FOCUS ON:
DECENTRALIZING COASTAL MANAGEMENT

INTERCOAST NETWORK

INTERNATIONAL NEWSLETTER OF COASTAL MANAGEMENT

Coastal Resources Center, University of Rhode Island
Narragansett, Rhode Island USA • #42 • Fall 2002

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A Spotlight on Decentralization: Removing the 'Brackets' Constraining Effective Coastal Management

By Donald Robadue, Jr.

As this issue of *InterCoast* is going to press, the World Summit on Sustainable Development (WSSD) is getting underway in Johannesburg, South Africa, amid considerable concern about whether world leaders will take the title of the draft conference document — Plan of Implementation — seriously and commit themselves to specific deadlines and funding.

Over the past 10 years, Chapter 17 of Agenda 21, which set out programs to protect oceans, seas, and coastal areas as adopted at the Rio Conference on Environment and Development in 1992, has proven to be a useful tool for getting national attention for marine and coastal issues in most countries. Now with the WSSD upon us, we must reflect upon what has been learned and make the next decade one of serious decision-making and commitment. We need investments and actions at all levels to preserve and wisely use what we now have. This means preventing stressed ecosystems and their people from going over the brink, and in some cases, it means pressing hard to restore degraded systems. It is these systems that have great potential to improve the quality of life.

The Call to Action from the Global Conference on Oceans and Coasts held in Paris in December 2001, made key recommendations

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Decentralized Coastal Management

By Kem Lowry

One of the most sobering realities about contemporary environmental management is how difficult it is to translate environmental goals into effective action. The result is what might be called an 'implementation gap.' This implementation gap refers to inconsistencies between policy goals conceived at one level or branch of government and the translation of those goals into specific resource management activities at another level or by other agencies. It also refers to the gap between management actions at all levels of government and actual improvement in environmental conditions.

Many of the tasks associated with designing inter-governmental systems of environmental management have to do with allocating some authority and responsibility between central government agencies and provincial and local agencies.

Decentralization has become a convenient way of characterizing this process. Relationships between central government and local authorities may range from coercive to cooperative. Authority and responsibility may also be distributed in a variety of ways. Availability of resources for management, technical assistance, and administrative support can vary enormously in different decentralized relationships. Moreover, there is a dynamic quality to efforts to decentralize that is often not reflected in textbook treatments of the process. Central government agencies (or officials) may decide to recapture authority transferred to subordinate units, such that over time authority may ebb and flow among agencies and between levels of government.

What is Meant by Decentralization?

Administrative decentralization of environmental governance is a means of redistributing some authority for the management of human uses and activities affecting resources from central government authorities to subordinate units of

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INTERCOAST NETWORK
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Editor: Noëlle F. Lewis
Designer: Matt Castigliego

InterCoast is an international newsletter of coastal management, published three times each year by the Coastal Resources Management Project of the University of Rhode Island's Coastal Resources Center (CRC) and the U.S. Agency for International Development (USAID). Funding to publish InterCoast is provided by USAID's Global Environment Center.

InterCoast s objective is to facilitate information exchange on coastal management issues. Readers are invited to contact Noëlle F. Lewis with questions and comments.

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for the WSSD on six ocean and coastal issues, including capacity building for governance. It warns, "integrated coastal management at the local scale will not flourish unless national governments provide national enabling conditions, including policy, legislation, and coordinating mechanisms." Recommendation 3.3 is particularly relevant to the theme of this issue:

[Take decisive actions to ensure effective management measures for the coast areas of each nation, moving from the implementation of demonstration projects to a more complete coverage of each nation's coastline.]

The Call to Action proposed targets and deadlines, one being twenty percent of coasts be under management by 2012 and sixty percent by 2022.

The "Plan of Implementation" to be deliberated on at WSSD was designed with those points still remaining to be discussed identified by being placed in brackets in the text (see website http://www.johannesburgsummit.org/html/documents/summit_docs.html). Being held inside these brackets is the language that reflects the urgency of deadlines, fairness, and commitment to ocean and coastal management in the Call to Action. Let us hope that world leaders are bold enough to delete these brackets and unleash the creative energy and commitment which the articles in this issue of *InterCoast* clearly demonstrate is already present in Africa, Asia, Latin America, and the South Pacific.

Of these 'bracketed' proposals, there are ones of special concern to the coastal management community. One of these is Paragraph 146 on good governance. This paragraph needs to be 'unbracketed' in its entirety. Its topic sentence reads as follows:

[Recognizing that good governance at the national level is essential for sustainable development, all States should strengthen their Government institutions, including promoting the rule of law, improving legal structures and enforcing existing laws that support sustainable development.]

The rest of bracketed Paragraph 146 calls for access to information, effective public participation, cooperation, and coordination with local governments, indigenous groups, and community-based organizations. These need to be transparent, non-discriminatory, and fair institutions and procedures.

Good coastal governance is increasingly likely to mean a decentralized structure that enables the creation of strong programs and initiatives at the subnational and local levels. It also means that bold and creative local initiatives are finding a number of ways to organize themselves into larger initiatives that might include entire districts, provinces, or states.

Heads of state from the countries participating in the WSSD will need to agree and make commitments for a global plan of implementation. As the Paris conference concluded, "There are currently close to 100 coastal nations that have developed some type of integrated ocean or coastal management initiative either at the national or local levels, indicating an almost doubling of effort" over the past 10 years. In many cases the ideas, people, and initiatives are already present in coastal countries, just waiting for the green light to proceed. More evidence of this is set out in the following pages of this issue.

Most of these articles describe pioneering efforts to build upward from what Lowry (page 1) calls 'devolved experiments' and 'local entrepreneurship.' In countries where legal responsibility and administrative control has been held close to the center, Lowry offers a detailed road map for

understanding what authority might need to be shifted to achieve the improved central/local government relationships which are at the core of what good governance means to coastal management.

Tulungen (page 4) reports on a ground-breaking decision by the Minahasa, Indonesia, legislature to create an enabling framework for community-based management of coastal resources benefiting 150 villages in Indonesia.

Torell, Luhikula, and Nzali (page 6) describe how action planning at the district level, sponsored by Tanzania's national coastal program, can be the best way to introduce coastal management to all 15 districts.

Mexico is presently working out the best way to decentralize its federally-dominated environmental management system. It currently offers little authority to states or municipalities for administering coastal and marine areas and resources. Martínez and Díaz (page 8) describe a pioneering effort to negotiate a conservation and sustainable development agreement with a communal land holding group in order to protect one of the most important desert islands in the Gulf of California island park system. Villalba and Robadue (page 10) explain how resource users and two municipalities initiated an estuary management plan in Santa María Bay and invited state and federal officials to participate. This was done with the hope of incorporating the findings and actions from an integrated strategy that was prepared with extensive public involvement into standard government plans and regulations.

Fiji has been working to adopt comprehensive national environmental legislation for more than a decade, so far without success. Its first national workshop on coastal management, held earlier this year, yielded ten consensus findings that place a great deal of importance on continuing to emphasize work in villages, districts, and provinces. This is with the expectation that lessons drawn can inform the design of a future national policy and program (page 31).

Torell (page 16) takes this learning theme much further in her review of initiatives in Tanzania and Kenya. The paper describes the productive interplay between a national program and a learning-based approach in projects that include livelihood and development components as part of coastal management. The three cases provide tangible examples of what good coastal governance looks like, and how it might be achieved. In addition, it illustrates the 'practical measures insuring accountability' called for by Lowry.

Balgos and Ricci (page 14) trace the evolution of coastal management in the Philippines from experimental marine protected areas to greater involvement of a number of municipalities. These were supported in the 1990s by national programs that specifically targeted lower levels of government. Coastal provinces, which typically encompass an entire island, are now emerging almost spontaneously as a new level for coastal planning and implementation. This will help those municipalities that are having trouble getting started, as well as to address issues of common concern to an entire province or region. They examine the mechanisms by which the call for and commitment to coordination above the level of the municipality emerges.

The cases mentioned so far have drawn mainly from tropical countries. Govan and Hambrey (page 20) explore the strengths of participatory, local management of marine and coastal resources worldwide, including the small island nations of the Pacific. The paper also cites examples of local and regional initiatives proliferating in the United Kingdom. It then examine why the UK has not yet created an overall framework for good coastal governance that would help lower-level programs flourish, much along the lines suggested by Lowry.

As Lowry concludes, "for coastal managers, establishing a legal or administrative context for collective self-management of resource users is perhaps a more relevant answer ... the central point is that capacity building is more than simple skill development."

'Removing the brackets' on key statements in the WSSD Plan of Implementation means setting targets, deadlines, and making institutional and financial commitments for sustainable development. These are the very things needed to leverage the already extensive commitment and potential that exist in the world's coastal countries, regions, provinces, districts, and villages.

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Landmark District-level Legislation for Community-based Coastal Management: Minahasa, Indonesia

By Johnnes Tulungen

Indonesia's national regional autonomy act of 1999 gave provinces jurisdiction over coastal and marine resources out to 12 nautical miles and districts control out to 4 nautical miles. Now, for the first time in Indonesia, the legislature of Minahasa District in North Sulawesi province has taken the pioneering step of creating a legal framework for community-based coastal resources management, potentially benefiting 150 villages along the district's 260 km coast.

The new law, a first among Indonesia's 400 coastal districts, sets out key principles, goals, benefits, and priorities for community-based management, transparency, and accountability. It also recognizes traditional rights. It creates an Integrated Coastal Resources Management Board to oversee the process of preparing and approving community plans to integrate the different concerns among stakeholders — government, private sector, and community — as well as to coordinate among different sector interests within the government institutions themselves. The Minahasa Fisheries and Marine Office has been assigned the role of providing technical assistance to villages. Adoption of the new law also makes financing village-initiated plans easier.

The law is the culmination of five years effort in collaboration between *Proyek Pesisir* (a United States Agency for International Development-funded program led by the University of Rhode Island's Coastal Resources Center), the North Sulawesi's Regional Development Planning Board, and other agencies. Pilot projects were carried out in Blongko, Talise, and Bentenan-Tumbak (See *InterCoast* #38, pages 31-33).

The new law enables Minahasa to avoid a common hazard in coastal management: pilot projects that never move beyond the pilot stage into widespread adoption. In fact, replication of the community-based management approaches pioneered by the project is already occurring in the sub-district of Likupang. Here, 24 coastal communities, supported by a consortium comprised of the Minahasa fisheries office, about one dozen nongovernmental organizations (NGOs), and local universities, are initiating activities such as creating marine sanctuaries.

Formulating the new law involved bottom-up community participation and involvement of the private sector, NGOs, and the universities in Minahasa. This constituency strongly voiced its willingness to manage and protect their highly-valued coastal resources that are vulnerable to human exploitation. The village-based pilot programs had already resulted in locally-approved plans and village ordinances to implement marine reserves, no-take zones, mangrove conservation and reforestation, appropriate shore erosion control measures, and supplementary livelihood activities (see page 5). In turn, these efforts were supported by the district. The law will now provide an important new level of institutional commitment for upholding local regulations as well as carrying out non-regulatory measures.

The process to develop the law began with an assessment of the issues requiring local regulation. This initial step articulated issues from a community-based perspective. Formulation of the draft law was carried out with technical assistance from *Proyek Pesisir* and an informal group of 10 local experts from the public, private, and academic communities during 2001. This group prepared an initial 'white paper' for discussion, followed by an 'academic' draft that was then distributed and discussed in a variety of meetings and events, including field trips to the pilot project sites.

Central government agencies were also consulted, including the Department of Fisheries and Marine Affairs of the Republic of Indonesia. The draft law was also the topic on talk shows and interactive discussions in radio and television. The academic document and 'regulation' drafts were presented at local, national, and international conferences to obtain even broader inputs, ideas, and comments. In December 2001, after implementing all the above steps, the regulation draft was submitted to the Minahasa House of Representatives to enter the enactment process. This process follow the formal mechanisms in the legislature, including the establishment of a special task force, public hearings, and 'final meetings' to enact the regulation.

The enactment of the local law on community-based coastal resources management is not the final chapter of the story. There are still many possibilities the law will not be fully utilized or enforced; thus, it is essential that the constituency which was mobilized to pass the law continues to remain engaged with the Integrated Coastal Resources Management Board in promoting its use by Minahasa's villages and evaluating its implementation. This law is an example of how the creation of a

decentralized national coastal management program in Indonesia could effectively support the growth of community-based efforts.

Proyek Pesisir is now assisting Minahasa as it begins to implement the new law. This includes setting up and operating the Integrated Coastal Resources Management Board and working with the Fisheries Office to prepare a strategic plan for getting budget appropriations. They are also helping to meet the expected increase in demand for technical assistance by villages throughout the district.

The original pilot project sites of Blongko, Talise, and Bentenan-Tumbak have become essential study tour stops for those interested in how to do community-based management the right way. Similarly, the example set by Minahasa should be closely watched both by the hundreds of other coastal districts in Indonesia and other countries where the need for integrating mechanisms to further coastal management cannot wait for passage of a national law.

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Supplemental Livelihood Program for Women

By J. Johnnes Tulungen

One of the management objectives of the coastal resources management plan in Talise, Indonesia, is to increase agricultural productivity for selected commodities including, but not limited to, vegetables, beans, and spices. This is being done to introduce new appropriate agricultural technology in the village, and thus create alternative income and food opportunities for the small island communities. In February 2002, *Proyek Pesisir* provided trained interns to help community groups, especially women's groups, develop a demonstration plot. Small grants were also provided to buy seeds and fertilizer.

Preparing food for market

Women and students from the junior high school in Talise participated. Ten groups were formed of two to three members each. After being trained on how to prepare the soil, plant the seeds, fertilize, and take care of the plants, *Proyek Pesisir* also provided training on the financial management of the program. In May 2002, some plants were growing very well and some were harvested.

Junior high school students preparing demonstration plot

The initial market for selling the produce came from neighboring villages. However, community members also benefited by buying these vegetables; prior to being available, community members had to go to the main market in Likupang (1-2 hours ride by boat).

The demand is growing for such produce, and more families are planting their own yards. This is providing a good nutritional diet and possibly additional income for the family. In addition, the program has created a leisure/social activity for the community women, especially those who are jobless.

Providing alternative income for coastal communities, especially for women, is an important part of coastal management. Additional sources of income reduce pressures on fishing resources, reduce the potential for harmful actions, such as coral reef bombing and use of cyanide for fishing, and increase disposable income for education and general community welfare.

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Reflecting Upon the Experience of District ICM Action Planning in Tanzania

By Elin Torell, Gratian Luhikula, and Lewis Nzali

As Tanzania is making progress towards improving the management of its coastal resources, one focal area is district integrated coastal management (ICM) action planning. This is considered an essential element of implementing the proposed Tanzania Integrated Coastal Management Strategy, prepared by the Tanzania Coastal Management Partnership (TCMP). TCMP is a joint initiative between the government's National Environment Management Council (NEMC), the United States Agency for International Development (USAID), and the Coastal Resources Center of the University of Rhode Island (CRC). It is part of the USAID Tanzania's Strategic Objective Two that aims to establish the foundation for adoption of environmentally sustainable natural resources management.

One key goal of the strategy is to balance national and local interests by supporting planning and integrated management of coastal resources and activities at the local level. Studying different methods for implementation, the TCMP determined that district action planning is a suitable mechanism for implementing the national ICM strategy at the local level. This decision was in part influenced by the positive experience from the Tanga region, where the Tanga Coastal Zone Development and Conservation Program is successfully stewarding resource management through action planning. (For futher informaton on the Tanga Program, see page 16 or website http://www.iucn.org/themes/wetlands/tanga.html)

The Local ICM Action Planning Program, promoted by TCMP, encourages coastal districts to implement the strategy by completing district-wide action plans. Applying the strategy through local ICM action planning is anticipated to move Tanzania's coastal districts from the highly centralized system, inherited from the colonial era, by complementing the ongoing efforts in local government reforms. Now making progress, the Local Government Reform Program (LGRP) aims to transfer the responsibility of managing local affairs, including natural resources, from the central government to local government authorities. Assisting districts in preparing, adopting, and maintaining action plans, the Local ICM Action Planning Program is what Lowry (see Lowry, page 1) calls 'devolved experimentation.' The local action planning effort began in two pilot districts: Bagamoyo and Pangani, with guidance from TCMP. The experiences from the pilot districts are expected to build a foundation for sustainable action planning in all coastal districts.

Mikumi National Park, Tanzania

What is an Action Plan?

Action planning starts with an issue identification and prioritization process. Once completed, an action plan is prepared to address key issues and find solutions to specific problems that have been selected during the issues identification and prioritization process. An action plan focuses on solving priority issues through specific actions that are targeted at the causes or effects of the underlying problems. Hence, action plans provide guidance on activities to reach clear and achievable goals. Action plans are supposed to be relatively short term, aimed at jumpstarting management activities, which may or may not be accompanied by a longer-range planning effort. In terms of participation, action plans aim to empower those affected by the specific issues and those involved in planning and implementing the actions.

Developing Local ICM Action Plans

The districts of Pangani and Bagamoyo were carefully selected to be the first districts to prepare district action plans under the Local ICM Action Planning Program. The two districts were considered pilot studies because they tested the action planning guidelines produced by TCMP. Before selecting Pangani and Bagamoyo, which both applied to TCMP to become part of the action planning program, the TCMP Core Working Group did an assessment

of the readiness for ICM action planning in the coastal districts of Tanzania. Apart from fulfilling the criteria for ICM action planning readiness, Pangani and Bagamoyo were selected because one (Pangani) represented a district with experience from action planning — its involvement in action planning through the Tanga program — and the other (Bagamoyo) represented a district that was inexperienced. For both districts, the action-planning program was attractive because it provided an opportunity to develop and implement constructive ideas for improving the livelihoods of coastal communities and preventing destructive use of coastal resources.

