OCEAN IN US: SECURITY OF LIFE IN THE WORLD'S LARGEST OCEAN

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> The sea is our pathway to each other and to everyone else, the sea is our endless saga, the sea is our most powerful metaphor, the ocean is in us. (Hau'ofa 2008, 58)

> Climate change has arrived. It is the greatest threat to the livelihoods, security and well-being of the peoples of the Pacific and one of the greatest challenges for the entire world. (Majuro Declaration 2013, Article 1)

Pacific Island Countries (PICs) jointly hold ownership and access rights, as well as management responsibilities, for more than 30 million square kilometers of the Pacific Ocean, enormously increasing their sovereign territories and making them consider reclassification as Large Ocean Island States. While the wealth and resource potential associated with these extended maritime areas are likely to boost economic development opportunities in this region, the burden on the custodians is stressful, because Pacific Small Island Developing States (SIDSs) are obligated to determine their national boundaries, exert effective control over their territories, guarantee the sustainable use of the resources within their maritime zones, allow safe and free navigation, and be mindful of the interests of other states, including those that are landlocked

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and geographically disadvantaged. In addition, the Pacific SIDSs must commit to undertake marine scientific research, new and appropriate resource use and management, sustainable marine transport, affordable aquaculture, postharvest processing, and renewable-energy assessment that heighten the requirements for more trained human capacity and resources they do not have. These commitments place huge financial and logistical pressure on small and weak economies in the Pacific Islands that need to demonstrate effective control for their own, as well as global security.

Paradoxically, Pacific people are observant, adaptive, and resilient—traits that have been perfected by millennia of close association and intimacy with their ocean and island homes. These traits have allowed these people to live in their minute, ever-changing, and challenging small island environments for thousands of years. However, contemporary transformations such as ever-increasing population, global warming and associated sea level rise, environmental degradation, alteration and loss of natural habitats, loss of territory, globalization, and rampant consumerism in modernizing communities are posing imminent threats of a scale greater than anything Pacific Islanders have ever faced. Pacific societies therefore need to weave a sustainable future for their people using Pacific Islands' solutions that will ensure they live secure and dignified lives in their small islands.

Pacific SIDSs seek to maximize their return from the use of their marine resources; they have not fully benefited from these because of their inadequate technical and management capacity, as well as limited financial and physical resources. These potentially compromising features of life in the Pacific Ocean complicate resource management in this unique water-based region, ancient home to navigators, islanders, villagers, and fishers, a place where small is beautiful but where unprecedented levels of change threaten the existence of communities and the security of life across the world's largest ocean.

Coastal states in the Pacific Islands are trying to exert effective control over their maritime region. They recognize the significance of their resources and are committed to their obligations to their people and to the international community. They have strengthened regional cooperation and collaboration, have pooled their resources, and present strong and united negotiating groups that assist these sovereign nations with technical advice, funding, development assistance, environment management arrangements, education, and training on pertinent issues requested and determined by the member countries. However, there are inconsistent and divisive issues shaped by national interests, the sharing of benefits and not learning from the useful lessons in the experiences of others, which means that the same mistakes are repeated. These issues threaten regional cooperation and make PICs dependent on their nonstate institutions, some of which are increasingly assuming state responsibilities. This is a concern, because Pacific

SIDSs must not be dependent on regional bodies that "claim to serve our interests but in the process of doing so perpetuate our belittlement" (Ratuva 1993, 92).

Pacific Islands must formulate Pacific solutions to the problems associated with the conquest of the sea, which is predicted to worsen with the effects of climate change and sea level rise. Visionary Pacific Islanders, leaders, and communities are needed to devise suitable adaptive approaches that will allow the people to continue to live in the world's largest ocean. Hau'ofa (2008, 57) has prompted us to open our own mind to "much that is profound in our histories, to much of what we are and what we have in common." This is a call for Pacific Islanders to organize themselves, sustainably use their ocean and its varied resources, and formulate appropriate Pacific solutions to the challenges that threaten their existence in their small islands. This paper therefore will discuss the relationships Pacific Islanders have with one another and the ocean, those Hau'ofa (1993, 14) argued are the most "suitable people on earth to be the custodians of the ocean," and reflect on the geopolitics, ocean governance, fisheries management, coastal vulnerabilities, and new developments that will shape the security of life in the world's largest ocean.

Social Relations and Cultural Context

Pacific Islanders have lived in their small island environment for generations and have formulated adaptive arrangements to survive in their ever-changing and challenging homes. Nevertheless, Pacific Islanders must "make new sounds, new rhythms, new choreographies, and new songs and verses about how wonderful and terrible the sea is, and how we cannot live without it" (Hau'ofa 2008, 57). They must adopt some of their time-tested knowledge and practices to address the changes that they have to live with in their greatly altered social and cultural context.

At the time of European contact, indigenous Pacific Island communities were already well developed and organized to live in their islands in the world's biggest ocean. They were trading across the Pacific Ocean and had developed sophisticated navigational skills and practices that allowed them to travel freely and access resources over wider territorial areas (Kabutaulaka 1993). The people were reliant on their subsistence systems, through which most of their food was cultivated or foraged from the surrounding forests and the marine surroundings (Golson 1972, 17). Shifting cultivation, which was appropriate for the environment while allowing sustainable living in these small islands, provided an ample variety of food crops that supplemented the food from the sea, where the multitude of traps, nets, spears, poison, and ingenious fishing methods in the region demonstrated the Pacific Islanders' intimate understanding of their environment and prey (Veitayaki 1990: 50–5).

The people's customary marine tenure or the formal or informal ownership of sea space by a social unit (Calamia 2003) is a common and effective resource management arrangement across the Pacific. In Fiji, sizes and locations of customary fishing grounds and the quantities of resources there, as formalized by the determination of boundaries between the 1890s and 1996, were not related to the size of the population that depend on them (Muehlig-Hofmann et al. 2005) but on how important the social unit was in the past. This practice confirmed the close association between society and marine resources and emphasized the responsibility on the owners to uphold their health and integrity. This close association is the basis of community-based marine resource management undertaken across the Pacific Islands (Veitayaki et al. 2015).

