



# Environmental Change, Vulnerability and Security In the Pacific

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#### INTRODUCTION

Intuitively at least, we have a sense that environmental change has the potential to undermine human security. The degradation of resources can negatively affect the capacity of people to sustain their livelihoods. Accessibility to basic necessities such as food can be reduced by environmental change and there are widespread effects upon human health that can be linked directly to changes in the quality of the environment. Peoples' sense of security can be influenced also when resource exploitation and environmental change have impacts upon local communities, cultural norms and traditions, and sociopolitical structures. In some acute cases, the insecurities that arise from environmental change may lead to violent conflict.

It is much more difficult to establish precisely what the connections are between environmental change and human security. Land degradation, for example, threatens the economic and food security of people around the world, but the underlying causes often can be traced to complex processes of economic and political transformation that extend across regional, national and international territories. In such cases, land degradation is but one physical manifestation of global economic processes that are at the root of, not only, food insecurity, but other human insecurities as well. While at a superficial level violent conflict in the Middle East or on the island of Bougainville has been associated with competition for the control of natural resources, specifically water and minerals, an understanding of the causes of these conflicts requires a more broadly based analysis of the respective histories, political economies, and cultural tensions in each of the regions.

Notwithstanding these problems, one of the most interesting and strategically important questions in the context of the environment-human security relationship is the geography of insecurity, both latent and realised. That is, in what regions are the threats of environmental change to human security the greatest? This gives rise to several ancillary questions (see Box 1). To address these questions we need to determine the vulnerability of people to environmental change and how this vulnerability varies from

one place to another. These issues are explored here in the context of the Pacific Islands.

- What types of environmental change pose the greatest threats to human security in a particular place or region?
- What are the respective roles of acute and chronic forms of environmental change?
- How is environmental change linked to both internal and external processes of social and economic transformation?
- To what extent is environmental change the outcome of external versus internal drivers?
- What is the nature of the insecurities that arise from environmental change for example, threats to livelihoods, human health and well being, cultural dislocations, community disruptions, shifts in power and authority, etc.?
- What are the social and institutional capacities within specific regions that provide resilience to environmental change and/or an ability to adapt

## **Islands are Small Places**

Geographically, the Pacific region is vast. It is the world's largest ocean, studded by thousands of islands, which are grouped into about 30 different political territories. Despite the small size of the individual islands, collectively the land area is greater than that of Western Europe.

Individually, the island nations of the Pacific are small – in terms of their geographic extent, their populations and the size of their economies. At 461,690 km, Papua New Guinea (PNG) is the largest of the Pacific Island nations and while New Zealand is as large or larger than many of the countries of Europe (at 270,500 km2), the other island nations are relatively small. The independent republic of Nauru, for example, is only 21 km2 in area; Tuvalu is not much larger and Tokelau is only half that size (Table 1). The populations of the countries of the Pacific are small as well; at just under four million, PNG is the largest but only a few thousand people (Table 1) populate many others (see figure 1 for a map of the region).

# Table 1. Area and Population of Pacific Island Nations

	Lanite	Partio
	(int	(882)
American Samoa		
CookIslands		
EasterIsland		
Fed. States of Micronesia		100,520
Fiji		
French Polynesia		
Guam		
Kiribati		
Marshall Islands		
Nauru		
New Caledonia		
New Zealand		.3,434,900
Niue		
	Laniter	Peptio
	12-4	(7992)
	(Jackb	(area)
NorfolkIsland		
Norfolk Island North'n Mariana Islands		
Norfolk Island North'n Mariana Islands Palau		
Norfolk Island North'n Mariana Islands Palau Papua New Guinea		
Norfolk Island North'n Mariana Islands Palau Papua New Guinea Pitcaim Island		
Norfolk Island North'n Mariana Islands Palau Papua New Guinea Pitcaim Island Solomon Islands		1,912 43,345 
Norfolk Island North'n Mariana Islands Palau Papua New Guinea Pitcaim Island Solomon Islands Tokelau		
Norfolk Island North'n Mariana Islands Palau Papua New Guinea Pitcaim Island Solomon Islands Tokelau Tonga		
Norfolk Island North'n Mariana Islands Palau Papua New Guinea Pitcaim Island Solomon Islands Tokelau Tonga Tuvalu		1,912 43,345 
Norfolk Island North'n Mariana Islands Papua New Guinea Pitcaim Island Solomon Islands Tokelau Tonga Tuvalu Vanuatu		1,912 43,345 
Norfolk Island Norfolk Island Palau Papua New Guinea Pitcaim Island Solomon Islands Tokelau Tonga Tuvalu Vanuatu Wallis and Fatuna		1,912 43,345 

