coastal habitats and the provision of alternative sources of livelihoods.

Integrated resource management and sustainable development are now part of rural development planning and implementation in Vanuaso Tikina. Training workshops on resource management, sustainable development planning, governance and alternative sources of living have been part of this project to introduce the challenges that need to be addressed. Specific aims of the project include the preservation of the cloud forest, the adoption and use of better land use practices that are consistent with sustainable and integrated management, protection of drinking water sources, and the formulation of alternative sources of livelihood.

This project makes integrated resource management and enhanced community livelihood the focus of the rural development activities undertaken in the area. This is important given the close but often contradictory relationship between sustainable development and rural development. Marine resources management cannot itself be effective unless it is part of an overall set of activities that are observed to ensure the health of environmental assets. On the other hand, the villagers are under pressure to meet their obligations and responsibilities to provide for their basic needs, livelihood and economic development. This is why sustainable rural development must be part and parcel of the development activities that are undertaken. The care of environmental resources should be pursued in all rural communities because it makes economic, social, cultural and ecological sense. Using the Participatory Learning and Action approach (ECOWOMAN, 2000; Veitayaki *et al.*, 2003), the project in Vanuaso Tikina has made the environment the basis of the villagers' development aspirations.

Preparing for and Mitigating Natural Extreme Events

Community-based resource management in Vanuaso Tikina promotes a self-determined and integrated system for the protection of local environmental goods and services. The people have endorsed the need to manage their environment as they are concerned with their own positions in years to come and those of their children after that. These villagers are undertaking community-based resource management and are convinced that, in a situation where money earning is not well provided for, the best way to prepare for the future is to look after the environment that provides for their basic needs: food, clean air, clean water and protection from the damaging effects of extreme events. The project therefore focuses on how the villagers satisfy their basic needs, manage their environmental resources, make their initiatives sustainable and integrate their development activities. These communities know - through regular workshops, training and follow up activities - that basic needs for food and clean water as well as protection from climate change and associated sea level rise can be supported only by a healthy environment.

As with many insular coastal communities, villages in Vanuaso Tikina are vulnerable to the effects of sea level rise and extreme natural events such as cyclones, tsunami and flooding that are prominent features of their natural environment. However, in these six villages, the dwellers are caring for the environment and are involved in sustainable

development activities to safeguard their interests. These activities demonstrate that the care of/for the environment can be rewarding in ways that may seem removed at first but in fact are logical, given the interrelated nature of the environment. The villagers have named the initiative *Mositi Vanuaso*, which means having deep attachment to the place, its resources and inhabitants (Veitayaki, 2005a; 2005b).

Coastal communities in Vanuaso Tikina are aware of the challenges of living near coasts. The settlements are located close to the beach but not right on it. The villagers learn to swim from an early age and live off the resources of surrounding areas. Wild food sources provide supplies during and after disaster, drought and famine. Local villagers know how to prepare and consume normally poisonous giant taro species (Thaman & Clarke, 1987) and drink juices from vines (*Eutada phaseoloides, walai*) (Parham, 1972). Wild yams and vegetables such as fern (*Athyrium esculentum, ota*) and Fiji asparagus (*Saccharum edule, duruka*) are consumed whenever available (*ibid.*). The mostly poisonous puffer fish and moray eels are specially prepared delicacies. The islanders have intricate knowledge and skill that they use to access the resources they require (Veitayaki, 1995) but which are not normally used.

Great planning and care has been taken to decide on the locations of all the villages in the Tikina. The villages are only vulnerable under limited conditions. All the villages are on the bank of river mouths where excess water is quickly discharged in times of flooding. Malawai and Lamiti villages are less than 400 metres from each other. Both villages sprawl along the river mouth bank and on to nearby hill slopes where the inhabitants seek refuge during flooding. While Malawai is more exposed to southerly winds and is sheltered from the northerlies, the exact opposite occurs in Lamiti.

Figure 3: View of Malawai Village, as seen from the coast of Lamiti Village. The mangroves planted by the villagers appear in the foreground.



Resource management activities in the 6 villages are based on the agreements that the communities in the district have taken. Using awareness workshops, training and regular follow-up activities, the villagers have united to manage their environmental resources. The awareness directs the development activities that are undertaken in these communities and also mobilizes community support which is critical for sustainable development.