Sailing is an integral part of daily life that allows social interaction, movement, trade, and fishing across the Pacific Islands region. In previous times, sea passages were not feared barriers but exploited highways, the basis of connectivity and the maintenance of kinship and exchange networks. With their acquired knowledge of seafaring, navigation, ship design, and construction, Pacific people made the ocean an integral part of their small island home (Hau'ofa 1993, 7). The well-built and excellently designed indigenous Fijian canoes, for instance, were described as more superior than those of other islanders in the Pacific (Williams 1982: 76). Routledge (1985: 17–18) concurred and proposed that indigenous Fijian "great war canoes of historical times were the constructive triumph of the age. The largest *drua,* plank-built and with an outrigger hull, were up to eighty feet in length and had a mast almost as high as the vessel was long. In addition to their crew, the canoes were capable of cramming over two hundred warriors on the deck between the hulls."

Like other Pacific Islanders, indigenous Fijians forged extended and intricate social networks founded on strong social ties that ensured that the people's knowledge, responsibilities, and roles were perpetuated. The people knew when the importance of males, females, chiefs, extensive kinship ties, age, seniority, industry, loyalty, humility, perseverance, division of labor, and reciprocity influence people's behavior (Ravuvu 2005; Kikau 1981) and how they could be used to meet a need. This is why a good understanding of the people's social relations and culture is critical to understanding the way people conduct themselves (Toren and Pauwels 2015).

Indigenous Fijians are related to one another because of where they are from and who they know. The social connections of *mataqali* (a respectful relation between people from the Kubuna Confederacy), *tovata* (a respectful relation between people from the Tovata Confederacy), *tauvu* (jovial but close relation between people who have common ancestral gods), *naita* (jovial but close relation between people from Kubuna and Burebasaga), *takolavo* (close relations between particular districts within Viti Levu), and *dreu* (jovial but close relation

between the people from Tovata Confederacy and those from some parts of Viti Levu) provide the safety nets that guarantee that people assist and look out for one another because they are related (Veitayaki et al. 2015; Fache and Pauwels 2016). The ties also provide assurance that those who have assisted their relations will always have such assistance reciprocated when they need it.

Extended family relationships are reinforced by their bird, fish, and plant totems. These kinship ties are recited during social presentations to publicize and strengthen the linkages that are cemented by intermarriages, regular visits, and sharing. People practiced complex exchange arrangements, which ensured that the resources were efficiently used and that people looked after one another in times of need. Hoarding was neither practical nor necessary, because people's basic requirements were supplied through their kin-based networks (Narayan 1984, 13).

Pacific Islanders observe a system of adoption that reinforced family ties and allowed families to assist one another, as well as share and maintain their knowledge, relations, roles, and skills. Among indigenous Fijians, a "man's sister's son (and to a different extent her daughter) had a particular claim on his counsel, loyalty, assistance and even property" (Ravuvu 2005, 2). This arrangement allowed a woman to register her children under her own family group so that they could contribute to her social group, a process that used to require the elders and the young to work together so that training, education, and transmission of knowledge and skills could take place.

Customary practices such as the offerings of *sevusevu* (formal appearance), *matanigasau* (communal atonement), and *bulubulu* (atonement) among indigenous Fijians emphasize the maintenance of cordial relations in and among social groups. *Sevusevu* is an introductory and welcoming protocol where the visitors present *yaqona,* "kava" *(Piper methysticum),* on their arrival to inform their hosts about their visit and purpose. The hosts will reciprocate with their own offering granting the visitors' request and assuring them of their support, which may include the permission to fish in their waters. *Matanigasau* and *bulubulu* involve the presentation of *yaqona* or *tabua* (whale tooth) to seek forgiveness and atonement for any serious breach of protocol, norms, and custom. A person caught illegally fishing in an area will seek forgiveness and pardon from the village or district chief by offering *yaqona* or *tabua,* depending on the severity of the deed and the desire for pardon (Veitayaki et al. 2015).

Among the turtle fishers of Qoma Island, Fiji, villagers still observe customary practices that ensure that the fishers do not behave in ways that will offend their ancestral spirits, whom they believe will punish them if they are not happy with their conduct (Veitayaki 1990, 1995). The fishers believe that they go fishing with their ancestral spirits, who must never be upset by the fishers' inappropriate conduct. Punishment for wrongdoing is normally associated with the

failure to make a catch, which is enough to ensure compliance from all fishers even if there are no enforcement officers around. The failure to make a catch is also a sign that not all is well within the group and that atonement and reconciliation are necessary.

Likewise, *kana veicurumaki* (sharing food across normal societal divisions) and *kerekere* (borrowing) are acts of sharing within society to ensure that people help one another to allow them to live comfortably through times of need (Veitayaki et al. 2015). *Kana veicurumaki* is the sharing of subsistence resources and entitlements, such as customary fishing grounds and food rights, with people from other places and groups who normally do not have these rights. The practice is commonly observed among groups that live next to one another across known boundaries or those that cannot share the same food according to custom. This practice allows people access to food when prevailing conditions are abnormal.

Kerekere is when people borrow from their relations (Capell 1991, 95). The system allows the fulfillment of a need and ensures that the people share among themselves, thus preventing the personal accumulation of wealth (Nayacakalou 1978, 40), which is frowned upon as selfish and individualistic. People use land, *tabua,* mats, other artifacts, and food to obtain and return favor rendered to them (Nayacakalou 1978, 102). This social kinship system allows people to meet their needs and live through challenging times, because indigenous people's incentive to work is based on the principle of reciprocity, rather than monetary reward. In such situations, the compulsion to work is related to the knowledge that a person will one day require the assistance of others (Nayacakalou 1978, 119).