Findings from the Pangani and Bagamoyo Workshops

After completing the first year of district ICM planning, the TCMP organized reflection workshops in Pangani and Bagamoyo. The workshops were held in October 2001. Each workshop brought together between 30 and 40 participants from the districts and TCMP. From the workshops, the key lessons learned were:

Operate through small working groups where the participants are actively engaged in the planning process

The first year of district action planning showed it is essential that the district working-group members be engaged in the planning process. Although the district working groups include approximately 20 persons, it turned out that less than half of the group members were actively engaged in writing the plan. This may not be a problem if the writers have a good relationship with the rest of the group members, and if these members are involved in reviewing the plans. One concern in Pangani and Bagamoyo was that all working-group members received allowances even if they did not do any work. This is unfair to those who did work. Hence, the trick is to find a way to engage the key stakeholders and give those who do the work a suitable reward, while not paying sitting allowances to those who do not actively contribute.

Draw upon the expertise and experience that exists within already existing ICM programs

Although the action-planning process may be tied to other ongoing programs, it should be a new initiative in the district. Overall, the participants found the experience gained from the Tanga program in Pangani helpful because it allowed the district participants to build the process on their prior experience. In addition, as a result of the Tanga program, the capacity and framework for action planning was already in place. People at the village level were aware of the positive aspects of action planning — something that was missing in Bagamoyo. On the other hand, the already existing projects served to hamper the creativity of the action-planning process since the participants had a tendency to keep to their old habits instead of using the guidelines to conduct the action planning. For example, in Pangani, the ICM working group decided not to engage villagers in preparing a new issue identification, but to draw upon the issue identification conducted within the Tanga program several years earlier.

Ensure that villagers are continuously engaged in designing and implementing the action plans

According to the guidelines, stakeholder participation is a key component to district action planning. The experience from Bagamoyo and Pangani showed that action planning is a good way to engage villagers during the national coastal strategy process. Stakeholder consultations impart the perception of stewardship at an early stage. They also establish a flow of information between national, district, and village levels.

The overarching roles and responsibilities of district staff must be taken into account when setting up a time frame for the action planning process

It takes about six to nine months to complete an action plan, but the experience from Pangani and Bagamoyo showed that there are factors outside the immediate control of the district action planning team that may delay the process. One problem is that the district staff is overloaded with work. Hence, district action planning is only one among many tasks on the district working group participants' agenda, and it may often be hard to get things done on time. When creating the task plans in both Bagamoyo and Pangani, the roles and responsibilities of the district staff were underestimated. The reality is that the staff act like fire fighters, tending first to the most urgent tasks.

Capacity building is essential for the district action planning to work

Potential capacity building needs are broad, spanning from general ICM skills to specific technical expertise and communication skills. The capacity of the Tanzania districts to carry out action planning is low, but the district action-planning program offers various elements of capacity building to the district staff and their working groups. In Pangani and Bagamoyo, TCMP facilitated training on a range of topics relevant to ICM. As part of the preparatory stage, the district staff was trained in coastal ecology, facilitation skills, and Participatory Rural Appraisal (PRA). These training workshops were found to be useful (e.g., they informed the district staff about coastal issues and trained staff on skills communications.)

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Toward the Sustainable Use of Espírtu Santo Island Reserve, Baja California Sur, Mexico

By María Elena Martínez Delgado and Antonio Cantú Díaz Barriga

Much of Mexico's coastal lands are held in common and managed by associations known as *ejidos*. A key change affecting the coast is the constitutional reform to Article 27 which was adopted in 1994 allowing *ejidos* to sell off parts of the common lands to the private sector. These sales can even include common lands that have been declared as federal natural protected area, as in the case of the Island of Espíritu Santo in La Paz Bay, Baja California Sur.

In the Gulf of California basin, there are nearly 900 large and small islands. In 1978 the entire system was declared as the Gulf Island National Refuge for migratory birds and endemic species. The Island of Espíritu Santo is located close to the City of La Paz and receives about 30,000 visitors per year and supports twenty eco-tourism businesses.

In October 1976, a presidential decree transferred title of the Island of Espíritu Santo to the Bonfil *ejido*, a unique event in Mexico. The general assembly of the association of Bonfil *ejido* petitioned the agriculture ministry and its certification program for *ejido* rights and land titles, to allow 90 hectares of Playa Bonanza, one of the largest beaches on the island, removed from communal status and subdivided into parcels. Individual property titles were then issued allowing sale of the properties for tourism development. This occurred regardless of a national park law stating there was to be no physical alteration to flora and fauna.

In response, the Conservación de Territorio Insular Mexico (ISLA) developed a conservation initiative in 1997 with funding and support from a group of donors including The Nature Conservancy, the U.S. Agency for International Development, the government of Japan, The David and Lucile Packard Foundation, Homeland Foundation, Sweet Water Trust, and PEMEX. The initiative's intent was to help the newly created Gulf Islands park system carry out urgent measures to protect the marine and island ecosystems in Loreto and Espíritu Santo.

ISLA focused on Espíritu Santo and brought together stakeholders, including park managers, public officials, the *ejido* leadership, fishers, tourism service operators, the academic community, and local and international environmental groups. The intent was to develop a program for island management that could be based upon a shared vision of commitment to conservation, while respecting individual interests and needs.

In 1998 work began to build awareness on conservation issues concerning how the Bonfil *ejido* utilized its natural resources. A group was formed to discuss the legal framework governing the island and the responsibilities of the *ejido*. In addition, park managers were preparing a 30-year conservation plan for the island aimed to conserve the sensitive ecosystem and allow only low-impact activities.

The Bonfil *ejido* had insisted upon putting forward its development proposals for Espíritu Santo, which were rejected by park managers and environmental agencies because they did not incorporate conservation measures. Bonfil *ejido* then changed its approach and helped lobby the National Ecology Institute for funding to prepare a management plan for the Gulf Island. This work was led by the Interdisciplinary Center for Marine Sciences of the National Polytecnical Institute (CICIMAR/IPN), and financed by the Mexican Trust for Nature Conservation.

ISLA was brought in as an advisor to the Island Park Reserve office for Baja California Sur as well as the *ejidos* and CICIMAR. For the first time, community involvement was a central feature in preparing a park management plan. ISLA, with the help of the Mexican Environmental Law Center (CEMDA), acted as a mediator in conflicts over park management rules which needed to accommodate the rights, responsibilities and authority of all the public, federal, and state users.

The Bonfil *ejido* and ISLA analyzed possible low-impact development options for the *ejido*. These included an eco-tourism enterprise, agricultural projects, and a pearl farm (one of the traditional uses of the Gulf Islands). Unfortunately, one of the small *ejido* groups went ahead and built a set of cabanas on an island parcel in 1997. In 2000 the Federal Environmental Law Enforcement Agency, PROFEPA, acted to demolish the cabanas. This enforcement action signaled that the Mexican government would not tolerate illegal construction anywhere on the Gulf Islands.

Scuba diving on coral reefs is increasing

The Bonfil *ejido* and ISLA then developed a proposal to purchase the 90 hectares of land which had been legalized for private sale. The group also searched for a legal mechanism to insure all land held in common would be maintained in its natural state.

A draft formal agreement, "Collaborative Agreement for Conservation and Sustainable Development of Espíritu Santo Island," was prepared and focused on island conservation while promoting economic development for the Bonfil community.

A negotiation process began, key factors for success included clear and rapid lines of communication among the government agencies, foundations, and local actors.

Once the collaborative agreement was signed, the search began for the right legal approach for buying the privatized *ejido* land. Among the options were leasing the sites, outright expropriation, a purchase agreement, and an easement. An analysis indicated the tool which best met all parties needs was outright acquisition. This was the only approach viewed as legally binding over the long term under the existing agriculture law. The process began with a property value assessment. One proposal was that the land be sold for one-half peso per square meter (about US 50 cents). The Secretary of Environment, Natural Resources, and Fisheries replied with an offer of only 0.2 pesos. (about US 10 cents), justifying this low price out of concern for not raising the price for other conservation-oriented land acquisitions in the country.

ISLA proposed that a fund also be established to support sustainable development and agriculture ventures both on the island and mainland holdings of the Bonfil *ejido*. This recommendation was received positively, and steps needed to carry out the agreement began. However, the process was delayed as a consequence of the change in federal government. Fortunately, the agreement was concluded favorably in July 2001. The two islands were reincorporated into the Gulf Islands National Park and a fund of US$3,270,000 was established for the benefit of the *ejido*. Another group, FUNDEA, proved instrumental in the negotiation to obtain the 90 hectares and have them placed under the management of the National Protected Areas Commission. A key factor for future success will be to work with the *ejido* to carry out sustainable income-generating projects such as the proposal for pearl culture in San Gabriel Bay within the island system.

This success has initiated other very positive developments such as the recent commitment by the government to move ahead to complete the ecological master plan for the gulf and to consider extending the Gulf Islands Park jurisdiction to include adjacent marine waters, which has been a limitation of the Island Parks system up to now. In addition, the state of Baja California Sur is supporting the process now underway to create a model coastal zone program for the state.

In carrying out the special process to protect Espíritu Santo, ISLA was able to contribute to a new model for sustaining conservation programs which holds promise for other places in the Gulf of California and the Baja peninsula.

An important lesson learned during this process is the importance of looking carefully at, and taking advantage of, special opportunities that can lead to success. In this case, it proved possible to go from an initial proposal to carrying out a participatory process to solve a local problem, to influencing local and regional planning, and finally, gaining national attention.

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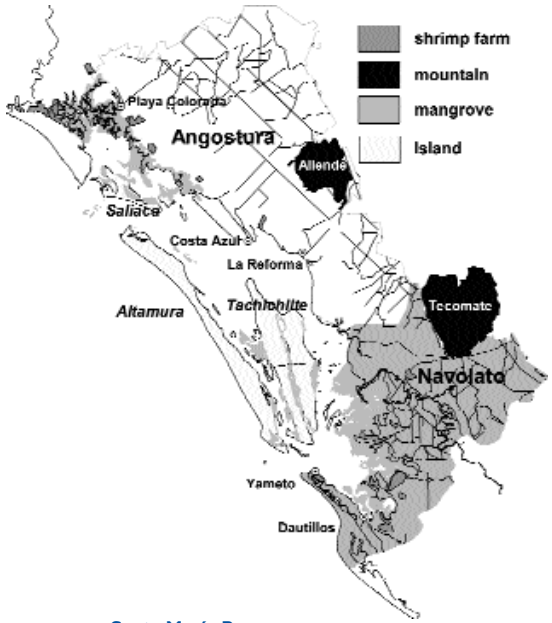
Gulf of Mexico shore

Just in Time: Conservation and Development Strategy for Santa María Bay, Mexico

By Armando Villalba and Donald Robadue Jr.

The resource users of Santa María Bay in Sinaloa, Mexico, have embarked upon a path-breaking initiative to prepare a conservation and development plan which will weave together the sectoral policies and highly fragmented administration of bay uses into a coherent vision and integrative structure for bay decisionmaking. This project was not the brainchild of state or federal environmental officials, but of leaders from the coastal municipality of Angostura who, in 1998, requested help from the Autonomous University of Sinaloa (UAS). The UAS appealed in turn to Conservation International's (CIMEX) regional office based in Guaymas, Sonora. This request for help coincided with CIMEX's interest in carrying out practical projects to put Mexico's recent environmental laws into action. In 1978 all of the nearly 900 islands in the gulf were declared patrimony of the Mexican federation and included in the Gulf Islands Flora and Fauna Refuge. Santa María Bay, along with eight other areas in the gulf, has been identified as among the 32 wetland areas in the nation of highest conservation priority.



Santa María Bay area

Santa María Bay is located on the southeastern coast of the Gulf of California. It is connected to the gulf by northern and southern entrances and has a surface area of almost 50,000 hectares. The bay has over 90 islands which are protected through the Gulf of California Island Park system. The three largest include Altamura (a 43-km long barrier island), the interior islands of Talchichitte, and Saliaca. The planning area for the management program for the conservation and development of Santa María Bay includes the political boundaries of the municipalities of Navolato and Angostura, which in turn are located within the coastal watersheds of the Mocorito and Culiacan rivers. Agriculture is the main economic activity and covers most of the valley's coastal plain. Two low mountain ranges (the Sierra de Allende and Sierra El Tecomate) have peaks of 350 to 400 meters and remain covered with native vegetation and trees. Shrimp fishing is the main source of income for the five communities located along the bay's shores. These are Dautillos, Yameto, La Reforma, Costa Azul, and Playa Colorada.

There are almost 7,000 hectares of shrimp farms in the tidal flats adjacent to the mangrove forest which borders much of the shore and islands. South of the fishing center of La Reforma, the tidal flats of Malacatay support duck hunting promoted by a private club and reserve called Patolandia. At the southernmost part of the bay, a group of farmers from Montelargo are producing salt by evaporating seawater within the tidal flats.

During the late 1980s and early 1990s, Mexico made substantial progress in creating the legal and administrative basis for protecting its marine and coastal resources. This included adopting the General Law of Ecological Balance and Environmental Protection (1988, revised in 1996) and unifying federal agencies involved in natural resource conservation and economic development — Secretary for Environment and Natural Resources (SEMARNAT).

During the remainder of the 1990s, SEMARNAT and several conservation groups have focused on putting these general policies and initiatives into action, working both at the regional level and in site-specific conservation programs. At the regional (gulf-wide) level, the government has initiated the preparation of one of the county's first Marine Environmental Plans. This massive undertaking has advanced to the information gathering and characterization stage and was expected to take more than a decade to complete. However, efforts have been placed on a much faster track following the announcement of the Nautical Route tourism project in early 2001, which is a plan to build or upgrade 24 recreational marinas around the Gulf of California and Baja peninsula to jumpstart tourism development in the region.

Santa María Bay is typical of much of the gulf shore, where no single lead agency is taking responsibility for integrated planning and decisionmaking. In addition to the Gulf Islands program, several other federal programs hold a piece of the ecosystem management puzzle for the bay. Key among these include the program for environmental plans, which are usually prepared in conjunction with state authorities highlighting

a key development sector, such as tourism or mariculture, as the unifying theme for the planning process. Decisions covered in these plans include allocation of uses for coastal and marine areas, as well as development guidelines and regulations. It is becoming more common for such plans to be prepared for special eco-regions of a state, such as a coastal zone in the case of Sinaloa.

In addition, several types of protection and conservation areas can be declared for marine and wetland areas under federal rules. For the immediate coastal strip, where the federal government has jurisdiction over the beach and bay zone, a program is in place to clearly identify the federal shore zone (ZMFT), identify uses that do not yet have legal concessions to occupy and use the area, and provide a portion of the revenues from the concessions directly to municipalities with the restriction that a portion of the revenues must be used for coastal zone management. Fisheries laws separate commercial open water fisheries from nearshore artesanal fisheries. In regions such as Santa María Bay, which have organized fisheries cooperatives, fishing grounds for certain species, mainly white shrimp, are allocated among cooperatives, while the federal authorities retain control over the timing of shrimp harvests and are responsible for enforcement.

Finally, municipalities can prepare and implement environmental plans and petition for delegation of certain decisionmaking authority on coastal development from the ZMFT. In fact, there is a strong movement toward decentralization to state and local authorities of federal responsibilities for day-to-day decisionmaking and management.

With all of these emerging possibilities for integrated planning and decisionmaking as yet unrealized, the stakeholders of Santa María Bay began a pioneering effort to work together (*Esfuerzos Conjuntos* in Spanish), to create a conservation and development program.

The catchphrase for this effort, repeated frequently in meetings and discussions, was the Spanish expression *estamos a tiempo*, meaning we are 'just in time.' Just in time to find a broad range of people concerned about the problems, and just in time to plan a course of action to avoid irreversible mistakes.

The year 2002 is proving to be a moment of convergence as newly installed municipal governments consider ratifying an innovative agreement to jointly manage the bay. The state of Sinaloa is reviewing a statewide coastal area use ordinance which could lead to legal recognition of the bay strategy which has just been published.

Objectives of the Bay Management Strategy

The overall objective is to carry out participatory, community-based management strategies that will preserve the different coastal environments of Santa María Bay. This means protecting the flora and fauna of the region, in particular endangered species. It also means promoting sustainable practices for current bay uses and pursuing promising alternative economic activities.

Specific bay program objectives include:

- Expand local capability to conserve critical zones in the bay
- Increase low-impact resource uses which reduce the pressure on overexploited or critical resources
- Incorporate environmentally-friendly management practices within ongoing economic activities
- Develop sustainable forms of economic development

Public Participation

Conservation is viewed by bay stakeholders as the way to support the development of present and future economic activities in the bay. The public involvement process has helped greatly to foster broader understanding of the importance of the management and preservation of the bay's environment and its natural resources.

Public involvement workshops have united communities and stakeholders in defining the main issues now facing Santa María Bay, given current uses as well as in identifying potential alternatives for the sustainable management. The result has been the formulation of a consensus-based Bay Management Program. Between 1999 and 2000, eight workshops were held in different communities around the bay. At these sessions, stakeholders developed a shared vision which requires that several specific conditions are achieved within the next 15 years:

- The hydrodynamic conditions of the bay are improved and maintained to 3- of 4-meters depth in the main basins
- Based upon the specific carrying capacity of the bay, the water quality is sufficient to support fishing activities and maintain shrimp farms
- The community is environmentally aware and actively participating in the bay program
- The communities around the bay are receiving economic and social benefits from the program's actions
- The invasion of cat tail grass vegetation into the bay is curtailed and controlled in strategic areas

A fundamental strategy for achieving this desired future is to integrate the program and policies into the government development and conservation plans for natural resources, pollution control, and land use.

