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**APPLYING PRINCIPLES OF COLLABORATIVE MANAGEMENT OF
COASTAL RESOURCES TO ADAPTATION PLANNING AND
IMPLEMENTATION IN SMALL ISLAND STATES**

DRAFT

By

John Virdin

World Resources Institute, USA

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Applying Principles of Collaborative Management of Coastal Resources to Adaptation Planning and Implementation in Small Island States

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John W. Virdin

World Resources Institute, Washington, D.C. – jvirdin@wri.org

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I. Background: Vulnerability of Small Island States to Climate

Throughout the Pacific Islands atoll dwellers speak of moving their houses because of coastal erosion, of changing cropping patterns because of saltwater intrusion, and of changes in wind, rainfall and ocean currents (World Bank, 2000). Similarly, in the Caribbean Islands a growing number of homes, roads, airports and hotels located in low-lying coastal lands are completely flooded during hurricane season (Auvergne et al., 2001). These types of anecdotes are becoming more common, reinforcing evidence that small island states of the tropics and sub-tropics are some of the most vulnerable to extreme weather events such as hurricanes and cyclones.

Although they are not a homogenous group, small island states share common characteristics that make them inherently vulnerable to the types of extreme weather events mentioned above. These characteristics include their small physical size and the fact that they are surrounded by large expanses of ocean, possess limited natural resources, and are relatively isolated, to name a few (IPCC, 2001). In addition to these natural characteristics, socioeconomic trends such as growing coastal urbanization and population densities, greater numbers of squatter settlements, rapidly developing and poorly constructed infrastructure, and degradation of coastal ecosystems are all intensifying small islands' exposure to extreme weather events and rendering them increasingly vulnerable to such events.

Arriving on top of this increasing vulnerability, global climate change will likely exacerbate the current impacts of extreme weather events in small island states (World Bank, 2000). According to the most recent projections, climate change is expected to result in:

- General increases in surface air temperature for most small islands of roughly 2 to 5° C by 2080;
- Average sea level rise of as much as 5mm per year over the next 100 years;
- More frequent floods and droughts in four tropical ocean regions in which small island states are located;
- Increased coral bleaching and subsequent mortality due to higher sea surface temperature; and
- Increased saltwater intrusion into coastal aquifers and reduced freshwater supplies (IPCC, 2001).

With small island states becoming increasingly vulnerable to extreme weather events, and global climate change expected to exacerbate the impacts of these events, projected annual climate-related costs are likely to be staggering for many islands. For example, a recent World Bank study estimated that by the year 2050, annual losses related to climate change could equal as much as 1/3 of Kiribati's current gross domestic product (World Bank, 2000). Increasing damages of this magnitude will only deepen the divide between those countries that can afford to protect themselves from extreme weather events and climate change, and the majority of small island states that cannot.

II. The Need for Adaptation

Because the predicted impacts of climate change will likely result in such large costs to small island states, there is an urgent need for these islands to act now to shift their current development paths in order to reduce their vulnerability to these impacts, i.e. to adapt. However, information concerning the future impacts of climate change is still uncertain, so experts recommend that small island states focus on adaptation policies, or development paths, that would make sense even in the absence of climate change (Parry and Carter, 1997). These ‘no regrets’ policies are often targeted packages of natural resource management and disaster preparedness activities. For example, promoting adaptation to climate change in small island states by implementing large structural measures such as seawalls might not be necessary if sea levels do not rise as predicted at that particular site. Rather, natural resource management measures that enhance the capacity of coastal ecosystems such as reefs and mangroves to act as buffers against rising seas can help reduce the vulnerability of human settlements and infrastructure to climate change, while promoting ecosystem management and conservation at the same time.

Most of the adaptation policies that have been recommended for small island states consist of ‘no regrets’ activities, such as strengthened water resource and catchment management, protection and/or restoration of critical ecological buffers, land use controls, and soil and sand conservation, just to name a few (Kench and Cowell, 1999). In this sense, adaptation policies in small island states can be considered sustainable development policies that include natural resource management measures targeted to reduce the vulnerability of these islands to current extreme weather events and projected impacts of climate change.

How much progress have small island states made towards implementing such adaptation policies? While many islands have undertaken research on their vulnerability to climate change and produced an array of vulnerability assessments, by and large none of these islands has planned specific and concrete adaptation policies in response. These countries (like the rest of the world) have very little experience in determining how to plan national adaptation policies, or actually implement them.