Among indigenous Fijians, there is keen competition among the groups using the exchange system and reciprocity to show their social standing. People try to surpass one another to ensure that their group is not embarrassed because they were ill prepared for the exchange. As a result, people plan and prepare well for their ceremonies while those with authority over these events are respected and obeyed because they have greater knowledge and experience of the local context (Nayacakalou 1978, 15).

This functional and secure social system was shaken and in many instances abandoned after the arrival of Europeans and the commercial intercourses that have continued since. The commencement of the bêche-de-mer and sandalwood trade along the northeast coast of Vanua Levu (Williams 1982, 93) in Fiji, for instance, resulted in the use of new and efficient equipment that put pressure on coastal environment and fisheries resources. This process continues to this day and has made people vulnerable as their home and food sources have become part of the world system, with which they are unfamiliar and where they always will be disadvantaged.

Geopolitics

The Pacific Islands are naturally beautiful but have been fought over repeatedly by great powers and, since World War II, poisoned with more nuclear bombs and nuclear radiation by the United States, France, and Britain than anywhere else on Earth (Nuttall and Veitayaki 2015). It has seen bitter wars of conquest and civil insurrection, minute by global standards but with the heaviest per capita casualties witnessed in Bougainville, Fiji, and the Solomon Islands. It faces the humiliation of being the first region on Earth where the carelessness of humans as a species will allow whole countries to sink because of anthropocentrically generated climate change, little of which has been of the Pacific Islanders' making (Nuttall and Veitayaki 2015). Pacific Islanders are considering their options to stay, adapt, mitigate, relocate, or migrate, while the world is still debating the eventualities of climate change and sea level rise.

As territories of the great powers, Pacific Islands were globally important "for the security of Western interests in Asia. We were pampered by those whose real interests lay elsewhere, and those who conducted dangerous experiments on our islands" (Hau'ofa 2000, 33). Many colonies graduated from that era as newly independent countries in the Pacific Islands region of "naked, neocolonial dependency," while the former "suitors are now creating a new set of relationships along the rim of our ocean that excludes us totally" (Hau'ofa 2000, 33).

The scars from the unjust union are illustrated by the displaced and resettled communities around the region; altered environments, some of which can no longer be used to support local sustenance; and dispossessed indigenous people who own the resources but are too poor to benefit from them. Colonization resulted in the introduction of Pacific Islanders into work areas outside of their own countries. This scheme to increase productivity of people who have never known regimented work resulted in the I Kiribati and Tuvaluan settlers in Nauru, I Kiribati settlers in the Solomon Islands, and Ni Vanuatu, Tuvaluans, I Kiribati, and Solomon Islanders in villages in Fiji.

Radioactive materials in Mururoa Atoll in French Polynesia and Johnston and Kwajelin Islands in the Marshall Islands pose grave danger to the country and to the region, while the victims still seek recognition and treatment and fight injustice. In addition, nuclear-powered ships and vessels carrying radioactive materials still ply the ocean, international businesses are still looking for islands on which to dispose toxic industrial wastes, and fishing entities continue with illegal, unrecorded, and unregulated activities, which deprive the rightful owners of the resources in the Pacific Islands their rightful return (Nuttall and Veitayaki 2015).

The Pacific Islands region is now home to 14 young democracies and, until 2014, a military government, an ancient monarchy, states and territories of

superpowers, dependencies, and states in "close association" with superpowers (Nuttall and Veitayaki 2015). Pacific SIDSs are among the most vulnerable, and it is difficult to see how they can achieve sustainable development under the present conditions. Although the 1982 United Nations (UN) Convention on the Law of the Sea enormously increased the Pacific SIDSs' maritime areas and offered them new wealth and potential resources, it gave them the burden of fulfilling their obligations under the convention. Pacific SIDSs are obligated to sustainably manage the resources of their exclusive economic zone (EEZ), even though they do not have the capacity or the resources to exert effective control over their maritime areas, some of whose boundaries remain undetermined. Pacific SIDSs must meet their international obligations as sovereign governments committed to playing their role as world citizens.

Over the years, Pacific SIDSs have established regional organizations to assist them with advice, development activities, education, and training on pertinent issues determined by the member countries. Regional institutions such as the Pacific Islands Forum, Pacific Community, Forum Fisheries Agency (FFA), Secretariat of the Pacific Regional Environment Programme (SPREP), and the University of the South Pacific (USP) have specific mandates to assist the PICs in meeting their obligations in accordance with the agreements, treaties, and conventions they have signed and ratified. Although these regional organization have done well in some areas, there are concerns that better working arrangements are needed (Hughes 2005). In addition, the regional organizations have not forged a common regional identity to help PICs work together for the "advancement of our collective interests and the protection of the ocean for the general good," which Hau'ofa (2000, 33) reasoned, could benefit the wider community and help us to become more open minded, idealistic, altruistic, and generous, and less self-absorbed and corrupt, in the conduct of our public affairs than we are today. This has not been fulfilled, because this level of governance of ocean resources is different from what Pacific Islanders are used to and prepared for.

Ocean Governance

Pacific Islanders live in villages, which are the basis of their social and political organization. Originally small, the main size regulators in villages were the minimum viable defense force or the maximum number of people that local food supplies can cater for (Frazer 1973: 78–79). This balance was disrupted by the enlargement of village sizes over the years because of modernization and urbanization. Despite the increase in size, village composition has remained the same with each village consisting of one or more closely related clans or *yavusa*. The clans consist of *mataqali,* which are allocated ritual and

ceremonial responsibilities and have use and ownership rights over environmental resources such as land and customary fishing areas for their sustenance (Routledge 1985). The *mataqali* consist of a number of extended families, or *tokatoka,* which, in turn, are made up of individual households.