Examples of Management Issues and Measures in the Bay Strategy

Improve Fisheries Productivity and Promote Low Impact Aquaculture

Many current fishing and shrimp farming practices are contrary to the goals for sustainable development. Key issues include an excessive increase in the shrimp fishing effort and fishing conflicts caused by the Official Mexican Regulation Pesca-002. This includes:

- Short-sighted fishing and aquaculture practices have damaged the nursery grounds of various marine species of commercial importance
- Inadequate technical studies, as well as incomplete legislation, do not provide for managing important bay fisheries resources other than shrimp
- Expansion of shrimp farms around the bay without proper controls

The strategies proposed in the Bay Management Program focus on increasing public knowledge of the principal valuable fish species and building awareness and support for management measures. In addition, the program promotes public discussions on the merits of present fisheries legislation and, where possible, advocates changing fishing and shrimp farming techniques toward those that are environmentally friendlier. Finally, the program recognizes the importance of building local management capacity and locally relevant decisionmaking criteria in order to make real progress on these proposals. Specific management objectives are to maintain or recover harvest levels of fishing resources and develop good management practices for shrimp farming.

Two important initiatives to implement these objectives are already underway. An innovative self-management experiment for the blue crab fishery involves the fishers, authorities, buyers, and experts from the University of Sinaloa. The goals include setting harvest targets and having fishers acting as enforcement offices. A second major project will be to expand work with shrimp aquaculture installations to expand the adoption of good practices and reduce impacts.

Water Quality and Bay Hydrodynamics

Excellent water quality in Santa María Bay is a necessary condition for sustaining fisheries production and developing shrimp farms and other forms of aquaculture. It is also a requirement to support low-impact alternative economic activities such as controlled beach tourism and eco-tourism that have the potential for generating employment in the region.

Specific bay program objectives include:

- Maintain or increase the bay's water quality
- Improve agriculture and mariculture practices in order to reduce demand for water, fertilizers, and pesticides
- Build upon existing state and municipal programs that promote good agriculture practices and apply these throughout the bay watershed
- Build the capacity to enforce Mexican regulations to control wastewater discharges from shrimp farms
- Monitor key indicators of bay water quality to serve as a baseline for assessing likely impacts of new developments and economic activities
- Reduce the sedimentation rate in the bay
- Maintain the bay's present water exchange rate with the open sea
- Restore areas of ecological importance, such as strategic fishing and mariculture sites
- Rehabilitate dredged channels
- Identify the best zones for discharging of domestic, agricultural, urban, and industrial waters
- Reduce the larvae lost in shrimp farms' pumping systems

Understanding the circulation of water in the bay is of vital importance in making good decisions on future development and correcting problems caused by existing bay and watershed economic activities.

Discharge of residual waters from aquaculture, agriculture, industrial, and domestic activities have been mistakenly allowed in sections of the bay which have low circulation and high residence times. This has led to a decline in water quality and accelerated the sedimentation process in the bay. New sand banks obstruct navigational channels and fishing boat movement. Fishing grounds have also been lost, along with nursery areas for commercially-important marine species.

The overall management strategy is based on carrying out technical studies to develop a hydrodynamic model of the bay. This computer model can be used as a tool to plan and make better decisions on the infrastructure needed to support economic activities in the bay, such as dredged channels, shrimp farm water intakes and discharges, and agricultural drainage canals.

The program has successfully obtained funding to carry out field work leading to creating and calibrating a model of the bay that will help the Conservation and Development Committee address several of its key objectives.

Mangrove Forests, the Malacataya Tidal Flat, and the El Tecomate and Allende Mountains

Conservation of wetland and forest areas around the bay is key for achieving three aspects of the vision for Santa María Bay shared future for year 2020:

- Preserve mature protected areas

- Maintain the bay as a natural laboratory that increases interest in scientific research and environmental education
- Support alternative sources of employment in low-impact businesses

The bay's 18,700 hectares of mangrove forest are important as breeding and feeding areas for many aquatic species that are the basis of the bay and offshore fisheries. Nevertheless, shrimp farms and local neighbors continue to extract lumber from these forests. The larvae of aquatic species are also being taking out of the bay by pumps used to bring seawater into shrimp farms. The tidal flat of Malacataya is of international importance because it is part of the route for the migratory birds of North America. Unfortunately, the excessive growth of cat tail grass, caused in part by changing salinity regimes, is endangering this habitat. There are also incompatible activities taking place in wetland areas including hunting, shrimp farming, and salt mining, which in turn causes conflict among land owners and bay users.

The mountains within the bay watershed are also 'islands' of native vegetation surrounded and isolated by the agriculture development of the coastal plain. A number of plant species of ecological and economic importance are found there. The main issue facing the mountain region is the continuing expansion of agriculture to the point of reducing the native vegetation on the mountain sides.

Specific bay program objectives include:

- Increase surveillance capacity
- Enforce current environmental laws
- Reach agreements among bay users and the government to control further change in sensitive areas
- Conduct research and environment education programs
- Promote low-impact economic activities which will add incentives for sustained local stewardship

The program is updating a dormant proposal that will lead to obtaining state-level protected area status for the Malacataya area.

Innovations in the Santa María Bay Program

Management Strategy for an Ecosystem and Watershed

The program is one of the first initiatives in Mexico to address multiple issues outside of an officially declared protected area, and which builds upon existing laws, rules, and policies in an integrated way.

Collaboration and Consensus Building at Every Step

The program unites the three levels of government, as well as civic and resource user groups and citizens, both in implementing the overall project and in designing the strategy. From the outset, international, national, and local institutions and groups joined together to provide funding and in-kind contributions, including the initial grant from the North American Wetlands Council, Conservation International, and the University of Sinaloa.

The Conservation and Development Commission

A voluntary committee was formed once the project started to guide public meetings and prepare plan elements. The commission has formed a subcommittee that is now assisting the municipalities of Navolato and Angostura to form a joint management entity to permanently guide and carry out a long term program, as well as a trust fund to administer funds and other tangible assets needed to carry the program forward.

Extending the Bay Management Concept Throughout the State of Sinaloa and the Gulf of California

In May 2001, a regional meeting, attracting 150 scientific experts, public officials, and conservationists, was held in Mazatlan to set conservation priorities for the gulf. One of the outputs of the meeting was a unified map of areas of high ecological importance that were also facing intense threats and social conflict. Santa María Bay was right in the center of the corridor of coastal lagoons and estuaries of concern (including Sonora, Sinaloa, and Nayarit states). The newly published National Fisheries Map identifies a total of 20 such ecosystems within the gulf. In 2002, Sinaloa state officials began reviewing a draft coastal environmental ordinance that encompasses all of the other lagoon and bay ecosystems in the state. The hope is that success in Santa María Bay will help inform and guide efforts to address the needs and concerns of other similar sites, and that these efforts will also be 'just in time.'

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The Convergence of Crises, Political Processes, and Capacity: Impetus for Local Coastal Resources Management Initiatives

By Miriam C. Balgos and Glenn Ricci

Two decades into community-based marine and coastal resources management (CRM), the Philippines is experiencing a rapid expansion of coastal initiatives at local and national scales. While many countries are struggling to plan and implement CRM, conditions in the Philippines are ripe for its continued application as the primary framework for coastal development. Local governments, endowed with the authority to manage coastal resources, are lacking in needed financial and technical resources to effectively carry out this mandate. Therefore, municipalities are looking up a level in government for assistance.

Municipal-level CRM

Municipal-level CRM in the Philippines began in the 1970s with the establishment of marine sanctuaries. Inspired by these early successes, national government agencies, nongovernmental organizations (NGOs), and academic institutions initiated CRM programs in municipalities, with marine sanctuaries and artificial reefs as the main management strategies. Within a decade, CRM became a priority through the adoption of the Philippine Local Government Code of 1991, which mandated the devolution of coastal resources management from national agencies to provincial and municipal governments. Since then, municipalities and provinces have been targeted as the implementing unit for national CRM initiatives, which evolved into more integrated schemes, incorporating other sectors such as agriculture, forestry, and tourism. Two recent national programs demonstrate this trend, the United States Agency for International Development-funded Coastal Resource Management Project (CRMP), which initiated a number of local CRM pilot projects, and the World Bank-assisted Community-based Resource Management Project, which provides direct funding to municipalities for use in locally-initiated resource management projects.

CRM has gained popularity throughout the Philippines through a combination of national and local initiatives, creating a demand as the benefits of CRM initiatives were directly felt by local stakeholders. A variety of promotional strategies were employed, including: a) municipal officials visited other municipalities to learn or teach about CRM; b) the League of Municipalities in the Philippines endorsed CRM as a preferred approach to environmental management; and c) a 'Best CRM Award' was developed as an incentive to develop effective CRM programs. The Philippines is currently developing a CRM Certification Program to provide a framework for prioritizing foreign and national funding of CRM projects.

Role of Provincial Government in CRM

In the devolution process, a transfer of matching resources has not accompanied the transfer of responsibilities. Thus, most municipal governments found themselves incapable of effectively carrying out their new functions. Furthermore, national initiatives are unable to provide adequate financial and technical assistance for CRM implementation at the local level. Hence, a new approach is highlighting the valuable role that provincial leadership can play in CRM.

Borrowing from a successful program in the Province of Negros Oriental, CRMP initiated three provincial-level CRM pilot projects in the Philippines. For each of these projects, CRM working groups were established at the provincial level. These groups were envisioned to become permanent units within environment and management offices as provided by a provincial environmental code. These CRM units' activities may be sustained by annual allocations from the National Economic Development Fund with the endorsement of the governor and provincial council.

The main functions of these provincial CRM units are to:

- Facilitate the formulation of a provincial CRM plan in consultation with municipalities
- Develop and implement a coordinating mechanism for CRM in the province
- Extend technical skills in CRM planning, implementation, and coastal law enforcement
- Facilitate the expansion of municipal CRM
- Conduct environmental education and training
- Assist municipalities in monitoring and evaluating CRM plans and programs

The initial successes in these provinces point to a paradigm shift wherein provinces play an important facilitation-coordination-replication role in CRM. Such a shift

will help municipalities and cities improve their CRM capabilities. It will also play a key role in expanding CRM in other communities.

Motivations and Influential Factors for CRM at the Municipal and Provincial Levels

In the absence of a national coastal management policy and overall coordinating body, what are the driving forces that push local governments to implement CRM? Based on recent experience in implementing provincial-level initiatives, Yambao, Deguit, and White, in a 2001 article in *Overseas*, 'Philippine coastal resource management: Bohol, Masbate, and Davao del Sur forge ahead,' there are a number of factors that motivate local adoption of CRM:

- Recognition and understanding of coastal and marine issues
- Recognition of the need to conserve the natural resource base for promising revenue-generating activities
- Perception of CRM as a way to address poverty and a variety of coastal environmental issues
- Realization of the need to broaden the scope of existing marine fishery development programs to cover CRM and environmental management
- Recognition that technical support is a critical success factor for sustaining CRM initiatives in municipalities
- Realization of the growing political will at the local level for CRM

These factors form part of a scenario characterized by a gradual development of conditions conducive to CRM initiatives at the local level. These supporting conditions, such as ability of CRM stakeholders in carrying out new roles and implementing new technologies, may be perceived in the light of John Kingdon's treatise on policy reform in his book Agendas, alternatives, and public policies in which he discussed how three key factors come into play in setting an agenda: 1) Crisis and problems pressing on the system; 2) Process of gradual accumulation of knowledge and perspectives among specialists in a given policy area; and 3) Political processes such as changes of administration and election results. A confluence of similar factors may be stimulating local level CRM in the Philippines, as described below.

Crises and Problems

Fatal flash floods and land slides; frequent red tide occurrences and fish kills due to deteriorating water quality; depletion of most of the country's fishing

grounds; and the destruction of majority of coral reef and mangrove habitats are among the coastal problems and disasters that caused manifold social and economic impacts on coastal communities in the last two decades. These crises have forcibly brought CRM to the top of the government's environmental agenda at the national and local levels.

Accumulation of knowledge and perspectives

Public education and participation activities are a critical component of community-based CRM. Skills, knowledge, and attitude among coastal stakeholders, organized into people's organizations, are vastly improved in the Philippines, due largely to the community organizing components of coastal management initiatives. Educational and participatory initiatives have led to a shift in stakeholder perspectives as indicated by structural changes in municipal governments to accommodate marine resources management. These changes are exhibited in the form of municipal council committees or subcommittees; policy changes in specific marine resources management approaches provided by new municipal ordinances; improvement in the expertise and responsibilities of local government officials; and organized communities actively involved in CRM programs.

Hungerford and Volk, in a 1990 article in *Journal of Environmental Education* (Changing learner behavior through environmental education) provided insights on "environmental citizenship behavior" by using a model that details a transition from awareness to responsible action. These educational and participatory activities can move individuals towards the resolution of environmental issues. The percolation of CRM activities at the local level shows that local constituencies are becoming more knowledgeable, skilled, and empowered in coastal and marine resource conservation.

Political processes

The kind of political leadership and organizational setup of resource management offices implementing CRM projects often determine CRM success. For instance, a local CRM initiative is more likely to be successful if the local leader and his/her constituency are strongly supportive of the initiative, a municipal council is actively supporting CRM efforts with appropriate legislation, and a municipal community-based CRM team is highly committed to the project.

(continued page 30)

Adaptation and Learning in Coastal Management: The Experience of Three East African Initiatives

By Elin Torell

A significant milestone in the East African regional integrated coastal management process was the signing of the Arusha Resolution on Integrated Coastal Zone Management in 1993. This non-binding resolution outlines coastal management needs and principles in East Africa and sets the stage for increased national support for, and efforts in, coastal management. The event also began a continued dialogue between the scientific community and high-level policymakers.

In this region, politicians and practitioners periodically take stock of the process and progress of coastal management. During 1998 and early 1999, an assessment of fourteen coastal management initiatives in East Africa was conducted. This was part of an international project to apply and refine techniques for promoting and documenting learning-based approaches to coastal management. The assessment explored progress in coastal management in East Africa, with a deeper analysis of five initiatives located in Kenya, Tanzania, and Mozambique. This paper will present part of the findings of this assessment, focusing on how three of these projects adapt and learn with respect to the three principles of adaptive, learning-based management:

- Principle 1. Adjust actions and project strategies as new information is obtained
- Principle 2. Learn by doing and experimentation
- Principle 3. Activate participation by relevant actors

This assessment was conducted during two, three-week trips to East Africa. During the first trip, 11 coastal managers from Kenya, Tanzania, Mozambique, and South Africa were interviewed. Additional information was collected through articles, reports, and correspondences. Initial findings were reviewed and validated during the second trip. In preparation for this article, the assessment was further updated in 2002.

Adaptive, Learning-Based Coastal Management

Coastal management is a continuous and dynamic process by which decisions are made for the sustainable use, development, and protection of coastal areas and resources. Coastal management requires an understanding of complex, dynamic ecological systems as well as creating governance systems capable of addressing issues of concern. Coastal issues require an understanding of the interplay between social processes and ecosystem change. In developing countries, coastal governance systems address not only environmental and natural resource management, but also environmental justice, poverty alleviation, developing a working democracy, and strengthening of social capital.

In order to be successful, management initiatives need to be flexible, adaptive, and have the capacity to learn. Initiatives are designed to cope with complex ecosystems by creating spaces in which reflection and learning can occur and allowing management processes to take action in light of new information. In short, it can be called a form of learning-by-doing.

Adaptive learning-based management has many dimensions. In this paper three broad management principles have been identified. These summarize most of the features of adaptive management in the public policy and resource management literature.

Principle 1 refers to adjustments of management processes and policies as new information is obtained through experience. This principle is about assessing and learning from the effects of previous management actions, and being able to respond in an effective and timely manner to what has been learned.

Information sharing and space for reflection are other important elements of adaptive coastal management. Making knowledge about both successes and failures accessible helps other projects to avoid reinventing the wheel.

Principle 2 is learning-by-doing and experimentation. When programs are treated as experiments with implicit or explicit hypotheses and system responses are monitored, management will adapt. Coastal management practices are termed 'special area management pilots and early implementation actions.' These approaches allow projects to obtain hands-on experience to measure tangible results. The outcome being these techniques can be incorporated into the management process.

Principle 3 is building a participatory process that actively engages significant stakeholders in management practice, collective inquiry, and decisionmaking. Promoting an open process where disparate interests and views are considered will provide more space for ideas and knowledge to be shared. Participation in management processes and decisionmaking also promotes local ownership of solutions.

The East African Experiments

The need for coastal management is acute in many areas along the East African coast. The combination of poverty, population

growth, and unsustainable resource use has deteriorated critical coastal resources, such as mangrove forests, fish stocks, and coral reefs. There are also other development issues, such as inadequate infrastructure and uncontrolled tourism development. Struggling to balance the needs of both conservation and development, this situation characterizes most of the coastal management initiatives found in East Africa, including the three initiatives reviewed for this study:

- Tanga Coastal Zone Conservation and Development Program, Tanzania
- Nyali-Bamburi-Shanzu Integrated Coastal Area Management Initiative, Kenya
- Tanzania Coastal Management Partnership (TCMP), Tanzania

The Tanga project, initiated in 1994, is in its third phase. It aims to improve the integrity of the Tanga coastal ecosystem and to support sustainable development of its resources. In phase one, the project involved three pilot villages. In 2002, it engages 28 of 42 coastal villages in planning and implementing collaborative fishery management plans. This includes all villages south of Tanga town and covers about 85 percent of the coastline north of Tanga town and south of the Kenyan border.

The Nyali-Bamburi-Shanzu initiative encompassing the Nyali-Bamburi-Shanzu shorefront areas and the estuarine waters of Tudor Creek. This covers only 12 kilometers of the Kenyan coast in the Mombasa district. Despite the small area, the project provides critical experience in coastal management and is of significance as a pilot for the national integrated coastal management process.

The TCMP was established in 1997 to improve national-level coastal planning and management, and to coordinate local and national coastal resources management. The project is a partnership between Tanzania's National Environment Management Council and other government sectors, scientists, private sector, international donors, and nongovernmental organizations. Since it started, the TCMP has prepared a national strategy for coastal management, *Options for a National Integrated Coastal Management Policy*, 1999; a *Tanzania Mariculture Issues Profile*, 1999; a *Tanzania Mariculture Guidelines Source Book*, 2001; and a *Mariculture Investor's Guide*, 2001. (See pages 39). The TCMP is currently preparing several documents on coastal tourism: a situation analysis, development guidelines, and a Kilwa tourism management plan.

