The Social Impact of Ocean Acidification in Pacific Island Countries: Limits and Imperatives of Predicting and Planning

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Introduction
This paper focuses on the Pacific Island countries, because that is the part of the Pacific world with which I am most familiar and because these countries are dramatically vulnerable to changes in their ocean environment. By Pacific Islands I mean the regions still often known as Melanesia, Polynesia and Micronesia. Among these, I am most familiar with Melanesia, in particular Papua New Guinea, by far the most populous of all the Pacific Island countries. About half of Pacific Island political entities are fully independent countries; about half the remainder are independent or self-governing in some form of free association with the United States or New Zealand; and, the rest remain territories or commonwealths of the United States or France. Of all the Pacific Island countries, only Papua New Guinea has a population surpassing a million (about 4.8 million in 2000), and Fiji’s population approaches a million (about 825 thousand in 2000). All others have populations in the low to middle hundreds of thousands, the tens of thousands, or even the mere several thousands (Lockwood 2004: 17-19).

Social impact assessment tries to forecast the social effects (in which I include economic, political and cultural effects) of a public policy, private sector endeavor, or natural event. The aims are to ascertain if a policy or enterprise is socially feasible, and plan to mitigate the adverse and reinforce the beneficial social effects of human actions or natural events.

As an ethnographer, I have observed for about 30 years the social effects on Papua New Guinea villagers of colonialism, the introduction of a market economy, Christian missions, and the creation of a new nation state. As a program evaluator I work with my colleagues at LTG Associates to find out if efforts of private non-profit organizations and government agencies to improve people’s health and well-being are achieving their objectives, and if not why not. I speak today as an ethnographer and as someone who, as a program evaluator and public policy consultant, is called on to go beyond describing and analyzing social phenomena to recommending actions and policies.
Much of what can be said about the social impacts of ocean acidification (OA) pertains to the aggregate economic value of the marine resources OA puts at risk. The extent of these aggregate impacts remains uncertain. This uncertainty, however, is nothing compared to the uncertainty surrounding other aspects of OA’s social impact, kinds of uncertainty virtually any social impact analysis faces. Understanding such uncertainty is fundamental to addressing the social effects of OA in Pacific Island countries.

After a few words about Pacific Island vulnerability to environmental events in general and OA in particular, I will discuss the following five points:

1. To advocate effectively for addressing OA in global forums, Pacific Island countries need the best estimates they can get of the aggregate economic effects of OA on vital regional resources. But knowledge of these aggregate effects tells little about the effects on particular populations. To manage social impacts one often needs to understand such particular effects, and this requires detailed social analysis.

2. It is nearly impossible to make social impact forecasts and plans to address social impacts that will play out just as envisioned, even when one digs beneath the aggregate. This is not only because societies and cultures are complex but also because they harbor diverse potentials for change that we sometimes can see only as change occurs.

3. Precisely because social change is so unpredictable it is important to forecast and plan, because forecasting and planning prepare you to act wisely when your wisest expectations prove wrong.

4. All of the above dictate that social impact analysis should be an ongoing effort, not a one-time task.

Addressing all the challenges I’ve noted, of course, is a very tall order. Doing so is rare anywhere. It takes resources, know-how, and commitment. As I’ll note in my conclusion, in the long run, the likelihood that a country pursues this demanding course may depend less on financial and technical capacity than on the degree of development of democratic institutions.

**Pacific Island Vulnerability**

Anyone who has ever lived in the Pacific Islands can easily understand how climatic and ecosystem changes can have dramatic effects. The Pacific Islands are exposed to an unusual extent to a wide range of disasters born of the atmosphere, the earth, and the sea, such as cyclones, flooding, droughts, earthquakes, tsunamis, and volcanic eruptions.

I can easily elaborate on such vulnerability from my experience living in the village of Kragur on Kairiru Island in Papua New Guinea’s East Sepik Province. Kragur stretches along a narrow strip of ground between the steep gradient of a volcanic mountain and a perpendicular drop to an exposed, stony beach. Heavy rains and the occasional earthquake keep detaching bits of this slender
foothold, which fall to the beach and are washed away. When I was last there, in 1998, unusually heavy rains had opened a crack in the earth an inch or two wide, many meters long, and who knows how deep, a few yards from the edge of the cliff. Villagers took great care to walk on its landward side. A few months earlier, a drought brought on by the 1997 El Nino weather system had parched village taro and sweet potato gardens. Now, however, villagers were worried that the unrelenting rain would rot their seed tubers in the saturated ground.