The village and the social units above it operate because the different groups consisting of *mataqali* and *tokatoka,* as well as *yavusa* and *vanua,* perform their particular responsibilities (Seruvakula 2000: 2–29). From the different *mataqali*, *tokatoka, yavusa,* and *vanua* come the chiefs, heralds *(mata ni vanua),* warriors and planters *(bati),* fishers *(gonedau),* priests *(bete),* and carpenters *(mataisau)*. People know who they are, the group they belong to and their predetermined roles and responsibilities. The *gonedau,* for example, are from known family groups and villages that are responsible for the fish and marine resources required for customary ceremonies (Farrell 1972, 38).

The intensive cultivation of cash crops was a new feature associated with the developing economic and political order. Traditional tenure systems and resource management strategies that prevailed throughout the region in the past were eroded with the increased impact of colonization and modernization. Although traditional roles and resource use systems within the communities are still well defined, leadership structures, protocol, power, respect, and beliefs are quickly changing, and the usefulness and relevance of hereditary leaders are increasingly questioned by people (Vunisea 2002).

Pacific Islanders had developed resilience derived from their access to communal land, strong cultural identity, and systems of community governance. Such resilience was supported through kinship ties, sharing of communal resources, and cultural obligations of reciprocity (Coates 2009, 30; Bayliss-Smith et al. 1988; Veitayaki et al. 2011). This coping strategy and survival mechanism is eroding quickly as a result of the social and economic transformation, such as the movement of a greater number of people into urban areas, where they are detached from their social groups.

The pursuit of rural development in recent time has quickened the loss and alteration of natural habitats, overexploitation of natural resources, introduction of pests, invasive species and diseases, and pollution of coastal zones because of inadequate waste treatment, questionable and illegal activities, and ineffective resource management strategies and practices. The destruction and loss of coral reefs, seagrass beds, mangrove forests, and wetlands and widespread pollution of coastlines are all illustrative of the problems that are part of the Pacific Islands' drive toward the economic development introduced so enthusiastically by governments and development agencies. Environmental destruction was an acceptable trade-off for the development that the people needed. In Fiji, the reclamation of the mangrove forest in Raviravi, Ba, in the 1960s to provide aquaculture and agricultural land is a lasting reminder of what will happen when

drastic changes are not properly thought out—the objectives are not achieved, but the natural habitats are permanently lost. With all the new developments and societal needs, the situation is expected to worsen in the years ahead.

The use of marine resources and environment in PICs is among the most intensive in the world, but little is known of the impacts on marine life. The Pacific Ocean is one of nature's greatest carbon sinks (UNESCAP 2010, 9) and affects the climate, ocean currents, and complex ecosystems it hosts. The changing conditions are expected to reduce ocean productivity in the future and will result in biodiversity loss. It is critical, therefore, that this engine room of Earth's climate and the mainstay of Pacific Island economies must be cared for to continue to provide ecological and economic services for Pacific Islanders and humanity as a whole in the future.

The customary marine resource management that has served Pacific Islanders for centuries is widely recognized as an alternative to existing arrangements, in which the people are mere spectators to state-driven resource management activities that have not worked well. Moreover, there is increasing alteration and pollution of coastal habitats and extensive damage to the fishing areas, caused by the heavy and destructive fishing methods used and the regular fishing associated with the higher population and its insatiable demand for food and income. Furthermore, local people who own, use, and depend on these resources are not involved in the management except to implement the prescribed measures outlined in the national legislation and regulations they normally do not know let alone comprehend. The situation is a problem waiting to happen and needs to be addressed in a timely manner.

In 2014, the SIDS Accelerated Modalities of Action (SAMOA) Pathway was adopted at the UN General Assembly (2014) and added to the long list of UN agreements and plans for sustainable development. Few tangible results have been achieved since the first SIDS meeting in Barbados, which raises questions about the ability of Pacific Islanders and others to achieve sustainable development. The SAMOA Pathway, like the other UN-endorsed plans agreed to over the last 44 years, provides the goals that national governments need to localize and work with their partners to achieve (Ambassador Ali'ioaiga Feturi Elisaia, Samoa, in SPREP, 2014). This is a concern given the little action Pacific Islanders have taken to address pressing issues such as climate change, worsening poverty, depleting resources, and environmental degradation that are expected to affect their lives in catastrophic ways.

Fisheries Management

Fisheries provide the main sources of protein for Pacific Islanders, who have fish per capita consumption rates that range between 16.9 kg in Papua New Guinea

(PNG) to 181.6 kg in Kiribati (Gillett 2011, 83). This dependence on fisheries is far above the global average of 16.5 kg per person per year (Gillett 2011), showing the importance of fisheries resources to the sustenance of local communities, the pressure on the stocks, and the need for effective management.

Coastal fisheries are poorly understood, which makes their contribution to the livelihood of people and the economies invisible and the dire need for their management trivial. This is a concern given the higher population, improved technologies and capabilities, and variety of coastal developments undertaken. Coastal fisheries are crucial for national food security and must be effectively managed to ensure optimum use and healthy and vibrant stocks (Kailola 1995; Pita 1996). The situation is grim, as fish species such as coral trout, grouper, bumphead parrot fish, hump-head wrasse, mullet, turtles, and sharks that used to be sold in the markets are expected to collapse in the near future unless effective management is undertaken at once to address sustainability issues.

Sea cucumber is an important but poorly managed coastal resource whose use has not been effectively controlled and thus has been characterized by the boom-and-bust cycle[1] that has been a feature of the fishery since its introduction in the 1800s. Although the productivity of the stock is reduced by half every time the stock collapses (Carleton et al. 2013), the fishery continues to lure local households to catch more sea cucumber to support their aspirations for consumer goods. This is a concern, because the ever-growing demand and higher prices fuel increased bêche-de-mer harvest and make management difficult to implement. Only a more strategic and coordinated management approach will save this convenient source of income for coastal communities from collapse.