In addition, to implement the coastal strategy, the TCMP is assisting coastal districts in preparing coastal management action plans.

Adaptive, Learning-Based Management Practices

The three projects are reviewed on the basis of the application of the three principles of adaptive management as described above.

Principle 1: Project monitoring, self-assessments, and evaluations have been part of all projects, with the possible exception of Nyali-Bamburi-Shanzu. But it is difficult to determine if such potential adaptive learning exercises are responses to requirements from supporting international agencies or true learning activities.

The Tanga program is the only project that has developed a monitoring program which includes participatory coral reef and fisheries catch monitoring. In addition to the monitoring program, Tanga treats its logical framework as a living document that is periodically evaluated and refined. Thus, components of the logical framework have been removed or added as the project's goals and objectives have changed. This is a sign of a learning-based management strategy.

Workshops to self-assess diverse project components are used by both Tanga and TCMP to provide space and time for group reflection and learning. The learning workshops are useful as a forum for team-building, allowing the participants to celebrate and reach consensus on what has been accomplished in the projects. Learning workshops within Tanga and TCMP are tools for overarching strategic planning, but they do not challenge the projects' goals nor generate in-depth analysis of specific project components.

Coastal erosion in Tanzania

Mooring Bouy training at Mombasa Marine Park, Tanzania

Most of the managers interviewed in this study had attended regional meetings and workshops, and had visited at least one or two other coastal management projects in the region. In the TCMP project, one of the explicit principles is to build on existing experience, and hence, there are frequent national-level/local-level interactions both in the capital and the field. Based on the findings of this study, the two issues that have received the most attention through cross-project learning are seaweed culture and controlling unsustainable fishing practices.

Principle 2: Experimentation and learning from early implementation actions is an element of all projects. There is a consensus among the managers interviewed that early implementation actions are beneficial, and that it is better to start small with experimental applications than attempt to accomplish too much too fast. In Tanga, the experiences of demonstration projects to reduce dynamite fishing, adopt seaweed farming, and improve enforcement of regulations and by-laws were important elements of the decision to change the program from focusing on single pilot villages to collaborative fisheries management planning. Some activities such as seaweed culture and control of dynamite fishing have turned out to be successful, and consequently have spread to new sites, while other activities have been dropped or modified. Deliberation around what demonstration activities are successful, and hence, should be replicated, has been made in collaboration with villagers.

Both Tanga and TCMP identified mariculture development as an early implementation action. In the case of TCMP, which is collaborating with Tanga on this issue, the work within mariculture is lead by an inter-sectoral Mariculture Working Group (MWG). The experience of the MWG has been transferred to a new inter-sectoral working group: the Coastal Tourism Working Group.

The Nyali-Bamburi-Shanzu initiative has also successfully completed a few early implementation actions. The most significant has been the construction of mooring buoys to protect the adjacent marine park's fragile and endangered coral reefs. The activity of installing mooring buoys contributed to building support for coastal management among the local constituencies. Together with stakeholders, the Coastal Management Steering Committee and the Kenya Wildlife Service learned how to install the mooring buoys and drafted a code of conduct as well as educational brochures about the marine park and the moorings. Through this experiment, the Kenya Wildlife Service gained experience and knowledge that has now been transferred to other sites.

Principle 3: In the Tanga and TCMP initiatives, monitoring, self-assessments, and evaluations are frequently participatory, inviting stakeholders in the review of management schemes. Participation has encouraged views from diverse constituencies thereby broadening the parameters of policy debate.

The Tanga project has stimulated people to become active participants in their community's development by emphasizing individual's knowledge and abilities, implementation of solutions with minimal outside help, and participation of all groups. Women are active participants even in traditionally male-dominated program activities, such as village committees and in village patrols.

In the initial stages of the Nyali-Bamburi-Shanzu initiative, stakeholder forums and personal communications ensured that learning from all groups was incorporated into the governance process. The participatory elements halted temporarily but have again come into focus through the establishment of a coastal marine forum.

Since TCMP is a national-level project, the stakeholders were initially identified as national-level decisionmakers, national-level technicians, and sub-national level technicians (district level). But with time, the project has increasingly involved coastal districts through district action planning. At the community level, the TCMP, in collaboration with GreenCom, is leading the Coastal Environmental Awards Scheme (CEAS), which in 2002 involved almost 50,000 Tanzanians living along the coast.

Conclusions

While the adaptive manage-

ment concept is not new, few efforts have systematically studied how the theory holds up in practice in different places and contexts. The findings presented here are an initial attempt to explore the key features of adaptive management as it is applied in three East African projects.

Since adaptive attitudes about management are an inherent feature of the projects studied, it is difficult to isolate the adaptive elements from the projects as a whole. However, it is clear that periodic monitoring and self-assessments are providing constructive platforms to learn and make adjustments to project activities and strategies. Early implementation experiments appear to be working well to quicken the pace of progress. The participatory focus has enhanced problem solving, increased a sense of local ownership in the solutions, reduced conflicts, and built trust and credibility.

Still, there are many questions on the topic of adaptive management in coastal management projects and programs. For example:

- What are criteria for good demonstration activities?
- What is an appropriate balance among the various approaches to adaptive management: experimentation, feedback and adjustment, and participation?
- How much should a project invest in pilot activities?
- To what extent does adaptive coastal management contribute to active social learning?

The more we can learn about adaptive management in coastal management, the better we can design and implement efficient and effective interventions in the future.

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Capacity building should not only involve training, but also learning-by-doing and mentoring schemes

Learning-by-doing has worked well within the individual districts, but in order to enhance the benefits of knowledge transfer between the national and district levels, one idea is to establish a mentoring scheme where, in the future action plans, one or two TCMP members act as technical assistants or mentors. Such mentoring schemes would be particularly useful in building the capacity among districts that are new to the action planning process.

Post Bagamoyo and Pangani Reflection Workshops

After the October 2001 reflection workshops, the Pangani and Bagamoyo districts approved the ICM action plans. After the approval, each district selected one issue to implement during the first year. The action plans are implemented through funding from TCMP as well as the districts.

Conclusion

The experience from Pangani and Bagamoyo has shown that district action planning is one good way of implementing the national coastal strategy. It brings the national strategy down to the local level and enables villagers and district staff to plan for the management of coastal resources using the common framework developed in the national strategy and the local action planning guidelines.

Starting with one experienced and one inexperienced district was good because it gave some insights regarding how to deal with districts with different backgrounds in relation to ICM. It also confirmed the importance of continuing TCMP's efforts to build upon the experience of, and collaborate with, local ICM programs. Although it is important not to move too fast, depending on the availability of funds, TCMP's vision is that within a few years, all fifteen districts in Tanzania will be involved in district action planning. As experience grows, the process will become more streamlined, and the new districts will be able to build on the experience gained from these three pilot districts.

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Participatory Integrated Coastal Zone Management: The Way Forward?

By Hugh Govan and John B. Hambrey

Over the past 50 years, rapid economic development and population growth have taken place in the coastal areas of many countries which, combined with technological advances in methods for marine resource exploitation, has led to greatly increased pressure on coastal resources and those who depend on them. Pollution of coastal waters is still of great concern and is increasing, particularly in the rapidly developing countries of the tropics. Flooding and erosion (expected to increase with possible sea-level rises) will be an increasing hazard to the coasts.

Management of Coastal Resources

Although local and regional authorities have, to varying extents, recognized the need for coastal zone management (CZM), with a few exceptions national authorities fail to encourage the creation of administrative mechanisms that would promote integrated analysis and planning, and thereby sustainable development.

In this paper, after examining some common problems emerging in the coastal zone, we add our voice to the growing lobby for integrated coastal zone management and examine the potential role of participatory management in achieving the aims of integrated CZM.

Increased participatory management potentially provides an effective and democratic way of addressing the main objectives of integrated CZM. Here, socioeconomic factors are incorporated into the planning process by the affected parties, and the increased responsibility should enhance sustainability and compliance with regulations. The advantages are particularly obvious for outlying regions.

Problems in the Coastal Zone

Nature Conservation and Marine Nature Reserves

Many of the efforts of the nature conservation lobby have been directed at the designation of nature reserves. Attempts to designate effective marine nature reserves in many countries have been fraught with difficulty. In some cases there has been overwhelming local opposition and resistance from resource users. Marine reserves have been perceived as a major interference in, and constraint on, local economic and cultural activity, in circumstances where there is no 'locally' apparent need to safeguard the marine environment for cultural or scientific reasons.

The concept of nature reserves may well be inherently flawed as an approach to conservation except in extreme situations, in that it promotes the exclusion of resource users rather than promoting ecologically sustainable use. This is often compounded by the fact that the outside conservation interests usually fail to promote sufficient local participation at an early enough stage in the planning process.

Crisis in the Fisheries Sector

In Europe, a recent review of the Common Fisheries Policy by the EC concluded there was a potential crisis in the sector caused by over-capacity and over-investment leading to serious over-fishing. The management regime has proved inadequate to tackle these problems, and the review suggests that in the future there should be further regulation and limitation of access to resources as well as increased emphasis on the socio-economic aspects of management. It is strongly emphasized that those who exploit the resource should be encouraged to take responsibility for it and implement management regimes for their own long-term welfare.

In developing management regimes, the emphasis has been on biological information and yield models. Little attention has been paid to the socioeconomic context and the behavior and motivation of fishers. Government consideration of socioeconomic factors has generally exacerbated (albeit unintentionally) the tendency towards over-capitalization and over-capacity through the provision of subsidies, grants, and infrastructure.

It is widely suggested that the only way forward, along with a gradual reduction in government incentives to over-investment, is to increase the personal stake of fishers in the future health of the resource. This implies increased resource ownership.

Inter-sectoral and Cross-boundary Conflicts

Until now, management and planning has usually taken place along sectoral lines. Certain user groups have followed individual approaches to regulations without heeding others' experience. This has led to conflicts between different sectors. The intense pressure on each user group causes conflicts between groups to be all the more bitter and insurmountable.

Another area of conflict can be seen where an area, best managed as a whole, is divided by local, regional, or national boundaries. Here planning and management authorities are confined to their defined area. A similar problem is the frequent discrimination between terrestrial and marine management and planning at the land/sea divide.

In most cases, these problems and conflicts are relate to the failure to:

- Address the social and economic factors, as well as the environmental factors, affecting the exploitation of a resource
- Involve and adequately consider concerns of all the stakeholders at an early enough stage in policy formulation and management
- Take into account that the exploitation of natural resources and socioeconomic factors are extremely variable both geographically and over time

Requirements of Integrated Coastal Zone Management

There are many approaches to CZM that are dependant on the social, economic, administrative, and environmental conditions in a country. Nevertheless, several common themes appear to be necessary for effective CZM:

- Use of the coastal zone should be environmentally sustainable
- CZM should be included in national legislation with the establishment of a national body to coordinate and oversee CZM initiatives
- Local planning authority jurisdiction should be extended below low water
- Social and economic criteria should be incorporated into environmental assessment
- Sectoral policies affecting the coastal zone should be integrated and harmonized
- Public involvement should be promoted through consultation or participation in decisionmaking

The three last points are of particular interest. Even in countries where CZM strategies have integrated, or attempted to integrate, all sectoral policies, usually the fisheries sector, has been specifically excluded.

It is expected that people will participate more when given more responsibility for a resource upon which their livelihood depends. Here, marine conservation will be seen as intimately related to their own long-term interests. All too often, governments claim to be fostering participation when in fact they are really allowing participation by only a sampling of public opinion.

Participatory Management of Coastal Resources

It is accepted that open access to a valued common resource often results in resource degradation and associated economic hardship. For a number of common resources such as water in irrigation schemes, common use of agricultural land, and finance via village credit program, the success of community-based resource management compared to more state dominated forms has been recognized. The frequent occurrence of local or community-based marine resource management suggests that tenure systems or restricted access are far more common than open access to marine resources.

Local Management of Marine Resources Worldwide

Examples of community-based management are more commonly from developing nations where it can be argued that local management occurs in situations where the resource users are not greatly affected by the economic pressures (e.g., market forces and over-capitalization) which prevail in industrialized nations. However, two points are worth mentioning before moving on to examine cases of local management in more economically developed countries.

In a number of cases (particularly in Pacific Island nations), customary marine tenure has been included in the national legislation. And, modern developments in the coastal zone (such as bait-fishing, sport diving, and aquaculture) have to take into account the property rights of customary owners.

Traditional management systems in Asia and the Pacific have, in many cases, incorporated principles which are only just being recognized as vital for effective CZM in more advanced nations. An example is the perception of land and sea being economically and nutritionally connected. This is often not true in the West. By the same token, it would be inconceivable to divorce the management of fisheries from other resources.

Examples of Local Management in Developed Nations

Developed nations display interesting examples of local management of fisheries. In Japan, fishers' co-operatives hold property rights to coastal fisheries (and aquaculture), a system that works remarkably well given the concentration of fisheries. The key ingredients are a mixture of long tradition and strong organizational structures with most management responsibility allocated to the fishers themselves. This system ensures strong representation of the fishers' interests in relation to other users of the coastal zone, although it has been suggested that fisheries co-operatives wield too much power and may hinder other coastal developments.

There are many examples of restrictions by local management on access to single species fisheries. Examples include lobster in Nova Scotia, Maine, Mexico, and New Zealand; salmon in Alaska; and cod in Lofoten, Norway. Several of these constitute co-management, i.e., management by fishers within an overall government framework. There are instances of success and failure. Again the key to success seems to be the allocation of both rights to the fisheries and responsibility for their management to the local fishers.

There is a steadily emerging consensus that inshore fisheries may very well be better managed within a local or co-management framework. However, areas in

which fishers operate will have to be clearly demarcated to avoid conflict, especially with the larger more mobile fishing interests. Such zoning would be best incorporated within an overall CZM framework.

Fisheries management is a complex issue. The arguments in favor of increased participation in fisheries management can be broadly applied to the management of other resources in the coastal zone and also to the organization of local and overall CZM strategies. It is possible that combinations of property rights regimes may work better than single regimes.

Strengths and Weaknesses of Participatory Management

The case studies mentioned above and the literature on common property regimes and governance suggest the following strengths and weaknesses of participatory management of coastal resources.

Strengths/Advantages:

- Active participation by members of the whole community should lead to a stronger commitment to comply with the management strategies and sustainable use of the resources
- The potential for increased equity may enhance the legitimacy of the regulations in the eyes of resource users
- Increased awareness of resource users of the pressures exerted on their resource by themselves and other stakeholders may lead to awareness of sustainability issues
- Resource users may be more adaptable in the face of rapid changes in resources, markets, or other local conditions
- The cost of some burden of information gathering, planning, routine management, and enforcement can be shifted from central government
- More effective use is made of local knowledge and existing linkages
- Direct involvement of all stakeholders in the community ensures that decisions reflect local social, economic, and environmental conditions

Weaknesses:

- Access or investment may be denied to more enterprising or economically efficient outside interests
- Economies of scale may not be achieved
- Management may be influenced by local political whim or prejudice
- Management may be less practicable in open, diversified societies in urban areas than in smaller, identifiable communities in peripheral areas
- Integration into broader socioeconomic systems has made local communities less dependent on sustainable exploitation of local resources. Communities may be tempted to deplete the local resources and invest the cash.
- Certain interests (e.g., offshore or large-scale fisheries, heavy industry, and mineral exploitation) will not perceive any benefits to themselves and may not take part in and/or actively resist this approach
- Existing problems of overcapacity will be difficult to reduce

However, some of the weaknesses of participatory management regimes do not support a wholesale swing towards such strategies. Major problems can be expected in many interactions between local areas with the wider economy and powerful vested interests. Also, communities may choose to act to benefit themselves at the expense of the interests of society at large.

Participation and Integrated CZM

A broad outline of a possible participatory approach to integrated CZM would consist of local resource user groups establishing their needs and management strategies with respect to other local user groups within some type of local forum. The local forum would have the principle function of establishing strategies for sustainability, conflict resolution, and a certain degree of resource allocation or zoning. A next tier of management would address regional strategies, overseeing local initiatives, and mediating in conflicts not resolved at the local level. The regional bodies would work within the framework of a national strategy administered by a national CZM authority.

The policy cascade approach is similar to that adopted for terrestrial planning in the UK and to the CZM strategy of New Zealand. This framework should be gradually incorporated into national legislation, nesting wherever possible, existing legislation, especially that concerning regulation of the large and powerful vested interests such as industrial pollution and so on. Gradual adoption of this approach enables constant evaluation and modification of policies in the light of emerging problems, as is being achieved in New Zealand. This co-management approach will require that national governments make a commitment to financial and legislative backing for the implementation of locally-produced strategies and the creation of a national CZM framework if it does not already exist.

The Particular Case of the UK

National ICM programs, within which regional and local initiatives are nested, have existed in countries such as Australia, Brazil, USA, the Netherlands, and Denmark. Currently within the UK, local, regional, and national initiatives are proliferating, giving momentum to existing plans, but in the absence of any overall framework. This causes confusion of the relative roles and increases the potential for conflict.

However, some very promising local initiatives are taking place with good opportunities for

increased participatory management. Examples of these are a number of coastal or estuarine forums such as the Dee, Duddon, Firths, Morecambe Bay, Ribble, Solway, and Thames initiatives. Approaches vary, but in general the interested stakeholders in each area are encouraged to cooperate on the planning of management strategies. At the very least, this encourages communication and the identification of problems and constraints and hopefully produces valuable management strategies that are less likely to be locally unpopular.

For this strategy to be successful, a more inter-disciplinary approach is required involving less science and biology and more social science methods (e.g., consensus building, conflict resolution, and participatory appraisal) together with other socioeconomic and anthropological perspectives.

A major problem is that these initiatives do not have tangible support at the national level in terms of finance or legislation. Implementation of the strategies may be impossible without financing and government backing.

The political inertia is difficult to understand but is consistent with other government initiatives (or lack of) on environmental policy. Many things indicate that the time is right for a major rethink of the UK's national approach to CZM. A major fishing crisis is looming with potentially huge social and economic implications for coastal communities. Other coastal sectors also face serious situations. If there are going to be major upheavals, surely it would be better if these were tackled in one overall national and cohesive policy.