As a 2000 World Bank study of climate change and economy in the Pacific Islands points out (18-19), things are likely only to get worse.

Many Pacific Island countries have experienced and will continue to experience increased vulnerability to natural hazards as a result of high population growth rates, over-development, increased exploitation of coastal resources, mangrove clearance, and sand and aggregate extraction.

Potential impacts include a reduction in the protective capacity of coral reefs, resulting in coastal erosion, inundation and flooding. These impacts are expected to be exacerbated by climate change, sea level rise, and changes in storm intensity.

What about ocean acidification? It is less dramatically visible than crumbling cliffs and eroding coastlines, but the environmental effects are potentially severe. It is estimated that by the middle of this century rates of coral reef erosion could overtake reef growth because of slowing coral calcification, and lower pH environments could affect the health and reproductive capacity of some fish populations directly through increasing carbonic acid levels in their body fluids (Hood 2004: 4). A 2005 report from The Royal Society (United Kingdom) concludes that worldwide “Ocean acidification may have significant impacts on the life cycles ... of some marine fish and shellfish species, putting at risk some unknown fraction of the global economic value of these resources (about $100 billion). It may well cause a significant perturbation of the whole marine biogeochemical system and the ecosystem services (valued at billions of dollars per year) which it provides...” (35). The Royal Society report also notes that such estimates “do not take into account large non-monetary effects that are outside the scope of formal economic assessment” (35), a point of special importance in parts of the world, like the Pacific Islands, where much economic activity takes place in the informal sector.

A study conducted for Greenpeace, completed in 2000, (Hoegh-Guldberg, et al.:2000) addresses the social impacts of the degradation of Pacific coral reefs in particular, focusing on reef mortality due to coral bleaching, but noting that OA raises additional concerns (14). The Greenpeace estimates give an idea of the value of the reef-related resources for which OA is one source of risk. The
study addresses fourteen Pacific Island countries, excluding Papua New Guinea but including four other Melanesian countries: Fiji, New Caledonia, Solomon Islands, and Vanuatu. Summing up an exercise in constructing scenarios of different degrees of severity, Greenpeace concludes: “Even under mild scenarios the outlook is somber”. The report states that what it calls the “accounting cost” to Pacific economies could be in the billions, but emphasizes that “the social costs from the dislocation of coastal communities and the deprivation of the families of subsistence farmers and fishermen are not included in these numbers” (63). Melanesian countries, however, the report notes, are likely to be more resilient because they generally have more diverse, still-unexploited resource bases (58) than the smaller Polynesian and Micronesian countries.

More detailed and confident predictions of the economic value of resources put at risk by coral reef mortality and of the economic consequences more specific to OA will emerge. Even what we can say today is certainly enough to make a strong case for action by individual countries and for regional cooperation in pressing for global action to address OA. But we are still looking at a very broad-brush picture of social impacts. What are the prospects for achieving the kinds of more fine-grained pictures planning mitigation efforts requires?

I’m going to focus on two challenges to making reliable finer-grained forecasts. First, many social factors - including conflicting political and economic interests as well as cultural differences - shape the influence of aggregate impacts on particular populations. Second, social phenomena are inherently unpredictable. Neither challenge dictates giving up. They do dictate, however, that where finer-grained analysis is important, social impact analysis has to dig deep, but be tentative and ongoing.

**Aggregate and Particular Fish**

Looking at the economic and nutritional role of fish in Pacific Island countries illustrates the difference between aggregate impacts and impacts on specific populations. Fish suit my purpose because I know a little bit about fishing in some parts of Papua New Guinea. Also, fish are important in most Pacific Island countries, if not necessarily immediately important to all Pacific Island people. As noted in the World Bank report I just cited (2000:7):

> Apart perhaps from the making of copra, fishing is the only form of economic and subsistence production that is practiced in virtually every Pacific Island. Its prominence in the formal sector varies dramatically with climate conditions, size and location of the resources, and market prices. But its less publicized role at the village and subsistence level is large and persistent.