The Tikina is an integrated social unit that ensures uniformity of purposes and practices amongst closely related social units with blood ties and links. The people are benefiting from the outcomes which in turn are reinforcing their management activities. According to many of the villagers, the Mositi Vanuaso project is more worthwhile and rewarding than most of their other community activities.

Community based initiatives undertaken in the district include the protection and rehabilitation of stone walls, mangrove forests and coastal vegetation, the promotion of sustainable fisheries, the fight against deforestation and wild fires, the promotion of good drainage and the protection of water supply, the disposal of domestic waste, the treatment of waste water and the fencing of domesticated animals to allow the cultivation of nearby lowland areas. Such activities have empowered communities within the Tikina and Gau Island to realize that many environmental problems can be resolved. Judging by the result of the project activities, feedback and the support received, the experience is fulfilling and enriching.

Figure 4: Nacavanadi Village, showing the rehabilitated coastal vegetation maintained by the villagers to shelter and protect their village.



In Naovuka, the villagers have taken advantage of the rocky shores to build a stone wall that now protects their beach front. The village which was flooded by storm waves during Cyclone Kina is now better protected by the breakwater. The beach is now widening and the villagers have planted trees to consolidate the expanded coast. In addition, secure mooring is being provided so that punts are not dragged onto the beaches as was the practice in the past.

Figure 5: Stone Wall built by Villagers and Rehabilitated Coastline, Naovuka Village.



Mangrove forests and seagrass beds are managed as island coastal habitats that people require in order to provide themselves with basic goods and services. Mangrove forests are protected and replanted in Lamiti and Malawai because the villagers now know (and have been reminded) that mangroves are important not only as feeding and nursery areas for fish stocks, but also as safeguards from erosion and salt water sprays.

Community reserves have been established and new mangrove plantations have been established throughout the Tikina. In Lekanai, Vanuaso, Malawai and Lamiti villages, the locally managed areas extend from the beaches and mangroves to the rocky and sandy shores, sea grass beds and out to the coral reefs.

Figure 6: Care for Natural Environment, Lekanai Village: Protected mangroves in foreground, secondary forest and virgin cloud mountain vegetation in background.

The careless cutting of trees and the burning of slopes are banned in the district. Bush fires have been a threat to coastal vegetation because the villagers were not prepared to address these disturbances. All the villagers now observe a protocol to ensure the control of fires which has improved drastically in the Tikina since the ban on wild fire was made. Trees have been planted in these frequently burned areas. Native forest plantations are being



established in a number of the villages while in some other villages, the dwellers have planted exotic forests. In all of the villages, coastal vegetation is planted to minimize soil erosion and bring back the vegetative cover that has been removed over the years. Plantation forests are expected to be a source of income for future generations.

The use of smokeless stoves has been promoted in the villages to ease the cutting of coastal vegetation and make the burning of firewood more efficient. It also reduces smoke inhalation from cooking, which is mostly done by the women.

Domesticated animals and waste water remain threats to the health of coastal habitats in Vanuaso Tikina. Pigs and cattle kept by the villagers are decimating coastal habitats and have contributed to their modification and simplification. This issue continues to be a challenge in the district, in spite of a campaign underway to address it. Three of the villagers have received assistance to care for their domesticated animals and it is hoped that other villagers will follow their example. Pigs roaming near the villages are obstructing villagers from farming nearby lowland areas. Likewise, the villagers' cows continue to graze in good farming areas along the rivers rather than kept in designated paddocks away from the main settlements. One of the villages has established a proper cattle farm and the rest of the villages are searching for more effective ways of raising their domesticated animals.

Waste water is increasingly becoming an issue in the villages because of the use of village taps as well as flush and water sealed toilets. Waste water from coastal settlements is released directly into the sea through discharge or seepage. The use of flush toilets desired by people and now subsidized by Government, has concentrated the release of waste water and results in nutrient enriched water which causes algal growth that is overwhelming the coral reefs near the villages. To address this problem, compost toilets have been promoted in Vanuaso Tikina but these have not been widely adopted because of the Government assistance in providing flush toilets. Villagers also are largely unaware of the problems associated with sewage water treatment. It is hoped that the compost toilet will be adopted by the villagers because of its ecological attraction, suitability in areas where there is water shortage or where the water table is high, and its lower costs and maintenance requirements.