Source. Pacific Island Yearbook, 1995

# Figure 1. Selected Pacific Islands.



A key factor in explaining contemporary patterns of resource control and exploitation, as well as the future vulnerability of the region in economic, social, political and environmental terms is the small and relatively fragile state of the islands' economies (Table 2). A recent Food and Agriculture Organization (FAO, 1996) report revealed that economic growth in the region has been outpaced by population growth, which in some island nations is at rates that are among the highest in the world. Over recent years, the prices of exports relative to imports have shifted and trade balances have been affected by rising demands for imported commodities (Table 2). Economic vulnerability is exacerbated by the relatively narrow resource bases, which are founded primarily on agriculture, forestry and fishing. Inadequate capital resources, technical expertise and access to international markets has often led to "industrialisation by invitation," with many island governments entering into licensing and joint venture agreements to develop natural resources with other countries. These agreements are not necessarily under terms that are especially favourable to the Pacific Islanders.

#### Table 2. Economic Indicators for Selected Pacific Island Nations 1996

	GDP (U.S\$m)	Exports (US\$m)	Imports (US\$m)	External Dettr (US\$m)	Consumer Price Inflution (%)
Fiji	1799	653	813	253	4.4
Solomon Is.	275	190	173	158	10.5
Tonga	195	15	83	70	3.1
Vanuatu	247	30	86	48	1.4
W. Samoa	156	10	91	162	7.5
and the second					

\*Note External debt figures are for 1995

Source The Economist Intelligence Unit, 1997, ERI Country Report No. 1 - Pacific Islands.

Relatively small resource bases, small populations, limited institutional capacities and fragile economies leave the islands exposed to the vagaries of international geo-political and economic forces. This, on the one hand, has tended to encourage widespread resource exploitation and degradation, while on the other has limited the capacity of these nations to cope with the challenges presented by global environmental change.

#### Vulnerability is a Many-sided Thing

In the study of natural hazards, vulnerability is defined generally as the potential for loss. Cutter (1996) has distinguished between *biophysical vulnerability*, which can refer to the potential for loss from natural hazards, environmental variability and change, and *social vulnerability*, which refers to social and institutional capacities that determine both susceptibility to, and the ability to cope with, hazards and environmental change. The Pacific Islands, particularly the smaller Island States, can be characterised by high levels of social vulnerability, as well as by a high biophysical vulnerability.

Biophysical vulnerability of the region and its constituent nations is both cumulative and globalised in character. Under pressure to expand their economies, levels of resource exploitation in the region are increasing rapidly and these are accompanied by resource degradation. The environmental consequences of forestry operations include erosion, flooding, water pollution and loss of biological diversity. Mining and agriculture have caused similar widespread environmental damage. A UN Environment Programme report (Hay et al., 1994) predicts that in the period to the end of the millenium forest cover will continue to decline, and that soil erosion, flooding, soil salinity and rates of species extinction will increase.

Resource exploitation by overseas interests is associated also with cultural dislocations, which have implications for community and social security. In their analysis of the Bougainville crisis, Wesley-Smith and Ogan (1992) suggest that the Australian-owned mining operations on the island introduced social stratification to a society that previously was based on more egalitarian social relations. The emergence of non-traditional markets in land and labour and the existence of a group who enjoyed a beneficial relation with the giant Conzinc Rio Tinto (CRA Ltd.) mine also changed the social relations.