The same sorry situation is faced offshore, where the importance of tuna resources is raising serious concern about sustainability. In 2013, more than 2.6 million tons of tuna were caught in the western and central Pacific Ocean (WCPO), which constituted 82 percent of the Pacific tuna catch and 58 percent of the global tuna supply. Skipjack tuna catch dominated, with approximately 69 percent of the total tuna catch in the WCPO, where the total value of the tuna catch was estimated at US$6.2 billion in 2013 (Williams and Terawasi 2014). The license fees paid to the regional governments constituted 11 to 63 percent of the national revenue for Kiribati, Tuvalu, the Federated States of Micronesia (FSM), Nauru, the Marshall Islands, and Palau (Veitayaki and Ledua 2016).

Purse seining, the main fishing method, accounts for 72 percent of the catch weight and more than 200 other bycatch species caught in fish aggregating devices (FADs) or in free-swimming schools. While tuna fishing and processing provide employment for thousands of people in PNG, the Solomon Islands, Fiji, and American Samoa (Gillett 2008), two of the four main species, yellowfin and bigeye, are already overfished. Thus, the maintenance of healthy and sustainable offshore fisheries resources is critical not only to Pacific Islanders and

their economies but to the habitats and resources that provide the food and livelihoods for consumers all over the world as well.

In most Pacific SIDSs, the development aspirations revolve around the attainment of maximum return from the tuna fisheries to fund improvements to the well-being of the people. Many of these countries are dissatisfied with foreign vessels fishing in their waters under access agreements. Underreporting and illegal activities by the Distant Water Fishing Nations (DWFNs) are causing lost revenue for the countries (Maxwell and Owen 1994; Tarte 1998) because the DWFNs are paying low access fees, which undermine the capacity of the Pacific SIDSs to manage and conserve their tuna resources (World Bank 1996).

Pacific SIDSs have formulated innovative regional management arrangements and institutions to protect their tuna resources. They have established the Pacific Islands FFA, to advise them on tuna management and development issues and successfully negotiated their Regional Fisheries Management Organisation, and the Western and Central Pacific Fisheries Commission (WCPFC), to collaborate with their DWFN partners in the sustainable use of the region's tuna resources. The FFA has facilitated numerous regional tuna management agreements and actions, such as those formulated under the Implementing Agreements of the Parties to the Nauru Agreement (PNA), a subgroup of the FFA; the Palau Arrangement; and the FSM Arrangements to increase domestic landing and processing and in turn increase the benefits to regional economies (Aqorau and Bergin 1997a, 1997b, 1998; Lodge 1998; Ram-Bidesi 2003). In the same manner, the Pacific SIDSs have implemented some of the WCPFC's Conservation and Management Measures (CMMs) to protect the tuna and associated stocks in the high seas.

Some of the CMMs that the WCPFC has instituted include the ban on the use of large-scale driftnets on the high seas, a five-month ban on the use of floating objects (such as FADs) set in PNA's EEZs, and a 25 percent reduction in fishing mortality of bigeye and yellowfin tuna stocks to reduce overfishing for the two species. The permanent closure of the high-seas pockets has also been agreed, together with full catch retention and elimination of discards in the EEZs of PNA countries.

Despite all these management measures, tuna stocks in the WCPO are declining while the numbers of fishing boats are increasing. Overfishing is worsened by pollution, climate change, habitat destruction, weak governance, and lack of fisheries management knowledge exacerbating the fishing pressure on the EEZs of the WCPO nations. Illegal, unreported, and unregulated fishing remains a major problem because of the lack of capacity of coastal states to enforce compliance. Moreover, exemptions, noncompliance, and noncompatibility of national, subregional, and regional objectives weaken regional management arrangements and compromise the equitable sharing of benefits from

the use of their fisheries resources. These factors threaten the sustainable management and development of coastal and tuna resources in the Pacific Islands, which is critical given the worsening risks to their health and sustainability and those dependent on them.

Given the development aspirations among Pacific Island states, it is probable that some of them are turning a blind eye to the sustainability of their resources. Hau'ofa's (2008, 48) suggestion that Pacific SIDSs acting in "union for larger purposes and for the benefit of the wider community could help us to become more open-minded, idealistic, and generous and less self-absorbed and corrupt, in the conduct of our public affairs than we are today" has not happened. Instead, his warning is occurring as our countries and people scramble to carve a future in "an age when our societies are preoccupied with the pursuit of material wealth, when the rampant market economy brings out unquenchable greed and amorality in us" (Hau'ofa 2008, 48). Resource developments are pursued without proper consideration of the fish stocks, fishers are increasing in numbers and sophistication, resource management is reactionary rather than premeditated, management measures are not effectively adhered to, and some coastal states negotiate exemptions from the CMMs and pay lip service to sustainable fisheries development.

In a thought-provoking Greenpeace study in 2013, the proposal was for Pacific SIDSs to abandon the contemporary tuna fisheries development strategy in which they are bystanders who receive only licensing fees amounting to less than 10 percent of the value of the tuna fished from their waters. According to Greenpeace, the reliance on DWFNs, which presently control all activities from fishing to marketing of the commodities, will continue unless Pacific SIDSs revert to more appropriate smaller-scale and more labor-intensive methods that will be affordable and accessible to their people, who can target higher prices in the more lucrative sashimi markets rather than low prices at the canneries that are supporting the decimation of their tuna resources for minute financial return to the countries (Greenpeace 2013). Questions are also raised about the wisdom of depleting tuna resources being sold cheaply to fish processors overseas, who then export the processed product to PICs at much higher prices. In countries where employment of local people is a major challenge, Pacific SIDSs are using mechanized fishing they do not own and are selling their fish at prices that are a fraction of what they can receive at the sashimi markets. In addition, their brand of tuna caught through environment- and dolphin-friendly methods will attract the support of environmentally conscious people everywhere.