In many small island states, communities have the most experience adapting to extreme weather events, as a result of a process that has historically been a co-evolution between social and environmental systems (Berkes and Folke, 1998). By definition, communities have learned and adjusted to extreme weather events, as well as gradual climate shifts, and those social systems that did not fail (Barnett, 2001). As governments in small island states begin to plan and implement adaptation policies that can reduce the vulnerability of these states to climate change, their success will likely hinge upon their ability to involve the communities and stakeholders that have been adapting to similar climatic impacts over many years. Fortunately, the current experiences of many of the small island states with collaborative management (co-management) of coastal resources can provide their governments with useful lessons on how to involve communities and stakeholders in the planning and implementation of national adaptation policies.

III. Using Principles of Co-Management of Coastal Resources to Plan and Implement National Adaptation Policies

3.1 What is Co-Management?

Co-management regimes represent collaborative strategies that incorporate institutional mechanisms to share the responsibility for management of the coastal resources between the government and the communities (Kildow, 1997; Singleton, 1998). Simply put, government enters into a partnership with communities and resource users to share various responsibilities for planning and implementing coastal resource management measures. Such systems recognize that

natural resource management policies are rarely successful without the involvement of the users they seek to influence. In this sense, co-management represents a systematic approach towards reaching consensus among multiple interests involved in the coastal resources, institutionalizing processes appropriate to the culture and location (Viridin, 2000). Similarly, as they will likely involve some combination of targeted natural and coastal resource management activities, small island states will need to plan and implement adaptation policies using a systematic approach that involves all of the multiple groups and interests who will likely be affected by climate change.



Co-management systems are unique in that they represent ecosystem-based management approaches to conserve and manage the coastal resources as a whole, rather than concentrating on individual resources such as specific fish stocks or beach sand supplies. In order for these approaches to be successful, the roles and responsibilities of the various players must be clearly defined from the outset.

The various roles and responsibilities of co-management systems include (Viridin, 1999):

1. Governments legally recognize community authority to manage coastal ecosystems, allowing for restricted access to these areas and community use or ownership claims;
2. Governments supervise resource assessments, collect data, etc., providing all of the technical information necessary for communities to make management decisions;
3. Governments, or NGO partners, initiate the dialogue and planning with communities, assisting the communities to organize informal management institutions if necessary;
4. Community representatives work with government, utilizing the available technical assistance, to create management plans for the coastal resources under their jurisdiction;
5. Communities recommend conservation measures, rules and regulations through the management plans;
6. Government works with communities to take the measures recommended in these management plans and include them in policy, giving them legal recognition and communicating these measures to various resource users;
7. Community institutions carry out the day to day management of the coastal resources under their jurisdiction, monitoring them to ensure compliance with the new rules and regulations; and
8. Government ensures that communication channels between the community institutions and the appropriate line ministry remain open, so that resource users can communicate any changes in the status of the resources, or any threats for which they need government assistance.

The above roles and responsibilities are not comprehensive and will of course be adapted to local contexts, but they serve to illustrate the process of involving the communities in the planning of coastal resource management policy, and in the implementation of that policy. The ability of the different groups to assume these roles and perform these responsibilities is generally the deciding factor in the success of co-management systems. Specific roles and responsibilities that are often critical for success are emphasized in Table 1.

Government (and external partners)	<ul style="list-style-type: none"> • Should enact policy or legislation that enables co-management, by providing communities with jurisdiction and control over the coastal resources, legalizing traditional roles and supporting local enforcement.
Extension workers (i.e. the external agents that assist communities to create and implement the system, can be government or NGOs)	<ul style="list-style-type: none"> • Should assist the community to define the problem; provide independent technical advice, ideas and expertise; provide any training necessary and assist in developing management plans. • Should draw out community insights with a participatory style of facilitation, processing the comments and guiding the community in reaching its goals. • Should provide the community with information as to how to proceed in the process to develop policy. • Should promote a process of social learning, opening the eyes of resource users to the pressing issues with the resources they depend on, and the threats confronting them, and urging the communities to search for appropriate solutions, challenging them to take collective action.
Communities	<ul style="list-style-type: none"> • Community institutions should be of the appropriate scale to the area's ecology, with defined boundaries. • Membership in the community should be clearly defined, with strong local leadership.

Because government resources in many small island states are limited, and resource users and communities are often spread over many islands and long distances, centralized coastal resource management regimes inherited largely from colonial experiences in most cases have not been effective (Adams, 1998). For this reason, more and more small island states are beginning to implement the co-management systems described in this section, in order to decentralize some of the management authority to the resource users. Such an approach requires that formerly top-down government agencies transform themselves into demand-based agencies, providing communities with legal support and technical assistance as needed, in order to empower them to manage their coastal resources. An excellent example of where this has happened recently can be found in the small island state of Samoa in the Pacific (see Box 1).