One of the most widely popularised environmental threats to the region is contamination from nuclear waste dumping and weapons testing; the region is especially attractive for such practices by virtue of its isolation and oceanic character. The testing of thermonuclear weapons in the region began in 1946. At Moruroa, the controversial French testing programme which started in 1966, has been the cause of widespread protest and action in the region. Although there is some doubt about the nature and extent of the environmental threat, the moral, social and political implications of the testing programme have been more than real enough.

There also are problems associated with waste disposal as a consequence of social and economic transformations which include industrial development, the adoption of modern agricultural systems and urbanisation. These problems have been accentuated by an absence of adequate monitoring of environmental effects, inadequate regulations governing the use and disposal of chemicals, a lack of control over imports of chemicals and wastes, and a widespread lack of knowledge about the correct use and disposal of chemicals and other waste products.

In the late 1990s, climate change and a predicted change in sea level undoubtedly are perceived as the most serious environmental threats facing the region. Vulnerability of island nations to sea level rise has been expressed in terms of coastal erosion, loss of mangrove forests, destruction of agricultural and forest resources, coral mortality, threats to inshore fisheries, contamination of freshwater lenses, and the loss of sea grass beds.

Within the scientific community there is debate as to whether in fact sea-level rise is the most critical threat. Some scientists suggest that any systematic changes in sea level likely will be overshadowed by the short-term variations that the region has long experienced. There are suggestions also that the significant threats of climate change to the region probably will be an increased incidence of storm events, changes in rainfall patterns, effects upon soil moisture budgets, and shifts in wind patterns.

Significantly, the threat of climate change is a problem to which the island nations have not contributed to any discernible extent and over which, therefore, their influence is quite limited. At the same time the vulnerability of Pacific Islanders to the threat of climate change is at least as great as it is for anyone.

#### **Resources, the Environment and Geopolitics**

Anthony (1990) makes the claim that "The history of the Pacific Islands is in no small measure a history of conflict over natural resources." He suggests that, historically, the conflict centred on land-based resources, but that the "rediscovery" of the Pacific has expanded the domains of conflict to include the region's valuable marine resources. Colonisation of the region by European countries began in the 16th Century and continued more or less uninterrupted until the mid 20th Century. During the 1800s, the possession of colonies in the Pacific bore testimony to economic rivalry amongst the major European nations, and later the United States (Mackensen and Hinrichsen, 1984). The move to independence for most island nations was peaceful and uneventful. However, the reluctance of France to relinquish its assets in Vanuatu led to the Santo rebellion and violent struggles for independence continue in Kanaky/New Caledonia, East Timor and West Papua/Irian Jaya. The conflict on Bougainville, which has claimed in excess of 12,000 lives, is also partly a battle for independence from PNG.

In the Cold War period, the region remained of strategic military significance to the U. S., and is of continuing strategic importance in terms of access to transport lanes, seabed resources, the fishery and other natural resources. In this post-colonial era, conflicts over resources and the environment probably will intensify due to an expanding interest from Asian governments. The social and economic transformations associated with the exploitation of resources by offshore interests almost inevitably will lead to conflicts over the control and use of resources. These conflicts may be further inflamed if competition increases amongst the Pacific Island nations themselves, as senses of nationalism consolidate and the economic imperatives become even more acute. According to Ghee and Valencia (1990):

These resources (e.g., minerals, metals, fuels) are already deeply imbedded in regional and international political rivalry, and conflict over them appears likely to intensify... At the local level, conflict over natural resources among competing groups of users, including tribal communities, peasants, fishermen, miners, loggers, and corporations, has not only continued unabated but threatens to worsen in the coming years.

## Adaptation, the Pacific Way

To a degree, the responses to environmental change are conditioned by the institutional and political capacity of the respective nations, but it is important to note that Pacific Islanders always have had to deal with environmental variability and this has imparted a strong measure of resilience to change. Some threats to human security in the Pacific that are posed by environmental change can be managed from within, but to a large extent the response of these island nations must be one of persuasion and of adaptation.