At the same time, the forthcoming formation of the unitary authorities provides an opportunity for incorporation of new means of implementing coastal management strategies, and the new national environmental agency provides a promising forum for the national CZM framework and authority.

(The complete article is available at http://www.nautilus-consultants.co.uk/pdfs/czm.pdf)

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Decentralization in Rhode Island, USA: The Rhode Island Rivers Council

By Meg Kerr

Rhode Island's Rivers Council uses watersheds to link coastal management, water quality management, and economic development with local stakeholders and government. Although everyone lives in a watershed, most people are not conversant in watershed terms. A watershed is the area of land where all of the water that is under it or drains off of it goes into the same place. John Wesley Powell, scientist geographer, put it best when he said that a watershed is: "that area of land, a bounded hydrologic system, within which all living things are inextricably linked by their common water course and where, as humans settled, simple logic demanded that they become part of a community." Watersheds come in all shapes and sizes, and large watersheds can be subdivided into smaller subwatersheds. Watersheds cross boundaries — county, state, and national. No matter where someone is, they are in a watershed!

Watershed Management in Rhode Island

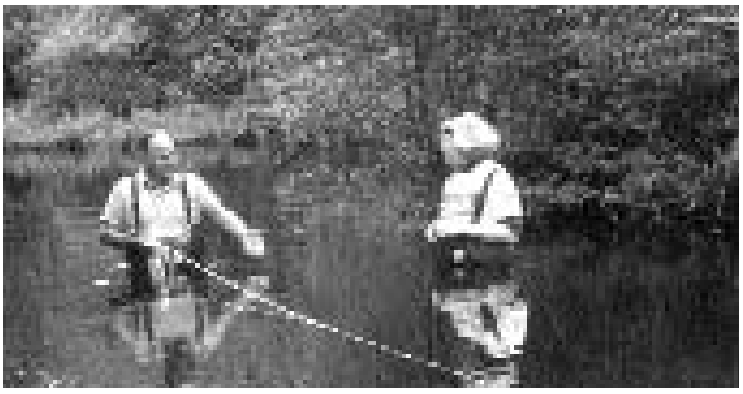
Rhode Island is the smallest state in the US, with a total area of 1,045 sq. miles. This small coastal state includes portions of seven major watersheds that link Rhode Island with two other states: Connecticut and Massachusetts. Thus, watershed management is a cross-boundary issue. Rhode Island, though small, has been in the forefront of coastal management in the US. One of its landmark initiatives was the development of the Coastal Resources Management Council (CRMC), a semi-quasi legislative body that was given power to regulate all activities in the coastal zone of Rhode Island.

With the coastal zone managed by the CRMC, Rhode Island's General Assembly, in 1991, created the Rhode Island Rivers Council to further protect the waters of the state. The Rivers Council was to consolidate the state's approach to implementing river policies and plans that impact environmental, cultural, and economic activity. It was also charged with empowering local watershed councils and fostering public involvement in planning and decisionmaking on river policies. Though the empowered local watershed councils guided much of the activity, the Rivers Council guides the process.

Redistributing Authority over the Resources

As stated by Lowry (page 1), one of the most sobering realities about contemporary environmental management is how difficult it is to translate environmental goals into effective action. The result is what might be called an 'implementation gap.' This implementation gap refers to inconsistencies between policy goals conceived at one level or branch of government and the translation of those goals into specific resource management activities at another level or by other agencies. It also refers to the gap between management actions at all levels of government and actual improvement in environmental conditions. Many of the tasks associated with designing inter-governmental systems of environmental management have to do with allocating some authority and responsibility between central government agencies and provincial and local agencies. This is called decentralization.

Administrative decentralization of environmental governance is a means of redistributing some authority for the management of human uses and activities affecting resources from central government authorities to subordinate units of government or semi-autonomous public authorities, corporations or functional authorities.



Stream flow monitoring

Decentralization: The Charge of the Rivers Council

The Rivers Council is part of Rhode Island division of planning. It is a voluntary board of 15 members appointed, for three-year terms, by various members of the government. Members also represent the Department of Environmental Management, CRMC, and the Rhode Island League of Cities and Towns. The Rivers Council is not a regulatory body, but a planning and coordination board.

The duties of the council are to:

- Develop a Rhode Island State Rivers policy and classification plan

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Rhode Island Watershed Councils Accomplishments in 2001 and 2002

The Rivers Council recognizes one watershed council for each Rhode Island watershed. Designated local watershed councils undertake activities that will better the environment, education, historic preservation, and economic development.

Saugatucket River Heritage Corridor Coalition (SRHCC)

The SRHCC is an all volunteer organization established in 1994. Activities include:

- Sponcering river and greenway cleanups and working with local land trusts to prioritize lands for protection
- Hosting community meetings to discuss issues such as water quality studies
- Organizing June Rivers Day events included river cleanups and a downtown block party with fires in the river. These successful "Saugatucket River Lights" were continued through the summer, bringing more residents and tourists to the river.
- Continuing construction of the Saugatucket River Pedestrian Walkway
- Heading an unsuccessful effort to preserve a 1700s farmhouse
- Promoting the environment and heritage of the river

Kickemuit River Council

The Kickemuit River Council was incorporated in 1973. Activities include:

- Encouraging town to aggressively address storm drain sources of fecal coliform
- Promoting the use of the sewage pumpout boat
- Advocating for shoreline access and walkability

Woonasquatucket River Watershed Council

The Woonasquatucket River Watershed Council is a volunteer-based organization. During 2001, the council hired a full time executive director. Activities include:

- Working with state agencies to develop inventories of riparian buffer and wetland restoration projects
- Completing a 'watershed asset map' that highlights sites of historic, cultural, and natural significance
- Developing watershed road signs that will be posted at watershed boundaries
- Conducting cleanups, canoe rides, and planting projects with children

Pawcatuck Watershed Council (WPWA)

WPWA was formed in 1983. WPWA is governed by a board of trustees, and employs a full-time executive director, a full-time program director, and some part-time summer interns. Activities included:

- Conducting a GPS inventory of navigable rivers, and mapping areas needing erosion control and access improvement
- Presenting an eight-week course for local school teachers
- Creating a digital image inventory of river access points
- Conducting a source-to-sea canoe trip — a five-part canoe ride through the river to Little Narragansett Bay

Pawtuxet River Watershed Council (PRA)

PRA is a nonprofit corporation formed in 1972. It was designated by the Rivers Council in 2001. Activities include:

- Adopting a river/stream, lake/pond and wetlands/land use monitoring system
- Advocating for open space acquisition, wetlands restoration and education, and shoreline access and walkability
- Holding three, one-day high school educator workshops
- Helping develop watershed road signs to be posted at watershed boundaries

Blackstone River National Heritage Corridor

Designated in June 2002

Narrow River Preservation Association

Designated in June 2002

For a complete reports of each council, contact Meg Kerr, Coastal Resources Center, University of Rhode Island, South Ferry Road, Narragansett, Rhode Island 02882 USA. Tel: 401-874-6522. Fax: 401-789-4670. E-mail: mkerr@gso.uri.edu

(continued from page 24)

- Advise state agencies and municipalities concerning programs and measures to improve and protect river and watershed quality and to promote river use consistent with the rivers plan
- Foster public involvement in river planning and decisionmaking through public education and promotional activities
- Designate watershed councils as bodies corporate and politic with specific powers, duties, and responsibilities

As often is the case of decentralization of environmental governance, many local watershed councils lack the expertise and finances to effectively carry out delegated responsibilities. The councils, in general, are small, non-profit organizations with limited or no staff. Nevertheless, these councils wield significant authority, as they are to advise and participate in municipal actions such as zoning decisions, comprehensive plan reviews, and state permit reviews. This requires councils to be very proactive in advocating for their watershed.

The Rivers Council works to support and enable local watershed councils by:

- Seeking funds for council work and bringing other resources to the councils (university student volunteers)
- Hosting workshops — both on institutional strengthening (e.g., how to run a good non-profit organization) and on technical issues (e.g., monitoring, water allocation, municipal decisionmaking, and implementing watershed action plans). These workshops provide councils with important information and also begin to build relationships between councils so they can learn from each other.
- Advocating for council participation at the state level, thus including councils in state management activities

Though not state funded, the Rivers Council may apply for grants and receive donations from member organizations. In addition, the council works with Brown University student teams on specific projects. Issues addressed by these projects included septic systems, public/private access points, aquatic herbicides, and a structural build-out analysis.

Potential Hurdles to Empowering Local Watershed Councils

The concept of empowerment of local watershed councils and decentralization is admirable, but challenging. Identifying concerned individuals is only the start of the process towards successful decentralization. These individuals take on the responsibility of being 'managers' of a critical resource. However in most cases, this responsibility is taken on with the understanding that there will be no financial compensation. Many people already have full-time jobs and have responsibilities outside of their work.

Decentralized watershed management requires both extensive participation with local communities and participation with state and federal agencies. It is time consuming and can quickly overwhelm dedicated volunteers.

For those councils that have overcome the difficulties of limited capacity and have sufficient funding to hire staff, the next hurdle is implementation of the policies they generate. Timely implementation of projects and plans, and coordination and consensus building among diverse actors is, by its nature, a slow process.

When government agencies work with local groups, although a good idea and certainly something that strengthens state actions, this combination can slow progress on decisionmaking and implementation.

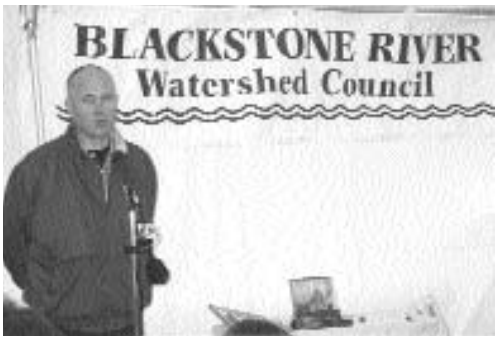
Nevertheless, this decentralization of authority creates a new management structure for implementing rivers' policies. By organizing local river protection groups into a network of watershed councils, the state gains an effective implementation method, and communities achieve new access to government resources.

Recognized Watershed Councils

The Rivers Council recognizes one watershed council for each Rhode Island watershed. The seven watersheds represent most of the state's area. The watershed councils recognized to date are the:

- Pawtuxet River Authority
- Kickemuit River Council
- Woonasquatucket River Watershed Council
- Saugatucket River Heritage Corridor Coalition
- Pawcatuck Watershed Council
- Blackstone River
- Narrow River Preservation Association

For further information, contact Meg Kerr, Coastal Resources Center, University of Rhode Island, South Ferry Road, Narragansett, Rhode Island 02882 USA. Tel: 401-874-6522. Fax: 401-789-4670. E-mail: mkerr@gso.uri.edu. website: http://www.crc.uri.edu



Ceremony designating the Blackstone River Watershed Council

Innovative Watershed-Based Management Program Adopted for Balikpapan Bay, Indonesia

NRM Headlines News

Three levels of government have joined together to approve the first-ever watershed-based bay management plan in Indonesia, the Balikpapan Bay management plan, to be carried out under the leadership of a newly created Bay Management Council. The governments of East Kalimantan Province, Indonesia, the regencies of Penajam Paser Utara and Pasir, and the city of Balikpapan, as well as stakeholders from the private sector, nongovernmental agencies, universities, and the public, demonstrated that a collaborative and highly participatory initiative can succeed. For people in Kalimantan Timur (Kaltim), especially those living around Balikpapan Bay, the signing ceremony held Tuesday, July 30, 2002, became a historic day. The Balikpapan Bay Integrated Strategic Management Plan was signed by the governor, two regents, and the mayor of city of Balikpapan, as well as the Indonesian minister of marine affairs and fisheries.

The Balikpapan Bay area is more than 211,456 hectares of watershed, coast, and coastal zone. Balikpapan Bay and the surrounding watershed contain rich natural resources and biodiversity. It supports a variety of human activities such as trading, shipping, mining, human settlements, agriculture, forestry, and others. While all are part of East Kalimantan's economic base, these activities increasingly degrade the environment. The watershed-based Balikpapan Bay management plan is a tool all stakeholders have agreed upon in an effort towards sustainable development of Balikpapan Bay. Development of the plan was initiated in 2000 with support from the United States Agency for International Development-funded Coastal Resources Management Program, known in Indonesia as Proyek Pesisir, through a joint effort between Pasir and Penajam Paser Utara regencies, the city of Balikpapan, and the East Kalimantan provincial government. Extensive public consultations were conducted endorsed by a series of surveys, studies, workshops, and training courses that identified issues related to watershed management for Balikpapan Bay. These activities increased stakeholders' capacity to participate in the process and increased their understanding of the intricacies of the issues effecting the bay. New institutions were formed such as a Kecamatan Task Force and new interdepartmental working groups looking at issues such as sedimentation, erosion, and mangrove and shrimp pond management.

The agreement marks a starting point for the government, public, nongovernmental agencies, the university, the private sector, and other stakeholders in developing an integrated watershed-based management model for the Balikpapan Bay area. The minister noted that this is the first time in Indonesia that regency, city and provincial governments have demonstrated their good will by joining in integrated watershed-based bay management. He also expressed how impressed he was that the bay plan was based on the most appropriate structure using an 'ecosystem approach,' rather than being limited by administrative area boundaries in managing bay resources.

Before the signing day, there was a special meeting to finalize the collective vision, strategy, and action plan for the bay. Addressed were issues such as budget, resource mobilization, monitoring, and evaluation. At this meeting, stakeholders selected the members to serve on the Balikpapan Bay Management Council. The council is chaired by the governor and includes the mayor and the two regents. Through the council, management decisions will by made across administrative and governmental boundaries achieving a true ecosystem approach.

While the signing is important, the next steps are just as important — implementation of the bay plan recommendations. The great commitment shown by each government administration bodes well for immediate initiation of integrated activities by local stakeholders. The commitment was make to immediately follow up and start implementation of the plan. This will include providing integrated budgeting and project planning, as well as action by the management council.

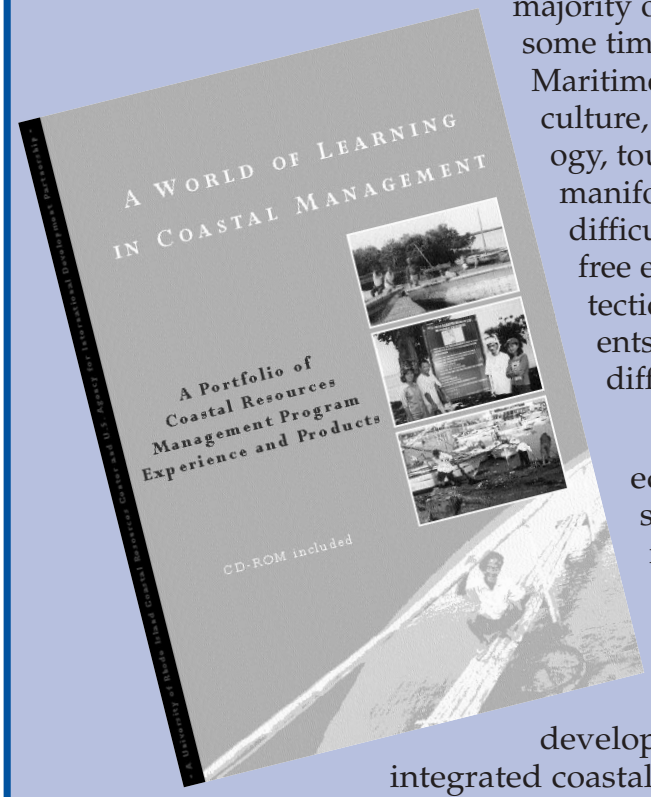
The joint agreement shows that improved governance of natural resources during an era of decentralization and regional autonomy is producing new innovations at the local government level. Legal and governance reform for natural resources, especially coastal and marine resources, are the foundation for all Proyek Pesisir initiatives, especially in terms of horizontal integration (between local governments and other stakeholders) and vertical integration (between local and national stakeholders). The models being developed will provide important road maps for others to follow.

For further information, contact Ahmad Husein or Elizabeth Wetik, Proyek Pesisir. Tel: 021-7209596, 0542-731016. Fax: 021-7207844, 0542-731858. E-mail: crmp@cbn.net.id or pesisir@indosat.net.id

A World of Learning in Coastal Management

A Portfolio of Coastal Resources Management Program Experience and Products

The need for improved management of coastal regions is urgent. Globally, the marine catch accounts for 16 percent of animal protein consumed by humans; the majority of these fish and shellfish are dependent at some time in their life cycle on coastal habitats. Maritime commerce, oil and gas production, aquaculture, pharmaceutical and industrial biotechnology, tourism, and recreation are but a few of the manifold human uses whose value is great, but is difficult to quantify. Add to these the myriad of free ecological services such as storm surge protection, water filtration and dispersal of effluents, and the importance of these regions is difficult to overestimate.



But the challenge of management is equally huge; these are systems where sectoral approaches are woefully inadequate. Many interest groups and agencies must work together if progress is to be made. It is also a relatively new field, with efforts in our own country extending back only 30 years, and in developing countries even fewer. Successful integrated coastal management is ultimately about forging the right balance between competing uses of water and natural resources, while ensuring that long-term environmental health and productivity are not compromised.

Coastal Resources Center
University of Rhode Island

Development depends on clean, abundant and affordable water. The United States Agency for International Development's (USAID) strategic goals of promoting economic and agricultural development, protecting human health,

preventing conflict, and safeguarding the environment all demand better, more integrated management of water. Since most of the earth's water is in oceans and seas, and nearly half of the world's population resides in close proximity to coasts, improving the management of coastal regions and resources has been a long-term priority for USAID.