New resource use options should be carefully planned and implemented as Pacific Islanders strive to better control the use of their tuna resources, employ more of their citizens, sustainably use their resources, and attain maximum return from their fisheries. PICs are formulating innovative approaches such as the Vessel Day Scheme and the closure of the high-seas pockets to optimize their

benefits from the use of their tuna resources (Ram-Bidesi 2011). The lead taken by the PNA in implementing the Vessel Day Scheme has increased the income to the member countries 16 times since the change was implemented in 2010. This good start should be built on to change the way this business is conducted.

According to Dr Transform Aqorau, chief executive of the PNA and architect of its Vessel Day Scheme, PNA's success was based on its ability to create the scarcity that was necessary to add value to its commodity. He warned that finding a solution for overexploited resources such as bêche-de-mer will not be easy but must start with the education and empowerment of people on the changes that need to be undertaken (Presentation by Dr Aqorau at the Bêche-de-mer and Coastal Fisheries Summit in Nadi Fiji, 7 August 2014). He further advised that the effectiveness of regional management arrangements will be compromised if individual states pursue different objectives based on their own interest, because the success of regional tuna resource management arrangements depends on the resemblance of objectives of member states and the compatibility of regional and national policies and strategies. This is what Hau'ofa (2000) wanted the PICs to achieve through better regional integration.

Coastal Adaptation and Vulnerabilities

People in Pacific SIDSs have effective traditional resource management practices, but these alone are insufficient to the people who are living with depleting resources, altered environments, and increasing demands that threaten their food security. In addition, most countries have weak economies—with Kiribati, the Solomon Islands, Tuvalu, and Vanuatu still classified as least developed countries. It is difficult to expect these countries and communities to fund resource management activities given all they have to provide for their people and the limited resources available to them.

Land in PICs constitutes only 2 percent of the total area and less than 0.4 percent if PNG, the biggest country, is excluded. Four of the Pacific states have land area of less than 30 square kilometers each, while 15 are either made up wholly of atolls or largely of atolls and coral islands. There are at least 11 square kilometers of ocean for every coastal Pacific Islander (Anderson et al. 2003, 2), which makes the Pacific Islands one of the most remote and far-flung regions in the world (AusAID 2008, 1). For many of these countries, the sea is the biggest resource base—as well as the main threat, given eventualities such as climate change and sea level rise and the high populations that are now part of their lives.

Pacific SIDSs have diseconomies of scale in production and the exchange of goods and services, remoteness from export markets, and vulnerability to natural disasters and climate change. There is high economic and cultural dependence on the natural environment and primary commodities, with a high proportion

of national incomes coming from aid from metropolitan countries and development partners, as well as remittances from Pacific Islanders working abroad.

The increasing concentration of populations in urban areas is placing intensive pressure on all marine resources in surrounding areas. The situation is so vulnerable that the marine resource requirements for cities such as Suva depend on fisheries resources from other parts of the country. In South Tarawa, Kiribati, with 54.1 percent of Kiribati's total population of 108,800 people in 2013 and an estimated annual growth rate of 5.2 percent, the population is expected to double in 13 years. It is inconceivable to imagine how South Tarawa's economy and environment will cope with the additional people (Haberkorn 2004). The same situation is faced in Majuro (the Marshall Islands), Funafuti (Tuvalu), Pago Pago (American Samoa), Guam, and Nauru, where population densities rival those of cities in Southeast Asia.

Future projections in the Pacific SIDSs are bleak, because natural resources are affected negatively by increasing human activities (UNESCAP 2010, 10). In addition, climate change has devastating and economically crippling impacts. Although Pacific Islanders have unique resilience associated with access to communal land, strong cultural identity, and systems of community governance supported through close kinship ties, sharing of communal resources, and cultural obligations of reciprocity (Coates 2009, 30; Bayliss-Smith et al. 1988; Veitayaki et al. 2011), the immensity and immediacy of the effects of climate change will make adaptation insufficient in many of the countries (Barnett 2002).

Pacific Islands are among the most vulnerable regions in the world to natural hazards such as cyclones, earthquakes, floods, drought, and tsunami, which often result in catastrophic changes. The sediment loads through Rewa River floods were estimated at an average of 107 tons per year (Hasan 1986). For instance, it is estimated that the soil loss in the Rewa River catchment was about 34–36 tons per hectare per year (Morrison 1981; Nunn 1990; Hasan 1986). Consequently, since 1983, the Fiji Government was spending about US$6 million annually on dredging to alleviate the problem of flooding in the Rewa and other rivers (Togamana 1995). This expense can be reduced if proper land-use practices are used.

Between 1950 and 2004, extreme natural disasters accounted for 65 percent of the total economic impact of disasters on the Pacific Islands' economies. Over the past 50 years, 10 of the 15 most extreme events occurred in the last 15 years (UNESCAP 2010, 10). Between 2015 and 2016, two category 5 cyclones caused widespread destruction in Vanuatu, Kiribati, Tuvalu, and Fiji. Climate variations and extremes disrupt food production, water supply, and economic development. "Events during the last decade have demonstrated that vulnerabilities remain high and efforts to build resilience have been insufficient" (UNESCAP 2010, 10), so PICs are continuously rebuilding and recovering from disasters, spending millions of dollars otherwise earmarked for development activities.

To make matters worse, the coping strategies and survival mechanisms Pacific Islanders used to employ are quickly eroding as a result of the social and economic transformation taking place. The slow recovery in Vanuatu and Fiji after the devastation of category 5 cyclones in 2015 and 2016, respectively, is a good illustration of the current situation. In Fiji, people in devastated areas are still living in tents a year after the disaster, when the customary *bure* (thatched house) would be more comfortable and secure. In addition, poverty is worsening, with more than 80 percent of the region's population living in the four poorest countries of Kiribati, PNG, the Solomon Islands, and Timor Leste. Data on poverty are limited but alarming. Three national surveys in Fiji show that poverty rose from 11.4 percent in 1977 to 34.4 percent in 2002. Moreover, exposure to consumerism and international information technology is resulting in the replacement of traditional diets with canned and processed foods, traditional materials with throwaway goods, and traditional values with populist global cultures. Formerly independent Pacific Islanders have become an insignificant part of the globalized world.