Box 1: Co-Management of Coastal Resources in Samoa

In order to respond to declining coastal resources, the Fisheries Division of Samoa began in 1995 to develop a policy framework that would enable communities and government to share coastal management responsibility, with financial support from AusAid. With this policy framework in place, the next year the government began to work with communities to develop coastal management plans, and provide them with any technical assistance they needed to develop such plans. By 1999, the Fisheries Division had assisted 61 communities to begin or strengthen coastal management, and 53 of these had created management rules and regulations.

Government implemented the system gradually, providing extension services to 10 communities a year to create coastal management plans. Extension officers would first meet with the community institution in authority, and if they were interested and willing to participate, the officers would meet with the entire community to negotiate the entire co-management process. These negotiations generally consisted of defining what responsibilities needed to be performed in order to manage the resources, and which of those would be carried out by government and by the community.

Sources: King and Fa'asili, 1998, 1999; Viridin, 2000

In summary, the key aspects of a co-management approach include:

- Clearly defined community jurisdiction over coastal resources, restricted access
- Community authority and ownership legally recognized
- Community rules and regulations for the resource are harmonized with national policy, and based on these policies in large part
- Government provides communities with information and technical assistance where necessary to assist in adapting policies to specific local rules and regulations
- Institutional mechanisms exist for communities to communicate needs to government and to take an active part in policy process
- Communities monitor and enforce rules in coastal area, receiving government assistance where necessary

3.2 *Applying the Principles of Co-Management to Adaptation Planning*

The principles or key aspects of co-management systems outlined briefly in section 3.1 are readily applicable to adaptation planning in small island states. Many of the islands around the world have conducted basic assessments of their vulnerability to climate change, and in some cases have begun to establish the capacity to continue to do so and revise vulnerability projections as new information becomes available. As the ongoing vulnerability assessment continues to yield the basic scientific research necessary to project climatic impacts and identify key vulnerabilities, small island states are now faced with the task of planning national adaptation policy responses to this vulnerability. As has been mentioned previously, there are several reasons why this planning process should involve the stakeholders and communities:

- Because information on future climate impacts is still uncertain, small island states are generally advised to pursue ‘no regrets’ adaptation measures that would make sense even in the absence of climate change, such as targeted packages of disaster preparedness and natural resource management activities. The success of these activities will invariably depend on the participation of communities and resource users.
- Natural resource management policies are very rarely successful without involving the stakeholders they seek to influence.
- Specific adaptation measures will need to be based on the socio-cultural and political context of the communities who will be most affected by them, and most capable of implementing such measures.
- By definition, communities have been adapting to climatic impacts for years if not centuries, and if provided sound information concerning projected impacts of climate change, will likely be able to recommend some successful strategies for adaptation.

Acknowledging the above reasons for their inclusion, how can small island states involve communities and the various stakeholders in the process for planning national adaptation policies? Initially, a government committed to planning a national adaptation policy should be willing to disseminate the results of vulnerability assessments to communities and stakeholders, and work with them to conceive adaptation responses. Co-management systems suggest several methods and principles for providing such technical assistance and participatory planning.

Community-driven adaptation planning begins with government educating communities about their vulnerability to climate change, based on recent experiences with extreme weather events. Extension officers from either government, or an external partner working with government such as an NGO, would:

- Assist a particular community to understand and define the problem (in this case, the community’s vulnerability to climate change);

- Provide that community with independent technical advice, ideas and expertise concerning how the resources and activities important to them are vulnerable to climate change; and
- Guide the community through joint problem solving and decision-making to recommend adaptation strategies to reduce this vulnerability. This might begin with the extension officer recommending some generic adaptation options for a specific vulnerability, such as reforesting mangroves to buffer against sea level rise, and the community adding and refining these options to fit their local context (Pomeroy et al., 2001).

Governments engaged in long-term adaptation planning might gradually include more communities in the process, in the same way that Samoan extension workers added 10 more communities to the co-management program each year. Similarly, a government might pick a focus group of 20 communities that is representative of the types of users who will be most affected by the various projected impacts. In many islands these communities or stakeholders would likely include some urban populations, as well as industry representatives and affected trade groups, depending on the stakeholders for particular sectors or activities that are vulnerable to climate change. The meetings and methods of extension will differ depending on the stakeholders – i.e. extension workers might present climate vulnerability to

a small group of village elders using a pen and flip chart, or in an urban area at a large town hall meeting with a computer and consensus-building or strategic planning software – but the process for participatory planning will likely be the same. This process is one of social learning, in order to inform resource users about the pressing issues with the resources they depend upon, and specifically the vulnerability of these resources to climate change. Through this process, extension workers should urge communities and stakeholders to search for appropriate adaptation strategies, and challenge them to take collective action (Berkes et al., 2001).