According to the same report (28), “Seafood comprises 28 and 67 percent of the animal protein consumed in Fiji and Kiribati - substantially higher than the
world average of 17 percent.” And, “Fiji, the Solomon Islands, and Vanuatu would each have to spend an additional US$7 - 15 million a year for substitutes with similar animal protein. Kiribati would require US$18 million in alternative protein sources - equivalent to 38 percent of its GDP.” This is not to mention the effects of damage to reefs and fish populations on nature-based tourism or international commercial fisheries.

As essential as they are, however, such estimates tell us relatively little about the varied social impacts of such changes. And, at the local level, even among coastal and island people, relationships to marine resources vary widely in ways that are often far from obvious. There are people in Papua New Guinea who have never seen the ocean and know that their country is located on an island only by hearsay. Fish are, of course, inescapable in the multitudes of coastal and small island communities. In a particular community, however, you often cannot tell by casual observation how important fishing is as source of food or cash income or what other critical importance it might have.

Local Perceptions and Social Repercussions
When I first worked in Papua New Guinea, in 1973, I lived in Peri Village in what was then called - prior to Papua New Guinea independence - the Manus District. Peri people had moved to the beach from villages built on stilts over reefs and artificial islands only a few decades before. Fishing and harvesting other marine resources were central to their way of life. They fished for daily consumption, to trade with inland people for sago and garden produce, and to sell for cash in the District’s only town, Lorengau. They were self-consciously people of the sea and hardly a day went by that someone wasn’t fishing for something. That’s life on a Papua New Guinea island, right?

Not necessarily. A couple of years later I went to Kragur for the first time. During one six-month period in the middle of my stay villagers seemed to talk of almost nothing but fish, fishing, canoes, nets, and fishing magic. Men especially were on the edge of obsession with the size and frequency of the schools of Long Tom (Tylorus sp.), called konan in the Kairiru language, spawning in the bay beneath the cliffs. My observations over the seasons and over the years, including a time allocation study, made it clear, however, that locally caught fish were not and are not a factor in Kragur diet or cash income remotely proportionate to the interest they stirred that year. Nevertheless, when the konan failed to spawn in large numbers that year it had dramatic social effects. Some villagers blamed the failure on normal variation in spawning patterns, a few allowed that the local habit of harvesting konan by dynamiting the spawning schools might not be the best thing, and some accused evil men in other villages or within Kragur itself of maliciously using magic to disperse the fish. Most villagers, however, blamed their own inability to achieve the kind of social harmony they believed was necessary to make the fishing magic work. So, fishing failure that year had only a modest effect on diet; but, it nourished the conviction that the village was full of hidden anger
and malice. This aggravated long-standing social tensions and damaged for several months or more villagers’ ability to cooperate in any kind of collective endeavor, including various efforts to increase cash incomes (Smith 1994).

The immediate material loss was minor, but the social impact - and perhaps the longer-term economic impact - was substantial. One could not have predicted this form even the most accurate information on the aggregate cash or nutritional value of konan in the East Sepik Province, or even from data on Kragur diet and household economy taken out of social context.

Resource Control and Local Impacts
Similarly, knowledge of the aggregate economic value of a regional resource does not necessarily tell you much about what it means to individual countries of the region without knowledge of the distribution of political and economic control of the resource. Fish account for large portions of the value of merchandise exports for several Pacific Island countries. According to the World Bank (2000:5) the export value of fish for Pacific Island countries within the past decade ranged from about 20% for Tonga to about 88% for Federated States of Micronesia. The tuna catch alone from “the ocean surrounding the Pacific Islands” averaged almost 2 billion U.S. dollars in value a year in the 1990s. However, as the World Bank also reports, “...the share captured by Pacific Island vessels remains modest.” What are called “distant water fishing nations” (including Japan, Taiwan, Korea, the United States, the Philippines, and China) realize a massive share of that value (about 89% in 1998). Such Pacific Island countries as Kiribati, the Federated States of Micronesia, Papua New Guinea, the Marshall Islands, and Solomon Islands do receive fees for the rights to fish in their Exclusive Economic Zones. These amounted to over US$54 million in 1997/98, but this was small potatoes compared to the value of the catch itself (World Bank 2000: 34-35).

Within a country, control over resources also shapes their importance to different groups. It is the policy of the Papua New Guinea government to try to capture more of the benefits of the tuna catch in Papua New Guinea waters by encouraging the development of tuna processing facilities within the country. But the workings of such a policy in practice can be convoluted.