USAID has been a pioneer in working with developing countries to improve the governance of coastal ecosystems, and its nearly two-decade partnership with the University of Rhode Island's Coastal Resources Center (CRC) has been central to the Coastal Resources Management Program (CRMP). CRMP designs and implements long-term field programs that work to build the capacity to effectively practice coastal governance. It also carries out analyses and identifies lessons drawn from within and across field projects, and disseminates experience and lessons learned through training programs, publications and participation in global forums.

This booklet and the accompanying CD-ROM offer a significant portion of the coastal management repertoire that has been developed through the USAID/CRC partnership.

A World of Learning in Coastal Management is separated into four complementary parts:

Sharing Knowledge and Experience in Integrated Coastal Management

Themes in Coastal Management

Governance
Critical Coastal Habitats
Sustainable Coastal Development
Capacity Building
Learning

Country Programs

Indonesia
Mexico
Tanzania

Bibliography of CD-ROM

The CD-ROM containing a suite of over 100 publications in PDF format. These represent seven years of CRMP work in coastal management by the Coastal Resources Center with funding from USAID.

For further information, contact Communications Unit, Coastal Resources Center, University of Rhode Island, South Ferry Road, Narragansett, Rhode Island 02882 USA. Tel: 401-874-6224. Fax: 401-789-4670. E-mail: communications@crc.uri.edu. Website: http://www.crc.uri.edu

(continued from page 15)

Formation and involvement of people's organizations such as fisher's and women's organizations in CRM programs also create opportunities for advocacy. These organizations have been involved in campaigning for the development of local ordinances in support of CRM initiatives and in implementation. Local organizations, if adequately empowered, can make their needs for collective self-reliance known to local officials, and demand responsive and effective government services. They can also inform national and regional policymaking officials and politicians of the needs of their organizations and its members, lobby for favorable policies and allocations, and oppose measures that they consider harmful, in a non-partisan manner.

Expansion of the Provincial-level CRM

The expansion in provincial CRM implementation may be a logical next step for CRM in the Philippines. The pilot sites have started a model that can be replicated in other provinces and from which information can be taken for promotional purposes. Lessons on scaling-up drawn from rural development programs in Africa and in South and Southeast Asia may also be brought to bear on CRM initiatives. Expansion is two-fold: 1) in area and population served or 'scaling-up,' and 2) in kinds of tasks performed or 'diversification.' Scaling-up requires careful and systematic planning and groundwork, and may involve experimenting before proceeding with large-scale expansion. Availability of funding and pressure from donor organizations should not be used as an excuse for untimely rapid expansion. Rapid scaling-up may be acceptable if adopters are willing to take on the responsibility and risks of adoption as noted in Uphoff, Esman, and Krishna's 1998 book, *Reasons for success: Learning from instructive experiences in rural development*.

Diversification of functions will occur as provincial governments take on new roles to assist evolving municipal CRM programs. Currently, their primary role is to assist in the initiation of municipal-level CRM. In time, their services may be most valuable in providing necessary technical support to sustain the municipal initiatives over the long term.

Expansion of the model is occurring in Region 8 (Leyte-Samar) in the Philippines, where a Packard Foundation-funded initiative by the University of Rhode Island Coastal Resources Center, the Philippine Council for Aquatic and Marine Research and Development, and Leyte State University is facilitating an initial planning phase for provincial CRM in six provinces. A workshop involving various stakeholders in this region was conducted in early 2002 to discuss how provincial CRM units could provide technical assistance to municipalities and the role academic and NGOs could play to assist the local CRM process in the region.

Conclusions

The Philippines has gone far towards putting in place an institutional mechanism for implementing CRM programs that involves various stakeholders and levels of government. While the municipal government holds the main responsibility over the management of coastal resources, the facilitation-coordination-replication role of provinces in CRM has been identified. The supporting roles of academia, research institutions, NGOs, and provincial and regional offices of national organizations continue to be redefined. It is anticipated that this institutional setup will solidify into a more stable and effective framework legalized by national legislation, which is perceived as a factor that will give CRM in the Philippines a vigorous push towards long-term effectiveness and success.

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Fiji National Workshop on Integrated Coastal Management

University of the South Pacific, Suva, Fiji, April 9-11, 2002

Pacific island countries such as Fiji are facing many problems in their coastal area. These include coastal erosion, reduced fish availability, deteriorating coral reefs, and competing demands for development. There are, however, a number of important initiatives to address the sustainable development and conservation of coastal resources throughout the Pacific Island countries, the Philippines, and Indonesia. Coastal managers based at these sites, unfortunately, rarely have the opportunity to share their lessons learned with each other, nor with government agencies at different levels. Yet such interaction is essential for the communication of ideas and lessons that can lead to the success of integrated coastal management (ICM) projects.

To begin to address these issues, over 60 participants from national government agencies, provincial government, local villages, research institutes, nongovernment organizations, and the private sector, along with international representatives, attended the *Fiji National Workshop on Integrated Coastal Management* held in Suva, Fiji, April 9-11, 2002.

A project team began work in November 2001. They compiled background information, interviewed national and provincial leaders, and consulted with coastal villages in an area of the Coral Coast on the main island of Fiji. This helped to identify issues, identify past and current efforts to carry out ICM, and develop a case study for use in exploring how existing efforts and new approaches could lead to making positive steps toward ICM nationally. A background paper, *Sustainable Coastal Resources Management for Fiji* was prepared by the Institute of Applied Sciences, University of the South Pacific, along with a paper on *International Experience in Integrated Coastal Resources Management*, prepared by the Coastal Resources Center at the University of Rhode Island, USA. These background papers provided basic information for the workshop.

The overall project, funded by the David and Lucile Packard Foundation, incorporates an examination of coastal management in two provinces in the central Philippines, and the nation of Fiji. Both locations have successful local on-going site projects and recognize the need for more government involvement in linking together individual, site-based projects.

Conference Purpose

- To develop a shared vision of key issues and the efforts and challenges facing coastal management in Fiji
- To explore the Fijian and international experience in addressing critical coastal issues
- To explore how an ICM approach could help address coastal issues and achieve a more sustainable development on the Coral Coast
- To recommend priority actions and mechanisms for advancing ICM in Fiji

Coastal resources have been important in the past and are key for the future well-being of Fiji. There are some important early initiatives as well as pending legal and policy proposals that indicate different groups and government offices are coming to similar conclusions about important next steps in creating a framework and viable local programs to care for coastal areas and communities. An area of the Coral Coast was examined because it is a region that shares many of the problems and concerns of other coastal areas in Fiji, including small outlying islands. At the conclusion of the conference, some reflections were offered on possible directions for Fiji to consider taking in the near and medium term as a point of departure for the main work of the meeting.

Consensus Finding

In addition to a number of actions taken, the workshop participants made ten major consensus findings on ICM for Fiji:

- Integration needs to occur at the national level.
- National, provincial, district, and village levels must be engaged in consultation and joint planning and implementation of coastal activities.
- Fiji must gather and disseminate reliable information in support of planning and decision making.
- Coastal management decisions in Fiji must be based in the community supported by government (especially extension), provincial offices, church groups, nongovernmental organizations.
- Fiji needs to build knowledge, awareness and its own capacity to carry out ICM.
- ICM decisions must recognize the economic needs of communities (and the nation).
- An initial focus on ICM would be most productive in a representative area, e.g., Coral Coast in Nadroga province.
- Urgent national issues related to ICM need to be addressed, e.g., coral harvesting
- Use the proposed changeover of traditional fishing grounds ownership as an opportunity to improve the management of Fiji's coastal resources
- Strengthen mechanisms for conflict resolution for ICM issues

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Coastal Management and Gender Equity at the Coastal Resources Center: The WILD Initiative

By Lesley Squillante

For 30 years, the University of Rhode Island's (URI) Coastal Resources Center (CRC) in Rhode Island, USA, has worked with partners around the world to achieve effective coastal management. While the principles of participatory democracy, sustainable development, and equity have always been core to this work, the issue of equity — especially gender equity — has proved elusive and difficult to address in CRC programs. In many of the countries where CRC works, e.g,. Indonesia, Tanzania, and Mexico, the reasons include, but are not limited to, cultural traditions, religious taboos, and socioeconomic and educational barriers. In addition, while the constraints are real, so too is the need to address them in place-appropriate and context-appropriate ways. To do less leaves half the coastal population without the opportunity for equal voice, decisionmaking, and leadership — an unsound foundation for sustainable development.

Getting Our Own House in Order

An important first step for CRC was recognizing its own need to do more on the issue of gender equity in coastal management. For decades, its field programs tried to address gender relations and other human development issues, and for decades these same efforts have fallen short. Programs found themselves in the common 'trap' of addressing gender equity through 'add-on' approaches or interventions — interventions that although well-intended, occurred largely outside the program's core design and implementation. While CRC commissioned a number of assessments of its efforts to incorporate gender concerns into its programs, the resulting recommendations often proved difficult to incorporate into programs already underway. This only further emphasized the need to ensure gender and other human development concerns and issues are designed into programs from the start.

Once CRC realized the need to mainstream gender issues into its programs — including how to provide women with greater voice and leadership opportunities in coastal management — it faced a number of questions:

- How to begin?
- What were the issues?
- How did they overlap or integrate with each other?
- What were the barriers to making progress?
- What groups were already doing effective work in attainment such integration?
- Who might CRC partner with to move forward with its own thinking and action?
- How did CRC begin to incorporate what it learned into the design and implementation of existing and new field programs?

The WILD Initiative

To begin to answer these questions and make changes in its own programs, CRC started its Women in Integrated Coastal Management: Leadership Development (WILD) initiative. In the past year, this initiative has tackled the subject of gender equity and other human development issues linked to coastal management. This occurred in several fora: a multi-disciplinary workshop at URI in July 2001; a follow-up special session at the Coastal Zone 2001 Conference held in Cincinnati, Ohio, in July 2001; and a working lunch and presentation at the Global Conference on Oceans and Coasts at Rio+10: Toward the 2002 World Summit on Sustainable Development, Johannesburg held in Paris in December 2001.

As always, learning from both those who already know how to do something, as well as those struggling to understand and address the issues is a good place to start; these fora provided this opportunity. They brought together individuals who were expert in one or more, but not all, of the areas of integrated coastal management (ICM), gender, leadership, and population. Together, the group listened and learned from each others' collective experience, debated root causes of gender inequities, proposed solutions, and strategized for more integration across the groups' respective areas of expertise and experience. CRC recognized this dialogue as only the first — but a very critical — step toward the goal of learning how it could effectively use a gender 'lens' when designing and implementing its programs. This also represented the beginning of dialogue on how CRC could better work in partnership with groups invested in broader human development issues closely interwoven with coastal management.

Recent Activities

The CRC Workshop (July 12-13, 2001) prior to the Coastal Zone 2001 Conference (July 17, 2001)

CRC held a two-day workshop which brought together a diverse group of individuals interested in tackling the challenges of mainstreaming gender, leadership, and population in coastal programs and vice versa. Participants came from the United States, Kenya, Mexico, the Philippines, and Fiji and included academics, field practitioners, international donors,

global advocates on women's rights, and gender specialists.

Discussions focused on:

- Dissecting the barriers faced by women globally to engage in coastal management
- Exploring ways to empower females as leaders in coastal management
- Identifying potential partnerships for and opportunities to move forward with other individuals and groups working in the fields of population, leadership, and gender to mainstream these issues into coastal management programs

Several participants presented real-time case studies of programs that had identified opportunities to and/or were already taking action on ICM issues and activities with other development issues.

In addition to the two days of rich discussions and growing partnerships that emerged as a result of the workshop, the group produced an impressive list of potential actions for governmental, non-governmental, and private groups to ensure gender issues are addressed in programs with sustainable development as their goal. This included possible statements for inclusion in documents prepared by various groups for the World Summit on Sustainable Development in Johannesburg.

The Coastal Zone 2001 Conference (July 17, 2001)

Selected individuals from the workshop participated in a special session at the Coastal Zone 2001 Conference in Cleveland, Ohio, UASA, that immediately followed the CRC event. There they:

- Shared their workshop discussions and experiences with a larger audience
- Solicited ideas and experiences on coastal issues related to population growth from the audience
- Discussed barriers to women's voices and their inclusion in coastal management
- Explored means and methods for action, with a focus on options for better promoting integration between ICM and other human development interests

The Preparatory Meeting for the World Summit on Sustainable Development (WSSD) (December 3-7, 2001)

In partnership with several other individuals and groups including the World Conservation Union (IUCN) and the Women's Aquatic Network, CRC hosted a working luncheon that discussed the issues of gender equity in coastal management. Approximately 50 conference participants attended. They listened to a joint presentation by CRC and Lorena Aguilar, senior gender advisor for IUCN and a partner in the WILD initiative; shared experiences; and discussed issues of concern on the topic. Participants also received a number of publications on gender and coastal management.

Most importantly, the workshop encouraged representatives of the preparatory meeting's seven working groups to incorporate statements on gender equity into their respective working group papers that would be put forward as recommendations to the WSSD conference in August 2002. If acted on, this would help set the model for mainstreaming equity concerns/issues into other elements of resource management and avoid the traditional model of addressing equity as a stand-alone or add-on issue. While some working group statements did successfully make this incorporation, others unfortunately did not.

A Year of Progress

For ICM to be an important means for achieving sustainable development, it must explicitly demonstrate how coastal issues are linked to and affected by human concerns such as poverty, food security, equity, health, and population. At the same time, to be most effective ICM must incorporate and model the attributes of the governance systems it is working to establish — attributes such as gender equity, participatory democracy, and inclusiveness. Some progress has been made in making these linkages, but much remains to be done.

In the last 12 months, the WILD efforts have made a good start at reminding CRC and others of the changes necessary to ensure all development programs — especially coastal programs — remain true to the principles of participatory democracy and equity. It has begun a dialogue across ICM, gender, population, and leadership groups at several local, national, and international fora. In the next year, it hopes to expand to reach groups working in other human development issues of concern such as health and education. It has begun its own self-education process, including initiating partnerships with experts in leadership and gender. The WILD effort has helped CRC begin to identify opportunities in its on-going projects to make these value-adding linkages. It has made CRC more conscious of the need to consider equity issues, including gender equity, into the initial design of its projects. Lastly, it has stimulated dialogue with donors interested in seeing better integration and use of synergies between now un-linked groups and programs.

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Management of the St. Lucia Coastal Lagoon

By Ricky Taylor and Sylvie Haldorsen

Lagoons are among the most dynamic natural systems in the world. The interaction with seawater and the changes in the inflow of freshwater result in continually changing hydrological and ecological conditions of the lagoon. The management of these natural system is a challenge.

The St. Lucia lagoon is a coastal lagoon in the province of KwaZulu-Natal in northeastern South Africa. It is the core feature of the Greater St. Lucia Wetland Park. In 1999, the park was designated a World Heritage Site because of its unique estuarine and wetland biodiversity. The coastal lagoon is also listed as a Wetland of International Importance under the Ramsar Convention.

The lagoon's surface area is 350 km^2 and is very shallow, with an average depth of only 0.9 m. Five rivers drain into it from a catchment area of 9,000 km^2 in the west and north, where small-scale subsistence agriculture and cattle ranching are the main land uses. Along the eastern shores, there are no major rivers. In places, high coastal dunes reach up to 150 m above sea level and act as a groundwater reservoirs from which groundwater flows westwards towards the lake. (Figure 1)

The region is subjected to large variations in annual rainfall, and experiences severe droughts for at least two years out of ten. During droughts, the inflowing rivers dry up and evaporation exceeds rainfall. The groundwater flow tends to persist during droughts, and this component is the only freshwater inflow during such conditions. During droughts, the water level in St. Lucia drops below sea level, and saline water enters to replace the water lost to evaporation. When the drought is prolonged, hypersaline conditions occur and, in the northern half of the lake, the salinity concentration may become more than three times that of the sea (Figure 2).

The salinity regime is the main physical factor that determines what species, and hence ecosystems, occur. At low salinity, fresh or brackish-water plants and fish colonize the system, and its bird community is largely ducks. As salinity concentrations approach seawater, the submerged water plant Ruppia cirrhosa and the seagrass Zostera capensis are important, as are marine fish and an abundance of fish-feeding birds. At hypersaline conditions, there are no submerged macrophytes, water levels are low, and up to 40,000 flamingoes feed in the shallow waters on the abundance of diatoms, phytoplankton, and chironomid larvae. The ecosystems switch in response to fluctuating salinity resulting in continual change.

Management of the Mouth

The Umfolozi River, south of the lagoon, formerly shared a mouth into the sea with the St. Lucia lagoon. This river is larger than the five in the catchment combined. The Umfolozi River once drained through an extensive swamp and floodplain that was canalized and drained for the development of sugar plantations in the first half of the 20th century. Under certain low-flow conditions, some of the river's water would be diverted naturally into the St. Lucia lagoon.

As a result of the draining, the ability for the floodplain and swamp to act as a receiving basin for the sediments shed from the steep catchment area was lost. The sediments passed through the canals to be deposited in the joint St. Lucia-Umfolozi Mouth and, in 1950, the jointed mouth was so choked that the linkage to the sea was cut off. To protect the sugar plantations, which were now subjected to back-flooding of the river, a new mouth to the sea was dredged for the Umfolozi River, separating it from the St. Lucia system. Once this had been done, the St. Lucia linkage to the sea was dredged open — a process that took five years. Since then, the mouths of the Umfolozi River and the St. Lucia lagoon have been managed to keep them separate. The minor floods in the Umfolozi, which occur a few times each year, flush out accumulated sediments. Between large flood events, marine sediment is transported by incoming tides and accumulates. An ongoing dredging program removes these.