Regional cooperation as a form of governance through which to mediate the effects of global environmental change has emerged quite strongly within the region. The Convention for the Protection of the Natural Resources and Environment of the South Pacific is one example, and the South Pacific Forum played the pivotal role in the implementation of the Convention for the Prohibition of Fishing with Long Driftnets in the South Pacific. Since the late 1980s, the Pacific Island nations have played an important role in the international negotiations over climate change, through representative bodies such as the South Pacific Regional Environment Programme (SPREP) and the South Pacific Forum, as well as through participation in the Alliance of Small Island States (AOSIS). The petitions of the small island nations led to the inclusion in the 1992 UN Framework Convention on Climate Change of a requirement of signatories to consider the circumstances of small island nations when fulfilling their obligations under the convention. More recently, Hay (1997) reiterated the need for ongoing regional cooperation as a key component of a strategy to cope with the implications of climate change in the Pacific (Box 2).

Despite the success of the Pacific Island nations in establishing and participating in regional governance, there are two main concerns with respect to responding to environmental change. One is an inclination to impose upon the people of the region strategies that were developed in other contexts, including institutional arrangements, administrative and economic restructuring and specific approaches to environmental management. One of the important keys to understanding global environmental change is a recognition of the social and cultural contexts in which the threat is constructed and adapted to; to neglect social context when it comes to developing response strategies carries with it the risk of failure. Thus, in the Pacific, the social construction of environmental threats, the specific nature of resource control and ownership, the aspirations of people, systems of governance, including those of tribal leadership, and the cultural meanings attached to the environment are important considerations.

The other threat to the effectiveness of social and institutional responses to environmental change lies within. Economic disadvantage will persist for some time, while at the same time other nations will continue to exploit the region's resources and environment. In the face of pressure to improve their economic, national governments, many of which remain locked into an ethos of the nation-state and sovereignty, might be tempted to sideline regional priorities in favour of their own economic benefit. Thus:

Reliance on some glamorous slogan like 'the Pacific way' as a means of solving problems may be illusory when the interests of outside powers are threatened and large amounts of money are at stake. In a generation or two, what now appears to be a comfortable consensus may turn out to be paper-thin and brittle indeed.

Ghee and Valencia, 1990.

The collective approach has worked well in terms of persuading other nations about the particular threats to the region's environment and in formulating approaches to resources and environmental management. The challenge will lie in mediating tensions and conflicts within, particularly as the institutional, political and economic context in which these countries are operating becomes increasingly complex.

## Box 2. Regional Action Strategy for Climate Change

- Regional cooperation;
- A policy of owning the climate change issue;
- Identifying ways to maximise the benefits of climate change;
- Improved factual understanding of climate change;
- Mainstreaming responses to climate change in national planning;
- Enhancing the capacity to respond to the consequences of climate change;
- A policy to improve regional security.

## **Towards the Pacific Century**

The vulnerability of the Pacific to environmental change is both cumulative and global in character. Resource exploitation and the associated degradation of the physical environment, widespread contamination of terrestrial and marine environments by toxins and hazardous wastes, and the possible effects of climate change are three main causes for concern. These threats arise out of both the historical and geographical circumstances of the region, and they are inextricably linked to the contemporary economic, social and political contexts. Ongoing resource exploitation and environmental degradation are manifestations of this vulnerability, and the effects upon the resource base and the environment contribute in turn to insecurities for the region and its people. The problems are exacerbated by the fact that those threats that loom largest, lie outside the direct control of the region's people. Also, vulnerability is related to the ability to cope and in this respect the islands' geographies conspire against them; the capacity of the social, economic and environmental systems to cope is constrained by scale. Yet, there is a foundation for optimism, based in the demonstrated successes of regional cooperation; human security in the Pacific Century will depend very much on the continuing robustness of the regional alliances.

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