Since I last visited the East Sepik Province, South Seas Tuna Corporation (SST) has built a tuna processing plant in Wewak, the East Sepik’s major town and the jumping off place for most travel to Kairiru and other East Sepik Province islands. On the face of it, this development may seem to support the policy of capturing more of the value of the tuna fishery for the local and national economies. However, a social impact assessment of the SST plant, conducted on behalf of a local non-profit organization in 2005 by anthropologist Nancy Sullivan and her colleagues, found the impacts at very best mixed. For example, many in Wewak charge that SST has reneged on promises to support development of locally-owned spin-off businesses (68). Many more report that
SST has done little or nothing to reduce noxious odors that now, it is reported, sometimes envelop most of Wewak (19). The plant does provide employment in an area where wage work is scarce, but some observers argue that the working conditions are inhumane and unsafe and the employees, while gaining experience in the wage sector, could probably make higher net incomes in the informal economy (25).

Who benefits most clearly from this enterprise? Sullivan found some details of the ownership of the venture difficult to disentangle. Foreign corporations, however, appear to be by far the major SST shareholders, with only a few well-placed Papua New Guineans getting more than a small taste (51). If so, this would not be surprising and would mirror the general pattern of business development in Papua New Guinea which, so far, is doing more to create a business elite than to improve the general welfare.

News from Kairiru Islanders confirms this picture of the fishing industry in the East Sepik Province. I have been corresponding with Kragur people for many years, among them Herman Boyek, a Marist Brother (the Marists are a Catholic teaching order) and a social activist. Although widely traveled, Brother Herman has worked in the Wewak area the largest part of his life, residing at the Marist Brothers residence, a two-story building of a tattered simplicity in keeping with the Marists’ vow of poverty. The residence sits just back from the beach not far from the center of town, between - on the west - the single-story Windjammer Hotel and - on the east - the SST processing plant. Br. Herman helped found and eventually became Managing Director of the Bismarck Fishing Company (BMC). The BMC is a cooperative venture named for the Bismarck Sea, as the corner of the Pacific Ocean bounded by mainland Papua New Guinea, New Britain, New Ireland, and the Admiralty Islands is called. Br. Herman and other islanders formed the BMC to provide part-time local fishers a way to market their catch more profitably through a central entity in Wewak, equipped with a warehouse, a freezer, and boat storage and repair facilities.

Through Br. Herman’s letters I’ve followed the BMC’s efforts to obtain financing and the use of a building on land owned by the provincial government, near the concrete wharf that serves local sea traffic around Wewak. But, within a few years of BMC’s launch it lost its facility when the provincial government sold the land on which it stood. According to Sullivan’s report (36), the provincial government sold the land to a well-known local businessman - proprietor of, among other enterprises, the Windjammer Hotel - who paid for it with shares in a seafood enterprise which he owns in partnership with the East Sepik Development Corporation, a business arm of the provincial government, which also owns shares in SST. In short, it appears that a larger operator is pushing small-scale local producers to the extreme edges of the fishing industry, with government complicity.
I’ll be hearing more about this situation when I’m in Wewak again, which I hope will be in 2008. Since I often stay with the Marist Brothers there, I’m also likely to smell more of the situation. It appears, however, that due to the structure of the tuna industry in the East Sepik, a decline in the Bismarck Sea tuna stock - unfortunate as it would be in the long run - would have a rather small immediate effect on the cash incomes of local people.

A Spreading Net of Impact
The story of the impacts of East Sepik Province tuna industry becomes even more complex as one looks into it more closely. In fact, it is possible that a decline in the tuna fishery great enough to shut down the SST plan could actually improve the health of the local population, because the current structure of the tuna industry encourages a flourishing sex trade between foreign trawler crews and local people and the local and international transmission of the human immunodeficiency virus (HIV).

It’s safe to say that HIV and AIDS (HIV/AIDS) pose a more immediate threat to the well-being of Papua New Guineans than fishery depletion. In 2002, a report issued by the Australian international aid agency AusAID concluded that “PNG is poised on the brink of a serious [HIV/AIDS] epidemic” (vii). At that time, the need to address a growing HIV/AIDS problem was already straining the limited capacity of the country’s health system. Without aggressive action, even the least pessimistic scenarios for the effects of an HIV/AIDS epidemic on the economy as a whole were sobering. More particularly, the AusAID report warned that the spread of HIV/AIDS could easily increase barriers to obtaining education, decrease the effectiveness of government, and exacerbate income inequality and gender inequity (56-72) (cf. Malau 2001).