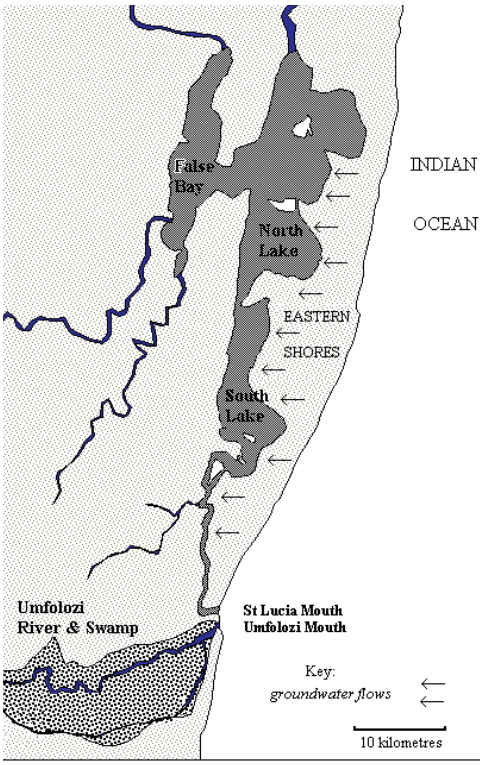

Figure 1: The St Lucia Coastal Lagoon: South Africa.

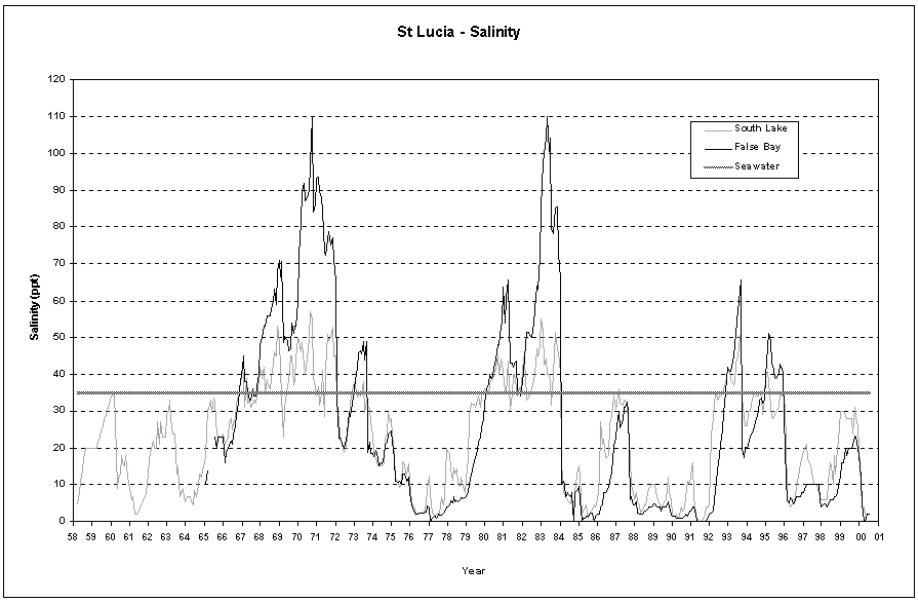

Figure 2: Salinity changes in St Lucia 1958 to 2001

Over the past forty years, a considerable amount of effort has gone into researching and managing the St. Lucia mouth. Its control dictates the wellbeing of the estuarine coastal lagoon. The efforts to control the mouth started with engineering-type solutions. Hard groins were built to narrow the mouth in an effort to make it self-scouring as tidal water moved in and out. Once this method had been started, more and more concrete was added for stabilization. With hindsight it is recognized that this approach was not particularly successful. It did, however, initiate an intensive monitoring program and the development of computer models — one to simulate catchment runoff and one to describe the lake level and salinity changes within the lagoonal system.

Then, in 1984, a cyclone passed over the catchment area, depositing huge quantities of rain that resulted in a huge flood. The floodwaters washed away all the hard structures, and left a clean slate for management efforts. Better understanding of marine sediment movement patterns, combined with detailed studies of the St. Lucia mouth area, has shown that a strategy of minimal management was the best. Dredging is still done to remove the accumulated sediments. Excavating a sediment trap a short distance in from the river's mouth does this. By doing this the mouth position is not constrained, but careful placement of the sediment trap helps reduce its movements. This is a far less intrusive management method than the use of hard structures.

Management of the Freshwater Needs

The area along the four rivers flowing into St. Lucia is progressively being planted for irrigated crops or being deforested. As a consequence, the present runoff in these rivers is now about 20 percent less than it was in the unmodified condition.

The water that is extracted reduces the flows in the rivers enough to make these, formerly perennial rivers, seasonal. At the onset of a drought, the rivers dry up sooner than they would under undeveloped conditions. The result is that the overall salinity regime has shifted towards being more saline, and hence, the proportion of time the lagoon is in each salinity ecosystem state has changed. Along the eastern shores of St. Lucia, there is no major extraction of freshwater for human use. Pine plantations are now being removed, and in their place indigenous vegetation, which uses less water, is allowed to reestablish.

South Africa's National Water Act legislates that a portion of all water is allocated to maintain the functioning of river, lake, and wetland ecosystems. The size of this water allocation, called the reserve, is based on several factors; one of which is the conservation importance of the ecological systems being maintained. This is advanced and enlightened legislation, however, the capacity and funding needed for implementation is often lacking. However, the legislation specifies that no further extraction or deforestation permits shall be issued until a preliminary determination has been done to assess the ecological needs of any particular catchment area. This legislation is an important tool for capping the amount of water extracted, thus, providing for the freshwater needs of St. Lucia.

Modeling and Simulations for Management

Computer simulation is a useful tool to understand the effect of man-made and natural changes in complex systems. In St. Lucia, conceptual models and long-term data sets have been used in different kinds of computer simulation models. Complex integrated hydrological models are used to simulate how the salinity regime in St. Lucia has responded to changes in runoff patterns. In addition, changes in ecosystem state have been modeled and used to indicate the ecosystem-level responses to the changes in salinity. In this way, ecology is linked to hydrology. New insights into future trends have been used to test possible management scenarios. The ecological modeling is based on the principle that there are certain

thresholds of salinity concentration at which the ecosystem is reset, and at each of these thresholds a new ecosystem state is initiated.

Typical patterns of colonization by pioneer species occur whenever new or vacant habitats become available with each resetting of the ecosystem. Then once the colonization process has been initiated, there is a gradual species enrichment of the system as more and more of the vacant habitat is colonized, and as biomass of the pioneer species increases. If this colonization process is truncated by the further shift of salinity concentration over another threshold into another ecosystem state, a new colonization sequence is initiated without having had a very large biomasses accumulate in the previous ecosystem state.

One output of the simulations is that the salinity fluctuations are now faster for the manipulated St. Lucia than it would have been for a fully natural system. With the faster switching between ecosystem states, any delay in the start of the colonization process after the resetting of the ecosystem will have a profound influence on the vitality of the ecosystem.

A research program is focusing on the dispersal and colonization of species after the ecosystem has been reset. Under these conditions, the founder populations that colonize the ecosystem may immigrate into the coastal lagoon from the sea (as is the case with many marine fish and birds). Or they can emerge from seeds or spores, which have survived the adverse conditions in situ. Or they may disperse from refuge sites where small populations have managed to eke out an existence. These refuge sites have salinity conditions that are not as severe as in the main water body, as they are buffered by the groundwater seeping from the sand catchments of the eastern shores of the lake. This groundwater tends to persist during droughts.

Other Major Management Tasks

The management of St. Lucia also includes the maintenance of lagoon-sea, lagoon river and lagoon-wetland connectivity. St. Lucia is not isolated, but is part of a regional matrix of ecosystems. These are needed to retain the full ecosystem functioning of the St. Lucia coastal lagoon.

The linkages with the sea are especially important for fish and crustaceans. Populations of the commercially or recreationally harvested species are declining as a result of overfishing. Their management relies on the sustainable control of fisheries under the Marine Living Resources legislation, and the maintenance of the adjacent Marine Protected Areas, which are part of the Greater St. Lucia Wetland Park.

River linkages are required to maintain dispersal routes used by hippopotamuses crocodiles, eels, and the macrobrachium prawns. These are being severed by increasing human influences such as land transformations, altered stream flow patterns, and the difficulty for agricultural activities to be conducted in places used by the larger wildlife species.

The wetland linkages are mainly important for birds. There is a network of wetlands in the southeastern region of Africa. Within this region, birds move from wetland to wetland, driven by patterns of drought, excessive rainfall, and season. St. Lucia is one of the nodes within this matrix, which includes the large wetlands of southern Tanzania, Zambia, Zimbabwe, Botswana, Mozambique, and eastern South Africa. There is also a migration of the palaearctic waders that hop from wetland to wetland from Eurasia down the length of Africa. The maintenance of these networks of wetlands requires international conservation efforts or else links will fall out and alter bird numbers everywhere in the region. The promotion of transboundry conservation, international conventions (e.g., the Ramsar and Bonn Conventions (focusing on international wetland conservation and protection of migratory species, respectively) are important initiatives in which South Africa participates.

Concluding Remarks

One lesson learned from St. Lucia is that the conservation of a large estuarine system needs a multi-disciplinary approach. A scientific advisory committee for St. Lucia was established in the early 1960s. It has successfully guided the direction of research and technology needed for the management of the St. Lucia system.

Now, with the changing social, political, and administrative structures in South Africa, much of the future management will focus on minimizing the direct human impacts. The need is to maintain the ecological integrity and the large-scale conservation values of the system while enabling access to its users. This is the biggest challenge in the endeavor to conserve the St. Lucia Coastal Lagoon. This is a challenge facing conservation in many of the lesser-developed countries of the world.

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Sustainable Coastal Communities

Rhode Island Sea Grant ■ Coastal Resources Center

http://seagrant.gso.uri.edu/scc/

This new web site provides coastal managers at the community and state level with valuable management tools. Visit the Rhode Island Sea Grant College Program/University of Rhode Island Coastal Resources Center (Sea Grant/CRC) site for guidance on conducting public participation processes, community visioning, training programs and program evaluation. Through its 30-year history in coastal management, Sea Grant/CRC has developed tools for sustainable coastal communities to replenish their environmental, economic, and social resources for present and future generations.

For further information, contact Susan Kennedy. Tel: 401-874-6107. Fax: 401-789-4670. E-mail: skennedy@gso.uri.edu

The Road to Johannesburg: Integrating Gender Concerns into the Coastal and Freshwater Agendas

In December 2001, two important international meetings were held as input into the upcoming World Summit on Sustainable Development (WSSD) in Johannesburg, South Africa. Although not officially sanctioned, the United Nations sponsored preparatory meetings for WSSD. These international sector-specific meetings brought together key professionals, stakeholders, and advocates in the fields of coastal and freshwater management.

In both events, progress was noted regarding the integration of gender concerns in the issue agenda. There was also some movement to better link the freshwater and land-based resource management agendas with ocean and coastal management. Unfortunately, the mainstreaming of population issues into natural resources management was less advanced, with little or no explicit participation of this professional community in the events.

Conference on Oceans and Coasts (Paris, France — December 3-7, 2001)

Gender and population were not specific topics of discussion at this event, but were of interest to many of the assembled participants. Lesley Squillante, University of Rhode Island's Coastal Resources Center (URI-CRC), and Lorena Aguilar, International Union for the Conservation of Nature and Natural Resources (IUCN), active in URI-CRC's Women in Coastal Management Leadership Development initiative (WILD), took advantage of the meeting to host a lively luncheon session on gender, population, and ICM that influenced the deliberations of several working groups. A paper was tabled at that event to put forth some of the specific recommendations of the WILD group (see page 32). (For more information, see: http://www.udel.edu/CMS/csmp/rio+10/)

International Conference on Freshwater (Bonn, Germany — December 3-7, 2001)

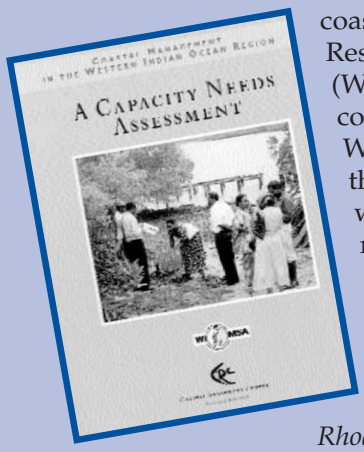
The need to establish better links with other international processes and agreements, including those related to the marine environment, was explicitly mentioned in the Conference Recommendations. Gender was highlighted throughout the week as a central cross-cutting issue outlined in a widely circulated and discussed thematic background paper, as well as significant references to gender equity in the outcome recommendations.

A morning plenary was dedicated to the issue. In considering the benefits and risks of water management decisions, suggestions were made to mainstream gender in development, call upon governments to present gender-sensitive policies in Johannesburg, and incorporate gender perspectives in ecosystem management. For more information, see website: http://www.water-2001.de/

A Capacity Needs Assessment in the Western Indian Ocean Region

Capacity development is the process by which individuals, groups, organizations, institutions and societies increase their ability to understand and deal with their development needs in a broad context and in a sustainable manner. Developing capacity in coastal and marine issues of the Western Indian Ocean (WIO) region is a very important activity, given increasing pressures on the coastal and marine resources.

Capacity-building programs must address the unique needs of individuals. However, there are some common features that effective capacity-building programs include a clear statements of objectives, use of indicators and benchmarks, and emphasis on learning-by-doing hands-on approaches with sustained follow-up.



In the report, ***A Capacity Needs Assessment*** (2002), the capacity building needs of coastal management practitioners in the WIO were identified by the Coastal Resources Center (CRC) and the Western Indian Ocean Marine Science Association (WIOMSA). WIOMSA and CRC developed a survey tool to measure the perceived competencies of coastal management practioners in the WIO region. Then, WIOMSA and CRC used these results to tailor a capacity-building program to the needs of emerging practitioners. The goal was to provide the WIO region with a systematic approach to continuous and improved learning in fields related to marine and coastal management.

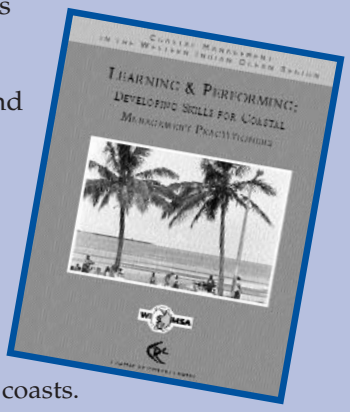
The needs assessment report lead to the development and execution of the course on ***Learning & Performing: Developing Skills for Coastal Management Practitioners*** (see below).

For further information or a copy of the publication, contact Elin Torell, Coastal Resources Center, University of Rhode Island, South Ferry Road, Narragansett, Rhode Island 02882 USA. Tel: 401-874-6103. Fax: 401-789-4670. E-mail: elin@gso.uri.edu. Website: http://www.crc.uri.edu.

Developing Skills for Coastal Managers

In March 2001, WIOMSA and CRC embarked on delivering a course, ***Learning & Performing: Developing Skills for Coastal Management Practitioners*** in the WIO region, which would begin to address the root causes of limited regional capacity for coastal management. This meant delivering a course that would not only focus on building individuals' knowledge and skills, but also expand and strengthen the network of individuals and institutions in the region.

The course (four, six-day modules) was conducted over a six-month period from March 2001 to October 2001. The ***Learning & Performing*** report (2002) provides an overview of the course background, approach, and design; a section on the financial aspects of the course; a summary statement on participant evaluations of the course. The modular approach also involved a cumulative building of skills and knowledge. Instruction in knowledge bases, concepts, tools, and skills were repeated over the course of the four modules at increasingly complex levels. This allowed participants to first gain a basic level of a knowledge or skill, then test and apply that knowledge or skill.



Some key elements were:

- A learning-by-doing approach balanced with time for reflection
- A modular structure — four or more modules per course
- External mentors
- Interim bridging and linking assignments

The Learning & Performing course was an experiment — a successful experiment that took a bold new approach. Yet, it is meant to serve as only the first in a series of initiatives within the WIO that will build the region's capacity to manage its coasts.

For further information or a copy of the publication, contact Elin Torell, Coastal Resources Center, University of Rhode Island, South Ferry Road, Narragansett, Rhode Island 02882 USA. Tel: 401-874-6103. Fax: 401-789-4670. E-mail: elin@gso.uri.edu. Website: http://www.crc.uri.edu.

Documenting Mariculture Development in Tanzania

Worldwide, mariculture presents management challenges typical of other economic development activities that increasingly exert pressure upon coastal habitats and residents. Mariculture also has unique attributes, since it most commonly takes place at the interface of land and water. This interface area presents special problems for management and sustainable development because institutional jurisdictions, responsibilities, and roles are often weakly defined for these areas. However, success in developing mechanisms to promote and regulate mariculture offers the promise of providing an example of how to deal with other coastal development issues.

Tanzania Mariculture Issue Profile

The Tanzania Coastal Management Partnership's (TCMP) Mariculture Working Group (MWG) was formed as an advisory team to the TCMP during Tanzania's integrated coastal management policy development phase. The team had two tasks:

- Identify issues of concern for mariculture as an intersectoral coastal development issue
- Address critical issues for mariculture focusing on policy and institutional arrangements. This would also serve as a model for the integrated coastal management policy development process.

The findings of the MWG's issue-identification phase were summarized in the report, ***Tanzania Mariculture Issue Profile*** (1999).

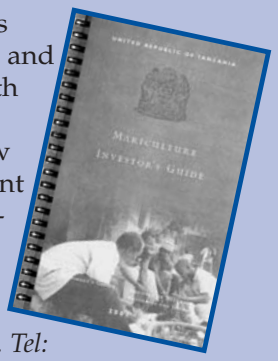
Tanzania Mariculture Guidelines Source Book

To date, no large-scale mariculture projects have been able to obtain all permits required to establish a legal operation. The realization that the nation was not fully prepared to deal with regulation of mariculture coincided with the planning period of the TCMP. The challenge in mariculture development is in taking full advantage of the opportunities offered by mariculture development while avoiding mistakes made in other parts of the world.

It is anticipated that a wide range of stakeholders will find these guidelines a useful tool for profitable and sustainable mariculture development.

The ***Tanzania Mariculture Guidelines Source Book*** (2001) will assist the investor and regulator alike in understanding and navigating the permitting procedure in order to streamline the process and reduce costs, thereby encouraging the establishment of mariculture businesses.