The scale and irreversibility of the effects of greenhouse gas (GHG) emissions, combined with the inability of local measures to mitigate the problem, make climate change a threat above all others. The minute contribution of GHGs by PICs, estimated by the South Pacific Regional Environment Programme (now the SPREP) to be 0.03 percent of global totals (Hay 2002), makes mitigation taken by PICs symbolic, no matter how successful. Unfortunately, Oceania's concerns and accomplishments are almost unheard on the global stage, drowned out by larger states, superpowers, and alliances whose consumption-based development and security interests easily outweigh PICs' voice. The failure of the international community to agree on emissions reduction targets in Copenhagen, Mexico, Rio, Warsaw, and Bonn reinforces the futility of Pacific SIDSs expecting a credible response from developed countries. Ironically, Pacific Islanders, along with indigenous communities at the poles, will be the first and the worst affected victims (Barcham, Scheyvens, and Overton 2009; Merson 2010).

Much of the global concern about climate change impacts on Oceania is focused on the plight of atoll dwellers, a view that is often expanded as representative of the whole region. While atolls and low islands are living in a climate change–ravaged environment, the experience is shared in all low areas in islands. In addition, Barnett and Campbell (2010, 155) argue that "representation of the Pacific Islands as extremely vulnerable may have created the illusion that adaptation is pointless, and denies the resilience, agency, capacity, and potential that Pacific Island communities have" to adapt.

The Pacific is one of the world's most imported fuel-dependent regions, with 95 percent dependency (99 percent if PNG and Fiji are excluded). Imported fossil fuels account for 8–37 percent of total imports, raising critical issues of fuel

price and security of supply (Woodruff 2007). In 2011, fuel imports cost PICs more than US$1.3 billion, which represents a major drain on their economies, has a crippling effect on national budgets and revenues, and affects all key productive sectors in the region (UNESCAP 2010). The largest consumer of fossil fuel, sea transport is entirely dependent on imported fossil fuels, which make the PICs vulnerable in physical, economic, and social terms that affect the security of life not only in these countries but also in the wider global community.

New Developments

Pacific SIDSs are actively determining their own development pathway to allow them to live in their countries with the challenges they face. Some areas in which future development activities have been made to address the issues that affect the security of life in the Pacific Islands include national policy development, better use and nonuse of resources, disaster risk reduction, climate change adaptation, use of renewable energy, and partnerships.

Pacific Island leaders' endorsement of the Pacific Islands Regional Ocean Policy (PIROP) and its presentation at the World Summit on Sustainable Development in 2002 illustrated the regional effort to safeguard a "healthy ocean that sustains the livelihood and aspirations of Pacific Island communities" (Barnes and Mandel 2017) and provide a principled approach to responsible ocean governance in the region. Unfortunately, only Vanuatu has formulated a national ocean policy. The other countries should do the same so as to provide a framework to guide the countries' relationships with the ocean in years to come.

Under the Pacific Oceanscape, which was to refocus the region's attention on PIROP and emphasize, among other things, integrated resource management and contribution to the SIDSs' commitment to declare more marine conservation areas patterned along the Phoenix Islands Protected Area (PIPA), once the world's largest marine protected area, an increasing number of Pacific Islands have declared large marine protected areas. PIPA was possible through the partnership of the Government of Kiribati, the New England Aquarium, and Conservation International. The subsequent declaration of even larger ocean management areas in the Cook Islands, Niue, and New Caledonia and the appointment of an ocean commissioner at the Pacific Islands Forum demonstrate the commitment in the region to better manage an ocean that is important to Pacific Islanders and the world. The debate on the benefits and costs of declaring large management areas has been lively, demonstrating the high stakes that must be taken into consideration in making these resource management decisions.

At the 2012 Pacific Forum, Cook Islands Prime Minister Henry Puna prompted other PIC leaders to rethink their shared identity within the Pacific, saying, "it is time that we break the mould that defines us too narrowly and limits us in any

way." Puna called for a recasting of regional identity to one of Large Ocean Island States: "Our large ocean island states should demonstrate—now more than ever—renewed commitment to define our future in our own terms. Our intimate and connected relationship is built from a deep spiritual bond and translated across an expanse of ocean in unique and traditional ways" (Komai 2012).

Pacific Islands have incorporated their input into the Barbados Programme of Action for the Sustainable Development of SIDSs through the SAMOA Pathway, a blueprint for national and regional development that takes into account the economic, social, and ecological aspects that are the pillars of sustainability. While the SAMOA Pathway has reinforced the SIDS commitment to sustainable development, it is a reminder of the lack of progress and action in a process that started 30 years ago. The SAMOA Pathway wave, created in Apia in 2014, is expected to drive more PICs to formulate Pacific-based solutions to Pacific Island issues.

The launch of Fiji's Green Growth Framework is exciting, because a PIC has finally decided to articulate the pursuit of economic development that simultaneously emphasizes social and environmental well-being (Ministry of Strategic Planning, National Development and Statistics 2014: 4–5). The framework outlines the process to ensure that development is sustainable and that Fiji's environment is maintained. It offers a space in which government, nongovernment, private sector, and faith-based organizations; the media; urban and rural communities; and individuals can all be engaged in sustainable development activities (Ministry of Strategic Planning, National Development and Statistics 2014: 4–5). "The Green Growth Framework is the first of its kind for Fiji" (Ministry of Strategic Planning, National Development and Statistics 2014: 4–5) and is the impetus to take the country into the uncertain future. The establishment of the Pacific Islands Development Forum as the region's newest institution is indicative of wide regional support for the Green Growth Framework that Fiji is embarking on. The implementation of the framework is eagerly anticipated.