In brief, this is how the tuna industry and HIV/AIDS are related around Wewak. In Papua New Guinea, HIV/AIDS is spread primarily through heterosexual contact and the sex trade plays an important role in this (AusAID 2002:25). In Wewak, there is a significant relationship between the commercial fishing industry and the sex trade. A 2006 report from the Operational Research Unit of the Papua New Guinea Institute of Medical Research (IMR) indicates that numbers of the local women who paddle canoes out to the fishing trawlers anchored offshore sell not only garden produce and coconuts, but also sexual services to the largely Asian crews (Hammar, et al.). Sullivan’s study observed the same practice, adding reports that some local men also sell sex to members of the ships’ crews (12-16). Ironically, the fishing crews sometimes pay for sexual services with frozen tuna, or even by-catch fish.

AusAID (2002:23-25), cites a number of studies linking high rates of commercial sex in parts of Papua New Guinea with economic need, and both Sullivan and the IMR found evidence that economic hardship drives some of those who sell sexual services to trawler crews. The present structure of the commercial fishing industry around Wewak does not put a significant share of its value in
the hands of local people. Hence, they are more likely to sell sex. Hence, also, there is a more active international flow of HIV/AIDS.

I’ll turn now to another complication of social impact forecasting and planning, the inherent unpredictability of social phenomena.

Mining and Changing Minds
Nothing is more important to social impact assessment than knowledge of similar cases, including how planning and mitigation efforts fared. But one thing experience teaches is that we should be prepared to be surprised.

The experience of efforts to plan for the social repercussions of large scale gold and copper mining in Papua New Guinea provides good examples of this. Colin Filer and Martha Macintyre are anthropologists, long-time observers of mining projects in Papua New Guinea, and contributors to related social planning efforts. In a recent publication (Filer and Macintyre 2006) they note just how much of a surprise some of the social consequences of mining have been.

A group of experts gathered in 1985, they write, would have assumed Papua New Guinea was on the right track toward harnessing mining to sustainable development and easing the social repercussions of establishing giant industrial sites in hitherto isolated rural areas populated by people practicing pre-industrial agriculture. For example, these experts, they write, “would probably have cited Bougainville Copper Limited’s training and localization program and Ok Tedi Mining Limited’s environmental monitoring program as examples of industry best practice. Policy makers from around the region would have nodded in agreement and undertaken to emulate this shining example.” Unfortunately, in 1998, an armed rebellion, in which mining issues played a role, broke out in Bougainville and by 1989 the mine had been closed; and, Ok Tedi became the subject of a legal battle between the government of Australia and the mine’s Australian operator, Broken Hill Proprietary Limited (Filer and Macintyre 2006:215). In addition to entanglement in such dramatic conflicts, mining in general in Papua New Guinea has not, as once hoped, strengthened the state’s capacity to provide people throughout the country with better services (Filer and Macintyre 2006:227), nor has it provided a basis for creating a more diversified and stable economy with greater opportunities for all (Smith 2004:62).

Concerted efforts to predict and plan failed. And, according to some observers, many social conflicts associated with mining ventures in Melanesia have been the fruit of local economic success rather than, as some might have thought, external economic exploitation. Colin Filer (1998:155-156) has argued that “the inability of the local community to distribute the economic benefits of mining in an equitable manner” has been the source of conflict within many communities involved with mining.
Could projection have been more accurate and, thus, planning more adequate? Perhaps, and studying these cases certainly will help others do better in the future. But surprises will always abound. Can intimate knowledge of a people’s culture cut down on surprises? Absolutely. I could make some pretty good guesses about how Kragur people or numbers of other Papua New Guinea villagers might react to particular kinds of change. But I would do this as much from my knowledge of how they have reacted to change in the past as from knowledge of some stable and coherent “traditional” culture. Also, my understanding of the ways of human culture in general tells me that even in Kragur I should be ready for surprises.

Studying the potential social repercussions of mining on the Papua New Guinea island of Misima (Milne Bay Province) in 1986, Martha Macintyre found that local women were much concerned about the silt mining would probably discharge into the sea because drinking sea water was an important part of their postpartum ritual cleansing. Macintyre worked with a committee of local women to formulate ways the mining company could address this concern, including creating special saltwater bathing facilities. But it was not long, Macintyre writes, before many women began to think about postpartum ritual purity in new ways and to care little for either downing draughts of saltwater or the saltwater bathing facilities. Rather, they had adapted their ideas about postpartum purity to a new environment that included a hospital and houses with bathrooms.