Vanuaso Tikina villagers now better appreciate the dangers of inappropriately disposing of their waste. The practice in the villages to treat waste products as disposables that can be fed to the pigs, thrown into pits, rivers and the sea, or left to be addressed by the village nurses, women and children is now changing as better systems of treating waste are adopted. People are encouraged to practise composting on biodegradable materials and to bury only non-biodegradable matter. All the villages are now managing their wastes because they do not want them as part of their cared-for environment. Burying non-biodegradable waste such as plastics and batteries is a real problem; but this is the best current option in such rural locations.

Lessons Learnt

Small island jurisdictions are often overwhelmed by the demands of implementing international instruments because they may lack the personnel, finance and political will to meet their obligations. In other instances, small island communities know what is wrong and how it can be amicably addressed but often are unable to organize to do what is required. It is as if the communities are content to wait for government or some other party to come and do what is needed. In these cases, it is hard for islanders to realize the benefits that await them if they make the necessary alterations to how they pursue development. This has been the reason for the approach adopted in this project which demonstrates the great deal that can be achieved by the communities with little assistance. Stories from case studies such as those shared here are important to show what can be done if those involved are convinced of the value of project activities.

The project in Vanuaso Tikina is engaging people in a meaningful partnership and the feedback so far is predominantly positive. The villagers continue to demonstrate their commitment to the initiatives and are encouraged to be consultative in trying to map their own course of action towards sustainable development. They are encouraged to determine their environmental management actions, use relevant and traditional practices, and adopt flexible management skills and actions so that improvements and effectiveness are pursued and not lost. The support from the villagers is indicative of the relevance of the project activities which are being incorporated into the village schedules.

Civic engagement is a major achievement. People in rural areas are busy and fully occupied in providing for themselves in a world that is rapidly changing. They are trying to adapt a system that is largely introduced and unfamiliar. This is why the approach used in their engagement is critical. Winning the confidence and trust of local communities is important for closer collaboration between the partners working together. The regular follow up visits help keep the focus on the project activities while the training workshops help provide the new ideas that are the basis for iterative decision making.

There are challenges in engineering and maintaining social change from 'outside' the community. The costs of regular follow-up activities are high while the engagement has to be long term to get the message and practices adopted. There is a financial cost of engaging local communities which need to be better provided. Villagers are best able to embrace social change when this comes in properly linked actions that build towards the targeted situation. This process requires leadership, enforcement, reinforcement and finance to be effective.

The failures with the compost toilets and the penning of pigs are related to this point. Flush toilets are seen in villages as the best system. The fact that they are subsidized by Government makes them doubly attractive. With the penning of pigs, the villagers are expecting modern pens constructed of wire and concrete blocks. The preferred options require more money instead of the ones made of local materials that the people can access. The lack of leadership, enforcement and reinforcement make it difficult to convince the villagers of the reasons why these alterations should be adopted. This is the reason why the

engagement has to be long-term. The villagers need to appreciate the costs of their decisions because these are crucial to the success of their overall goals.

The challenge now is to promote the method and see if mainstreaming is possible. The future looks bright if the small steps that have been taken in these rural communities can be adopted in other areas so that desired changes can be achieved widely. Once that momentum is attained, the social transformation can be widespread. This is already taking place with the interest to adopt the approach now expressed by the rest of the villages in Gau and beyond. This is why local case studies need to be promoted widely so as to bring about positive lessons and changes globally. In Vanuaso Tikina, the care of the environment is now the basis of sustainable development activities that the people hope will enable them to move away from environmentally exploitative positions and to protect them from extreme events that can impact their natural environment.

Villagers tend to be pragmatists: they will only adopt new ideas and practices if they are convinced that these will benefit them. In Vanuaso Tikina, the villagers have demonstrated great resilience and adaptability in accommodating to changing conditions. The villagers now live in concrete and wooden buildings and have flush toilets. They are cultivating commercial crops and earn some income. They are now convinced that a healthy environment is the best way of embracing modernity. However, the villagers require advice, human capacity development and finance to better articulate sustainable development. This case study reveals how far island communities are willing to go if they are convinced that the changes they need to make are for their benefit. Being pragmatists, they will want to see results. The engagement process used in Vanuaso Tikina is for this reason useful and is the main lesson from the Mositi Vanuaso project. Given what has been achieved in Vanuaso Tikina over the last few years with little financial resources, it will be interesting to imagine the outcome at regional and national levels if there is a concerted effort to engage community groups in sustainable development.

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