Tanzania Mariculture Investors' Guide



The ***Tanzania Mariculture Investors' Guide*** (2001) was developed in Tanzania and is committed to conducting this in a way that both the quality of the environment and life for coastal residents are protected. The ***Investors' Guide*** provides direction to both investors and the government sectors. The purpose of these three documents is to clarify the planning and permitting process for mariculture projects to promote new business development. This will, it is hoped, lead to wise and sustainable investment in the mariculture sector in Tanzania and serve as a model for mariculture development in other areas.

For further information or a copy of the publications, contact Jim Tobey, Coastal Resources Center, University of Rhode Island, South Ferry Road, Narragansett, Rhode Island 02882 USA. Tel: 401-874-6411. Fax: 401-789-4670. E-mail: tobey@gso.uri.edu. Website: http://www.crc.uri.edu.

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(continued from page 1)
government or semi-autonomous public authorities, corporations, or functional authorities.

■ *De-concentration* involves shifting some management responsibilities from central government ministries to sub-national units of the same ministry.

■ *Delegation* occurs when central government authorities transfer responsibility to semi-autonomous, sub-national agencies or authorities not wholly controlled by central government, but accountable to it in some fashion.

■ *Devolution* involves the transfer of authority to local units of government with defined geographic boundaries. Devolution typically leaves the local government authority with substantial autonomy regarding how the devolved functions are implemented.

These three general types of decentralization provide a starting point for a more detailed elaboration of central-local governmental relationships.

How did Central Governments Become such Dominant Players in Environmental Management?

Politics was a key factor. A growing international awareness of environmental issues culminated in the first Earth Day in 1970. Leaders made several arguments in favor of strong national programs.

■ Without significant national standards, some argued that state and local governments would adopt relatively lower environmental standards as a means of attracting economic investment and jobs. Scholars and policy analysts argued that only national standards could prevent inter-state competition to tailor environmental standards to meet the preferences of industry.

■ National officials, it was assumed, would be better able to resist the influence of industry lobbyists.

■ National standards and enforcement is required because a city, state, or province cannot effectively regulate industrial effluents or other land or resource use activities generating environmental impacts that cross jurisdictional boundaries.

By the end of the 1970s, centralized approaches to environmental management were predominate in many countries.

The Movement to Decentralize

By the 1980s, the pendulum was beginning to swing the other way: academic specialists, international agencies, and other specialists began to promote decentralization as a key governmental reform.

One of the primary arguments sometimes offered for decentralized approaches to environmental management is that the variability of local conditions requires management approaches that are more closely tailored to the environmental, social, political, and economic conditions at the local level. In general, the more that local knowledge is critical to program success, the greater the justification for local program design and implementation.

Another argument for decentralization is that it allows for greater sensitivity to local preferences. Decentralization, it is often argued, can allow for greater official awareness of local problems and needs. It could provide for better information to formulate more realistic and effective plans for government projects and programs.

Decentralization, it is also argued, can improve administrative efficiency. The key assumption is that central government authorities will be freed from routine implementation tasks that can be delegated to lower level officials. However, such efficiencies can only be achieved if the time and energy costs of supervising lower-level officials are low. If the tasks assigned to lower-level officials are too complex, or subordinates are perceived as misusing the authority they have been assigned, gains in efficiency are likely to be low.

Types of Decentralized Administrative Arrangements for Coastal Management

Many of the prominent examples of decentralized approaches to environmental management involve coastal management. A review of the international experience with coastal management suggests that there are at least five general types of national-local relationships.

Classic De-concentration:

Implementation authority is vested in the local or provincial officers of central government ministries. These officers are technically part of the same organization as the central government officers from whom they receive directions.

Coercive Devolution:

Provincial or local governments are treated as regulatory agents of central government. They are expected to comply with regulatory and/or procedural requirements imposed by central government ministries. Laws or administrative rules spell out detailed standards and procedures for achieving policy objectives thereby reducing the discretion of local authorities. Failure to follow these standards or procedures may result in sanctions such as fines, loss of funding for local projects, or other penalties.

Cooperative Devolution:

The cooperative devolution approach to inter-governmental

structures treats states, provinces, or other sub-national units of government as partners, albeit junior ones, with national government. It assumes that there is substantial agreement among national and sub-national agency staff about the substance of policy or, lacking such agreement, sufficient incentives can be provided to lower-level officials to encourage their commitment.

Devolved Experimentation:

This refers to situations in which central authorities identify general goals and objectives and mandate or encourage sub-national units (such as provinces or local governments) to develop projects that address these general goals. The devolved experimentation model is based on the premise that sub-national units have more knowledge about local resource issues and are therefore better able to design projects to address those issues. This model also assumes that local governments have or can acquire the capacity and resources to develop these experimental or pilot projects that tailor national objectives to local conditions.

Local Entrepreneurship:

This recognizes that resource management projects do not necessarily depend on central government mandates or encouragement. Provincial or local governments — and even communities — may respond to local resource use issues by organizing and implementing management initiatives. Purely local projects may be established outside existing legal and administrative frameworks. They may be organized by community leaders or by outside community organizers, including university extension agents.

Practical Dilemmas in the Design of Decentralized Management

At the core of decentralization efforts are a new division of authority and responsibility among levels of government.

Can cooperation work?

One of the key dilemmas in designing inter-governmental approaches is how to achieve national objectives through sub-national agencies and staff. Should central government authorities rely primarily on coercion or emphasize cooperation?

Efforts to design inter-governmental structures that are primarily cooperative are based on the assumption that local governments can be counted on to be faithful trustees of central government intentions. Cooperative arrangements may require local governments to prepare a plan, design a regulatory program, carry out a public awareness program or other management activity, but leave the details of how to accomplish these ends to local government (or local offices of national ministries). Such arrangements are also based on the assumption that local government officials have a more complete understanding of local condition and are therefore able to tailor central government objectives to local conditions.

Are local units capable?

One of the most frequently cited reasons for not implementing policies through subordinate units of government at provincial and local levels is that they lack the technical capacity, organizational strength, and institutional reforms needed to carry out required tasks.

Are local units accountable?

Reallocating authority and responsibility from central government ministries to local ministry officials or local authorities carries with it the assumption that those to whom responsibility is transferred will somehow be held accountable for their administrative actions.

However, administrative monitoring is often seen by subordinate agencies as a labor intensive and intrusive process that doesn't adequately gauge either the level of effort or quality of what they do.

A more inclusive system of accountability is needed. The most obvious form of political accountability is scrutiny by elected officials at all levels. Legislative bodies hold hearings, review reports, and consider new legislation. However, the notion of political accountability is also based on the assumption that administrative officials are responsible not just to elected and appointed officials but to the multitude of stakeholders whose lives are affected by the implementation of environmental programs.

Creating opportunities for community consultation is another mechanism that has the potential for increasing accountability. Some agencies maintain advisory groups composed of resources users, government officials and representatives of nongovernmental organizations to get assistance in identifying resource use problems in specific areas, management issues or review of agency actions or plans.

Are local units committed?

The commitment of implementing officials is a key factor in determining successful implementation. Political resistance accounts for some of the variability in responses by local officials to central government mandates. Getting local government assistance in enforcing coastal building setback requirements is a continuing problem in some countries, in part because some local officials regard coastal erosion resulting from improperly located coastal structures to be a minor problem unrelated to coastal regulation.

Local government officials may recognize the need for improved management of areas exposed to coastal flooding, for example, but object to administering a permit system or other regulatory program that imposes significant development restrictions on local residents.

Finding ways to address limited commitment (or political resistance) of local authorities is a key issue to be addressed if the implementation gap between central government goals and decentralized action is to be narrowed.

Implications for Decentralized Coastal Management

Determine whether a decentralized approach to coastal management is needed

A key issue in designing an intergovernmental approach to management is what sorts of resource uses account for patterns of resource degradation and depletion. In situations in which the primary threats to coastal resources are associated with a few key uses, such as heavy manufacturing, a centralized regulatory approach to management is probably more efficient and effective. However, in countries in which coastal issues vary from place to place, a more decentralized approach tailored to local conditions and the people who understand those conditions is likely to be preferable. Over-fishing, conversion of mangroves to other uses, and other forms of habitat destruction, for example, are all general coastal issues, but may be caused by different resource uses (and users) in different areas.

Centralized management works best when the number of users is small. When resource degradation and depletion is the cumulative result of the activities of numerous fishers, coral miners or other users a more decentralized approach based on a detailed understanding of local conditions is likely to be more effective.

Decentralized approaches work better when there is a tradition of local autonomy or where local institutions are already in place. In settings in which there is a history of local collective self-management, these traditions can often be effectively revived and strengthened for contemporary management needs.

Allocate management tasks, management authority and resources among levels of government in ways that respond to the coastal management challenges the country confronts

Effective decentralization requires a specification of what resource management issues are to be addressed, and a determination of what specific management tasks subordinate units of government are expected to perform. Establishing decentralized management tasks can be mandated by central authorities or negotiated among staff at different levels of government. The U.S. Coastal Zone Management Act, for example, required participating coastal states to prepare detailed management programs that responded to general federal guidance about what the programs should include.

Local authorities may be given the authority to regulate the conversion of mangroves to aquaculture ponds. However, in order to effectively engage in such management activities, they require both the legal authority to regulate, enforcement personnel and other tools, such as fines, to deter illegal conversions. The most frequent complaint of lower-level units in a decentralized system is that they are given management responsibilities without adequate resources to carry them out. Enforcement costs in particular — staff, vehicles or boats for site inspections, analysis costs — can be prohibitive. Inadequate implementation resources can subvert otherwise well-designed management strategies.

Tailor local government capacity building to management tasks

Building administrative capacity' is conventionally understood as strengthening the knowledge and skills of local of local officials responsible for implementation. As important as it is, treating local capacity as merely a problem of personnel development misses other important dimensions of capacity. A second important dimension of capacity building is organizational strengthening. Strategies for strengthening organizations includes:

- Improving recruitment and utilization of staff
- Introducing better management practices
- Restructuring work and authority relationships
- Improving information and communication flows
- Upgrading physical resources
- Introducing better management practices
- Decentralizing and opening decisionmaking processes

A third dimension of capacity building is institutional reform. Institutional reform involves altering the rules of the game in which organizations and individuals make decisions and carry out activities. While legal and constitutional change is sometimes cited as strategies for institutional reform, for coastal managers establishing a legal or administrative context for collective self-management of resource users is perhaps a more relevant answer.

For those designing decentralized coastal management systems, the central point is that capacity building should be regarded as more than simple skill development.

Develop incentives to encourage effective management by subordinate units

In the politically charged arena of local resource management, local managers need psychological, political, and financial incentives to maintain a high level of effort. Resources are needed to hire staff, organize training, conduct analysis, and engaging in all the other

tasks associated with developing local management capacity. Intergovernmental grants to engage in management can be a substantial incentive. Political support from national and local political elites in the form of building awareness and support for the management of uses affecting local resources is important. In addition, recognition to local officials in the form of professional awards and acknowledgement can be a powerful incentive to support good management.

Develop practical mechanisms for insuring accountability

Formal systems of upward accountability include such mechanisms as central government review of local plans or compliance with national guidelines, regular reports on the extent to which local governments have met national 'benchmarks' and periodic program audits.

Accountability should also be downward as well. National government agencies should be accountable to local governments to provide the legal authority and management resources necessary for effective management.

As a practical matter, local government agencies are also accountable in a variety of ways to local constituencies. Local officials know that they may be accountable to friends, colleagues, kin and local citizens. The subtle — and not so subtle — demands and expectations of local constituencies can shape their management behavior.

In short, local officials operate in a web of formal and informal expectations about how and to whom they will be accountable.

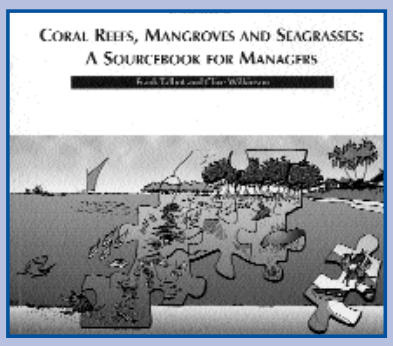
For further information, contact Kem Lowry, Department of Urban and Regional Planning, Porteus Hall 107, 2424 Maile Way, Honolulu, Hawaii, 96822 USA. Tel: 808-954-7381. Fax: 808-956-6870. E-mail: lowry@hawaii.edu

Coral Reefs, Mangroves and Seagrasses: A Sourcebook for Managers

By Frank Talbot and Clive Wilkinson
Reviewed by Lynne Z. Hale, Associate Director, Coastal Resources Center

Written for "resource managers and educators to provide information and practical examples to help prevent further damage to tropical coastal systems."

While the book covers familiar ground-the basics of coral reefs, mangroves, and seagrasses; the stresses to these systems; and management measures that can be used to reduce stresses-it is a welcome addition to the existing literature. It recognizes that many managers use English as their second or third language and often do not have access to the more scientific or technical literature. It therefore uses straight forward, non-technical language and presents a wide array of topics.



The book is presented in four major sections. The values of coastal ecosystems are simply presented in the first section. The second section briefly reviews the causes and consequences of the primary stressors of coastal systems. The third section, comprises over a third of the book, is on management. It includes a combination of short case studies-seven on integrated management and eight on human impacts of coastal ecosystems as well as general principles and guidance on marine protected areas and integrated management. The book concludes with a section on "sustaining coastal resources" which provides guidance on a number of topics including education, training, monitoring, and restoration.

The book's simplicity is both its strength as well as its potential weakness. It will be a very useful introduction to those who have not had access to much information on coastal ecosystem values, problems, and management solutions. The book does not, however, leave the reader with a sense of the complications that exist, and therefore, the strategic thinking that is necessary when seeking to develop and implement workable management solutions. A somewhat more extensive guide to further reading would also be helpful. However, these minor shortcomings are far outweighed by the concise and accessible introduction this book provides to its intended audience — the field-based coastal manager.

Copies are available from Science Communications, Australian Institute of Marine Science, PMB No. 3, Townsville Mail Centre, Townsville Q 4771 6138. Fax: 07-4771-6138. Copies are available from: Science Communications, Australian Institute of Marine Science, PMB No. 3, Townsville Mail Centre, Townsville Q 4810 Australia. Fax: 07-4771-6138. E-mail: bookshop@aims.gov.au

Coastal Sprawl: The Effects of Urban Design on Aquatic Ecosystems in the United States

By Dana Beach, executive director of the South Carolina Coastal Conservation League

According to popular wisdom, rapid population growth is the biggest threat to the coastal environment. It is a classic case of trying to put ten pounds of potatoes in a five-pound sack.

Or is it?

At first glance, national statistics appear to confirm that perspective. Coastal counties cover 17 percent of the land area of the United States. Coastal watersheds, as described by the US Department of Agriculture, represent just 13 percent of the nation's acreage. By any measure, the coastal zone is a small part of the country, but it is home to more than half of America's citizens.

Moreover, today's coastal populations are just the tip of the iceberg. Over the next 15 years, 27 million additional people — more than half of the nation's population increase — will funnel into this narrow corridor along the edge of the ocean.

Coastal population growth is not the whole story, however. It is actually a short chapter in a much longer book. Runaway land consumption, dysfunctional suburban development patterns, and exponential growth in automobile use are the real engines of pollution and habitat degradation on the coast. Some large coastal metropolitan areas are consuming land ten times as fast as they are adding new residents. Across the country, driving has increased at three to four times the increase in population. If today's land consumption trends continue, more than one-quarter of the coast's acreage will be developed by 2025 — up from 14 percent in 1997.

The independent Pew Oceans Commission has been studying the effects of coastal development on the health of US waters as part of its comprehensive review of the nation's ocean laws and policies. What was found is a prescription for severe ecological damage. Abundant research on rivers and estuaries confirms that when impervious surfaces cover more than ten percent of a watershed, the rivers, creeks, and estuaries they surround become biologically degraded. If today's growth trends continue, many healthy watersheds will cross that threshold over the next 25 years and the US will experience sharp and irreversible declines in the health of coastal waters. If we are to protect coastal ecosystems, reconfiguring and containing growth in the nation's metropolitan regions is not just an option. It is an overriding necessity.

Efforts around the nation to reform development patterns, embodied in such movements as Smart Growth and the New Urbanism, offer solutions to the coastal management challenge. However, the linkage between land-use changes and coastal ecosystem performance is not well understood, nor is it adequately integrated into these broader movements. A large-scale public education campaign targeting local officials, state and federal regulatory agencies and representatives, and the public is a necessary ingredient for success.

Some states continue to refine statewide planning processes in order to achieve growth that is more efficient. Reauthorization of federal transportation, coastal zone management, and water quality legislation is forthcoming. All of these arenas offer the prospect for coordinated policy revisions that protect coastal ecosystems.

The potential for positive change is enormous, and the momentum is building. Now is the time to add the cause of coastal ecology, and the voices of coastal protection advocates, to the call for land-use reform.

For further information, contact Pew Oceans Commission, 2101 Wilson Boulevard, Suite 550, Arlington, Virginia 22201 USA. Tel: 703-516-0624. The full report, "Coastal Sprawl: The Effects of Urban Design on Aquatic Ecosystems in the United States" is available at www.pewoceans.org.

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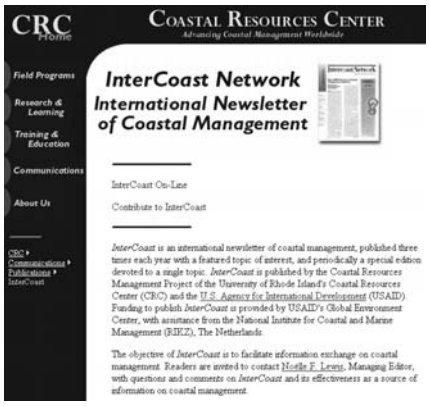

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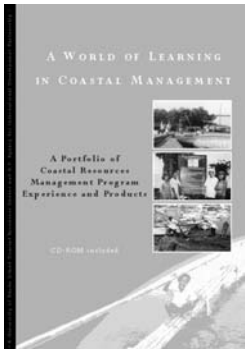

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