Is there any point, then, in taking culture into account in trying to identify social impacts and design ways to address them? Macintyre (2005: 125) writes:

I do not contest the need for developers to be aware of the cultures of the people whose resources they are exploiting, but the issue becomes decidedly more complicated when you actually try to work with that in mind as a way of determining policy and practice... The social sciences generally are not predictive, and Papua New Guinean people change their minds about the things that are important to them.

Of course, people everywhere change their minds. And they can do this without necessarily changing their culture, including the aspect of culture we refer to as people’s values. Development scholar Norman Uphoff (1996:337) observes: “Change of values is seldom the issue, because people usually have such a diverse set or repertoire to draw on already....Because these values frequently conflict, there are no invariant orderings of values. What matters is not which values one has - we all have many - but which values are activated and applied in a given situation.” This means that how people respond to change sometimes, perhaps often, tells us more about their culture than knowledge of their culture helps us to forecast how they will respond.
This is not evidence of the weakness of social science theory and methods. Rather, it reflects what Jacques Berlinerblau (2005:8-9) calls “one of the grandest (and presently least appreciated) strands in social theory....” This theoretical strand recognizes that history is “inherently ironic; the least expected (and desired) outcomes are often the ones that come to pass.” This is frequently the case even when people plan and work for specific social changes, as when they self-consciously seek “development.” To paraphrase sociologist Sandra Wallman (1977:13), they may get what they want, but it often turns out to be not exactly what they meant (cf. Fernandez 2001).

The Failure and the Necessity of Planning
This does not look good for the prospects of social impact assessment. In the same vein, Glen Banks, drawing in part on his experience assessing the social impacts of large-scale mining in Papua New Guinea and Indonesia, writes: “The rapid pace of social and economic change in all areas of the world, and the multifaceted and unpredictable nature of this change, means SIA [social impact assessment] can be redundant before the project or development they were carried out for is even complete.”

Does this make efforts to predict and plan for social impacts futile and pointless? On the contrary, in my work as a program evaluator I argue strenuously for the benefits of efforts to predict and plan. My colleagues and I sometimes serve clients who are not remotely ready to evaluate their work because their goals are so vague they cannot articulate objectives against which they can measure their progress. And, such clients sometimes say they have not articulated clear objectives because they want to remain flexible and able to respond to unanticipated circumstances and results. We have to explain to them that the distinct likelihood that nothing will happen as they anticipate is probably the major reason for trying to predict and plan.

To predict and plan responsibly, you have to examine the data on current circumstances, study similar cases, and articulate clearly your assumptions about how your actions or other events will lead to projected effects. You do this knowing that you are undoubtedly unaware of key factors and likely to be surprised by events. But, if you do not do this, you will not be prepared to understand why your plans go wrong - what data you have neglected or misinterpreted or what erroneous assumptions you made. And you will not be prepared to adjust your plan accordingly. As we say to our clients: “You can’t alter your course if you haven’t set a course.”

The lesson for social impact assessment is much the same: Efforts to predict the social repercussions of events are the best way to prepare to understand and cope with unanticipated repercussions. This also means, of course, that the best social impact assessment includes social impact monitoring. It does not stop once predictions and plans are out the door. Rather, it monitors
events, reassesses assumptions, and is ready to intelligently revise plans. While the actual impacts are sometimes unpleasant surprises, they are not necessarily so. For example, in his book Learning from Gal Oya (1996) Norman Uphoff provides a detailed analysis of the failure of participants in an irrigation project in Sri Lanka to behave as Uphoff “had been taught to expect by the predominant theorizing of social science.” This failure Uphoff found enlightening and inspiring rather than disappointing; things turned out much better than many might have predicted.

**Conclusion: Capacity and Will**

In practice, addressing the social impacts of OA has to be part of a larger response to environmental change. In any event, looking deep into local impacts, designing flexible plans, and conducting long-term monitoring is a big order. Are Pacific Island countries up to it? There are serious questions about the capacities of many Pacific Island governments to respond to any kind of threat or crisis effectively. The year 2000 World Bank report on responding to climate change in the Pacific Islands took an understated tone: “For Pacific Island countries to respond effectively to the challenges and opportunities that they face, the way in which they organize and govern themselves will have to continue to evolve” (8).