Box 2. Suggested skill for Extension Workers to Involve Communities in Adaptation Planning

The government staff or external partners who present the vulnerability assessments to communities and facilitate adaptation planning are one of the most crucial elements in the entire process. Extension workers should be equipped with the knowledge and skills they need to help train and equip the communities. These skills include leadership, situation analysis and problem solving, consensus building, value reorientation, basic biology and ecology, technology applications, and an understanding of vulnerability to climate.

Source: Pomeroy et al., 2001

To summarize, the basic components of co-management planning that could be utilized to develop community-driven national adaptation policies include (adapted from Berkes et al., 2001):

1. *Community entry and integration* – Government staff or external partners acting as extension workers identify the main stakeholder groups in the adaptation planning process, select communities or groups to include in this process, and begin a series of meetings or discussions to share the current science and research concerning climate vulnerability and build awareness of the threats.
2. *Participatory research and community assessment* – Extension staff then work with communities to identify the most important sectors or resources to that community, in order to determine their vulnerability to climate change. This step includes assessing the development goals and objectives of the communities, in order to understand how climate change may affect these.
3. *Education and Information* – Here extension workers and communities describe the nexus of the community’s development goals and key resources and the climate vulnerability assessment, demonstrating how these goals and resources are vulnerable to climate change.

4. *Core group mobilization* – Since community organization is the foundation of a co-management approach, core groups or local institutions will be needed to represent the users and work with the extension staff.
5. *Recommending adaptation policies and measures* – Extension staff would then work with the groups representing the communities to develop practical and localized adaptation options and measures.
6. *Policy development* – Based on the previous steps, extension workers would go back to the government agency or staff leading the planning process to incorporate that communities' recommendations for adaptation.

There are many specific details to the above steps that would depend upon island and local contexts, but hopefully these aspects of co-management systems can serve as a rough guide for governments of small island states to begin planning community-driven national adaptation policies.

3.3 *Applying the Principles of Co-Management towards the Implementation of Adaptation*

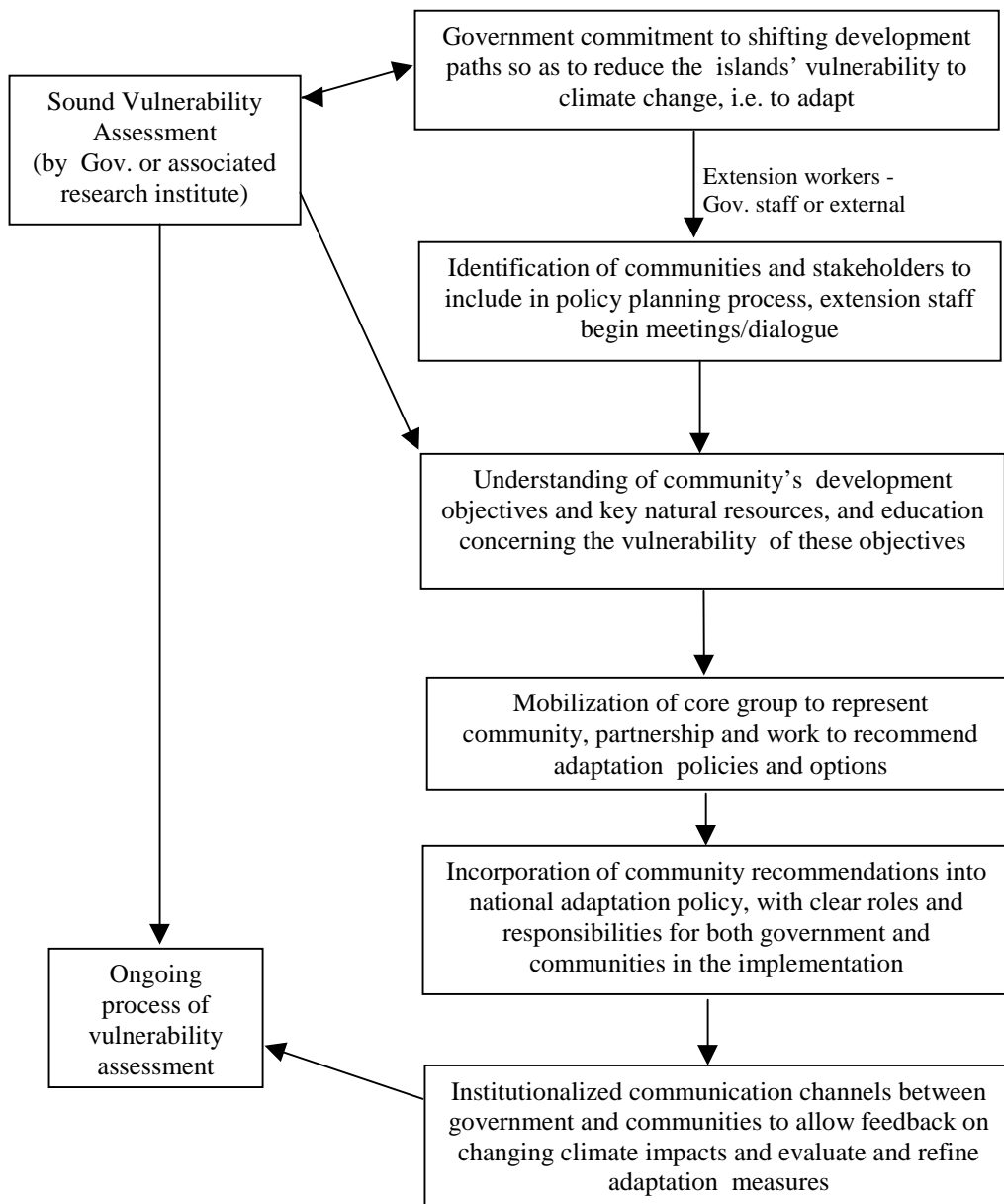
Having completed the planning process to produce a national adaptation policy to shift the country's development paths to reduce their vulnerability to climate change, the next question for small island states becomes how to implement such a policy. As mentioned previously, such policies can be anticipated to contain targeted packages of natural resource management activities, among others. While many of these activities might require initial capital investments by government, such as restoring dunes to buffer storm surge, the maintenance and management of these activities will ultimately depend on the users and communities. There are two key elements of co-management systems that could be included in national adaptation policies to assist with their implementation:

1. Legal recognition of community jurisdiction over certain natural resources and the management responsibility for them; and
2. Institutionalized communication channels to allow communities to communicate climatic impacts and any adaptation needs (Virdin, 2000).

The specific adaptation measures and activities included in the national policy should identify the roles for both government and the communities in implementation, as the two would have entered into a partnership to reduce the islands' vulnerability through the planning process. This would in essence represent a legal recognition of community jurisdictions over specific ecosystems and natural resources, and the community's role in management and implementation of adaptation measures. Similarly, as government agencies and associated research institutes continue to assess islands' vulnerability to climate change, community feedback and experiences can provide critical information for these assessments. In addition, communities can assist the government to revise and refine adaptation measures, since vulnerability is dynamic and policies will have to be flexible to continue to adjust to changing conditions. For this feedback to happen, adaptation policies will need to institutionalize channels of communication between community representatives and government agencies, streamlining a process that is often very difficult and time-consuming in many islands. The benefit of such institutions will be that adaptation policies will be able to respond to changing conditions of vulnerability, rather than sending government planners back to the drawing board every time new climate science and information becomes available.

3.4 *The Full Cycle of Planning and Implementing Community-Driven Adaptation Policies*

The generic process of utilizing co-management principles to develop and implement national adaptation policies in small island states can be summarized as follows:



The above process is simplified to illustrate some of the basic applications of co-management systems to national adaptation policy planning and implementation in small island development states. This process is meant to be illustrative of the ways that governments committed to adaptation can include those most affected by climate in the process. These recommendations are certainly not comprehensive nor are they intended to be hard rules, but hopefully the starting point for country and island-specific processes of adaptation. These should not be particularly expensive processes. For most co-management systems, the main cost is in additional staff and capacity for the extension. The Samoa Fisheries Extension Program for example, operates at an average annual budget of roughly US\$81,000 for on-going assistance to about 60 communities and extension of the program to 10 new communities per year (World Bank, 2000).

3.5 *Recommendations to the OECD*

Many small island states are already beginning to examine potential processes for adaptation planning. Since these states are some of the most vulnerable to climate change, adaptation is a large priority for many of these governments. However, there is little experience with actually planning and implementing specific adaptation policies that can shift current development paths to reduce vulnerability. Further research and cases studies in small island states where a solid foundation of vulnerability assessment work has been done and where government is committed to adaptation, could provide other interested parties around the world with useful examples for the practical integration of adaptation and development. An external partner like OECD could conduct a country-wide case study in a small island state where good vulnerability information exists and a solid government commitment, in order to examine how such countries can plan and implement development paths that promote adaptation, and involve the communities and stakeholders in the process.

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