Palau is providing international leadership in its attempt to have vibrant and healthy coral reefs as the centerpiece of sustainable development that supports strong and robust economies. Working under the Micronesia Challenge (2012) with the Northern Mariana Islands, FSM, Guam, and the Republic of the Marshall Islands, Palau is committed to protecting 30 percent of its coral reefs and 20 percent of its forest resources by 2020. These countries are contributing to the global coral reef conservation targets and have heightened marine resource management, solicited much needed funds to support local initiatives, and advocated the importance of taking appropriate action at all levels of governance. Palau has also declared a shark sanctuary, because it reasoned that live sharks are worth a lot more to its marine-based tourism industry than the price of the fins to its fishers. In a keynote address to a UN meeting titled "Healthy

Oceans and Seas" in February 2014, Palau President Tommy Remengesau Jr. announced his country's plan to outlaw commercial fishing in its waters once current fishing contracts in the country expire (Molland 2014).

The Marshall Islands are creating a global wave by announcing a plan to reduce gas emissions from ships in its register, the world's third largest. This bold move will require the collaboration and support of other flag states, but it shows that small Pacific Islands are taking leadership roles in addressing global issues that affect the lives of ordinary people. The Marshall Islands are working closely with a USP/International Union for Conservation of Nature research team on sustainable transport. They have held two international *talanoa* (storytelling) sessions in Suva and are working with partners and experts from around the world who can assist in securing appropriate Pacific solutions for this global problem. For example, the group has realized that in the Pacific Islands region, reducing the dependency on imported fuel is more practical and of higher priority than reducing emissions caused by burning that fuel. The available options are thus to increase the efficiency of current uses, reduce fuel consumption (which would come at a high social and development cost), or introduce or increase the use of alternatives (Nuttall et al. 2014). In many cases, there is an unanticipated correlation between use of alternatives and emissions reduction.

Lack of adequate policy and financing are major constraints to developing more appropriate sea transport for PICs (Prasad et al. 2013; Nuttall et al. 2014). Sadly, shipping projects are generally considered only as mitigation measures. Renewable shipping does not meet the criteria for many mitigation funds, because it would not be displacing fuel used for electricity generation (Nuttall et al. 2014), the current priority set by donors. This needs to be addressed. Investment in research and development, as is undertaken now at the USP to prove the commercial viability of renewable-energy vessels, must be a priority.

At the 6th Pacific Platform for Disaster Risk Management workshop in Suva, in 2014, with the theme "The Way Forward: Climate Change and Disaster Resilient Development for the Pacific," stakeholders agreed to a communication protocol to use during disasters (Naleba 2014). Sharing national information and experiences will enhance disaster and climate change resilience and sustainable development among PICs. As can be seen from the examples shared previously, people in the Pacific Islands are acting at all levels to climate-proof their islands and activities. President Anote Tong of Kiribati leads the way in calling for all to take a moral responsibility in the fight against climate change to ensure the well-being of all (USP Beat 2012, 7). In his keynote address at the 2015 European Society for Oceanists conference in Brussels, the head of state of Samoa, His Highness Tui Atua Tupua Tamasese Ta'isi Efi, reminded the audience to care better for the world we call home.

In Vunidogoloa village in Cakaudrove Province, Fiji, the villagers worked with government to relocate their village away from the encroaching shoreline (Silaitoga 2014), while other parts of Pacific community-based resource management initiatives are under way to rehabilitate coastal habitats and use adaptive arrangements to live with climate change. Pacific Islanders are vulnerable but are not giving up and are doing all that they can to adapt to prevailing conditions. Local communities and their partners are taking up the challenge to look after their environment resources, which they know are important and need to be sustainably used for their sake, as well as that of future generations.

Conclusion

The security of PICs depends heavily on how well the issues examined previously are addressed. Living in the world's largest ocean offers inherent challenges, as well as opportunities that can only be realized if smart, innovative, and painful decisions are made. This will require good PICs leaders to commit to working together to implement the plans of actions they have agreed to and to continue to look for local solutions to their issues. The regional governments must take the lead while securing the support of and contributions from development agencies, nongovernmental organizations, and the private sector. This is not the time to rely on others to determine what is best for us.

The collaborative work adopted in the Pacific is logical for small national governments that do not have the capacity to have their own people attend to required jobs. While the PICs are helping one another, national governments must commit their resources to address national issues. Environment departments within some of these countries need the resources to conduct their activities independently and diligently. As more demands and higher expectations are required of environmental resources, these government agencies need to be strengthened with adequate resources and clearer mandates.

The challenge for Pacific SIDSs is to ensure that the regional effort supported by the international community is taken through to local communities who are the owners and guardians of environmental resources. Development projects should be stringently assessed and evaluated, while funding should be provided only for those who have helped themselves. This will require good, transparent, accountable, and just governance. Some PICs are using sustainable development to replace their economic development goals. These countries aim to use effective resource management practices to unleash the development opportunities that will then benefit the people, the environment, and the economy. This vision has been adopted after decades of pursuing economic development that has delivered worsening poverty, degraded environmental resources, and stunted economic growth.

The time to change is here, and PICs must continue to articulate the sustainable development plans of action that have existed since 1992. Customary and community-centered conservation and contemporary, science-based, and government-led but inclusive resource management arrangements should be used to implement the plans. Sustainable development is the best and only available option for PICs as they sail into the uncharted future ahead. This is the way to forge a secure future in the Pacific SIDSs in the world's largest ocean.

NOTES

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2. The characteristic feature of bêche-de-mer fishing is that it starts, thrives, and then collapses because of overfishing. This characteristic remains to this day.

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