This sounds ominous, but it doesn’t necessarily mean that Pacific Island governments are more averse to careful social analysis, planning, and monitoring than many other governments and institutions. Over the years I have worked with many clients - ranging from small, poorly financed local NGOs to some of the largest international aid organizations - that are reluctant to invest in long-term program monitoring because they see it as a diversion from immediate action, they don’t understand its importance, or - in some cases - they apparently don’t really know how to do it.

Following the work of economist Amartya Sen (1999 a & b) one can argue that the will of a government to make such investments may depend in the long run less on material resources or technical capacity than on the degree to which democracy prevails. When people have a stake in solving a problem, making a program work, or protecting a resource and are able to make their voices heard in the political arena, governments are much more likely to do what it takes to make things happen.

How healthy is democracy in Pacific Island countries? This is a vital question for all aspects of environmental policy and action in the region, and the subject of much debate (see, for example: Dinnen 2004; Fraenkel 2006; Manning 2001; Morgan 2005; and, Rich 2002). Although it lies beyond the scope of this paper, anyone pursuing questions of social impact assessment and planning in the Pacific Islands will eventually encounter it.

In the meantime, keep these points in mind:
• Social impact forecasts that will hold in the face of cultural diversity, the political and economic divisions within populations, and the inherent unpredictability of social phenomena are profoundly elusive;
• This complexity and unpredictability are powerful arguments for doing the hard work of making forecasts and plans based on forecasts; and,
• Such complexity and unpredictability are indisputable arguments for thinking of social impact assessment and planning as a long-term commitment.

Notes

1Dr. Smith is the author of two books on social change in Papua New Guinea: *Hard Times on Kairiru Island: Poverty, Development and Morality in a Papua New Guinea village* (1994) and *Village on the Edge: Changing Times in Papua New Guinea* (2002), both published by the University of Hawai‘i Press. He has served as a consultant to many businesses, non-profit organizations, and international agencies, including the World Bank, the U.S. Agency for International Development, and the World Health Organization. He is currently Senior Research Associate at LTG Associates, Inc. He can be reached at:

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2Pacific Island political entities are typically divided among Melanesia, Polynesia, and Micronesia as follows. Papua New Guinea, Papua, Solomon Islands, Vanuatu, and New Caledonia comprise Melanesia. French Polynesia, American Samoa, Samoa (Western), Tonga, Cook Islands, Tuvalu, Tokelau, Niue, and Wallis and Futuna make up Polynesia. Palau (Belau), Guam, Federated States of Micronesia, Northern Marianas, Marshall Islands, Kiribati, and Nauru constitute Micronesia. (Lockwood 2004: 17-19). With the exception of Papua (an Indonesian possession comprising the eastern half of the island of New Guinea, of which Papua New Guinea occupies the western half) entities more fully incorporated into non-island states, such as Hawaii and Rapanui (both culturally Polynesian) are not included here.
Bibliography

AusAID

Banks, Glenn

Berlinerblau, Jacques

Bourke, R.M., M.G. Allen and J.G. Salisbury (eds.)

Dinnen, Sinclair

Fernandez, James W.

Filer, Colin

Filer, Colin and Martha Macintyre

Fortune, R.F.
Fraenkel, John  
2006  “Pacific Democracy: Dilemmas of Intervention.”  
http://www.opendemocracy.net/globalization-institutions_government/pacific_democracy_4135.jsp

Gibson, John  

Gibson, John  

Hammar, Lawrence; Operational Research Unit, Papua New Guinea Institute of Medical Research  
2006  “There are Meni Wom Forok in Nuigo: Summary Findings from Wewak.”  
Operational Research Unit, Papua New Guinea Institute of Medical Research.


Hood, Maria  

Larmour, Peter and Manuhuia Barcham  

Lockwood, Victoria S.  

Macintyre, Martha  
Malau, Clement  

Manning, Mike  

Morgan, Michael  

Rich, Roland  

Royal Society, The  

Sen, Amartya  


Smith, Michael French  

Smith, Peter

Sullivan, Nancy (ed.)

Sullivan, Nancy, et al.

Uphoff, Norman

Wallman, Sandra

World Bank