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Integrated Coastal Resource Management: A Prescription for Sustainable Development

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Environmental problems due to the human impact of growing urban populations in coastal areas necessitate an integrated approach to coastal resource management as a move toward sustainable development. Steps toward sustainable development of coastal communities should involve researchers, educators, and planners from a coordinated network of international aid agencies, non-governmental organizations (NGOs), national policy makers, and local communities. Hence, this paper aims to explain how international aid agencies and NGOs interact with national policy makers and local communities in integrated coastal management programs to promote sustainable development. From an examination of international agencies' roles in development, NGOs emerge as a counterweight to balance the perspective of development. Specific examples of several integrated coastal management programs explicate an understanding of organizational and institutional interaction in this process. Finally, some comments about social movements and their appropriateness for raising consciousness about environmental degradation through non-formal education programs will be given.

"There is nothing more difficult to carry out, nor more doubtful of success, nor more dangerous to handle, than to initiate a new order of things."

Machiavelli, *The Prince*, 1513

Throughout history civilizations have developed on the water's edge. For thousands of years humans have had a close relationship with the sea. The vast resources of the oceans are an essential element for the survival of coastal communities. Ironically, the world's marine environments are also disposal systems for human generated waste. It may be an overgeneralization, but there is some truth in saying, "Everything comes from the sea and everything returns to the sea." The implication is that since the oceans have limited resources, there is a need to minimize the impact that the growing size and number of coastal communities have on marine environments. Although non-coastal communities also have pressing environmental issues, maintaining sustainability in coastal development is particularly important because "more than half the world's population lives

within 60 km of the shoreline, and this could rise to three quarters by the year 2020" (United Nations Conference on Environment and Development [UNCED], 1992, para. 7.3). At the advent of the 21st century there are 20 cities in the world with a population of over 10 million. Sixteen of those cities are along coastlines. Growing populations not only put a greater strain on already depleting resources, but also are responsible for the degradation of marine habitats for those resources. According to the report of the Independent World Commission on the Oceans (1998), over 70% of the world's fish stocks are being exploited at or even beyond sustainable limits. "Over 80% of all marine pollution originates from land-based sources which are primarily industrial, agricultural and urban" (UNCED, 1992).The need to rethink development planning in coastal areas is undeniable. Steps toward sustainable development of coastal communities should involve researchers, educators, and planners from a coordinated network of international aid agencies, non-governmental organizations (NGOs), national policy makers, and local communities. Hence, this paper aims to explain how international aid agencies and NGOs interact with national policy makers and local communities in integrated coastal management programs to promote sustainable development.

After defining the problem of development in coastal areas this paper will briefly discuss sustainable development as a goal, and integrated coastal management (ICM) as a vehicle for moving toward that goal. From an examination of international agencies' roles in development, NGOs emerge as a counterweight to balance the perspective of development. Specific examples of several integrated coastal management programs explicate an understanding of organizational and institutional interaction in this process. Finally, some comments about social movements and their appropriateness for raising consciousness about environmental degradation will be given.

Growing Anthropogenic Pressures on Coastal Environments

The growing world population, world economy, and world trade have increased the demand for marine and coastal resources. Technology has enabled large companies to widen the range of resources they are able to exploit. Technology has also allowed an exponential increase in the "development" of coastal areas. Among the practices that contribute to unsustainable development are logging in mangrove forests, mining, dredging, filling, channelizing wetlands, bottom trawling, and dynamite fishing on coral reefs. Additional damage to marine ecosystems comes from land-based activities such as siltation from logging, fertilizer and pesticide run-off from agriculture, sewage effluent, industrial discharges, road building, urbanization of shorelines, construction of sea walls and jetties, and construction of harbors and marinas. The building of dams alters the flow of

freshwater and nutrients into marine systems and prevents some aquatic species from reaching their spawning grounds (UNCED, 1992).

Some of the inherent implications of unsustainable development are summarized in *The Ocean, Our Future,* a report of the Independent World Commission on the Oceans (1998):

> All too often the costs [of unsustainable development] bear most heavily on the poor. Management regimes to control land-based sources of pollution, over fishing, and other threats to the stability of marine and coastal eco-systems are often poorly developed or do not exist. Access to many ocean resources is unregulated and, where such regulation does exist, it is often ineffective. (p. 97)

Without a system for managing the ocean's resources, development will go unchecked. In market economies it is natural for individuals and companies to make decisions in their own financial interests. Unfortunately, short-term gains usually overshadow long-term consequences. From the types of detrimental practices listed above, it can be inferred that many decisions are being made without considering the long-term social and economic costs of degrading the environment. This has a tendency to worsen the cycle of poverty. The people profiting from the use of those resources are able to ignore the costs they impose on others:

> Liberalization may have yielded many economic benefits, but it has also increased the risk of environmental damage due to the failure of markets to register the environmental costs of economic activity. Markets have typically failed to signal the true scarcity of resources, both on- and offshore, and liberalization has often weakened corrective regulations or incentives. Indeed, the worldwide structure of property rights, taxes and subsides has encouraged over-use of coastal and marine resources. This has often placed these resources under intolerable stress (Independent World Commission on the Oceans, 1998; p. 98).

In their analysis of the World Bank's case studies on linkages between economy-wide policies and the environment, Cruz and Munasinghe (1996) further explain the paradoxical relationship between sustainable development and liberalization:

> Environmentally detrimental policy distortions include export promotion and trade liberalization that increase the profitability of exporting resources, particularly if those resources are

underpriced or subsidized. Market failures occur when prices do not adequately reflect external effects such as pollution.Institutional constraints include poor accountability in state-owned enterprises, inadequately defined property rights, and weak financial intermediation, all of which lower the incentives for sustainable resource management. (p. 7)

As resources reach economic depletion, workers are forced out of jobs. "In the United States alone, coastal areas provide 28 million jobs-many of which will cease to exist if fisheries are contaminated, tourist destinations fouled or public health problems exacerbated" (Claussen, 1997). Through the loss of jobs and the depletion of economic resources in less developed countries, environmental degradation can lead to an increase in environmental refugees.

Although lowered incomes and unemployment affect both men and women, it would seem that such sociological problems harm women more. According to the *UN Chronicle*, "women are among those who suffer most from environmental degradation and also among the most significant actors in the conservation and safeguarding of natural resources" (Empowering women, 1995, p. 47). As jobs become scarce, women are the first to be pushed out of the market. Some may leave rural communities for jobs in already overcrowded cities. The lack of skills, inadequate education, or limitations of only speaking a provincial language is likely to make it difficult for some to find jobs in the cities; thus forcing young women and even children into prostitution. Less money often means less food in developing countries. Women and children are the most likely to suffer from lack of nutrition. Lack of nutrition is often linked to high infant mortality, disease, and problems during pregnancy (Warren, 1996).

Sustainable Development

Sustainable development should not be interpreted as a fixed notion, but should rather be seen as "a process of change in the relationships between social, economic, and natural systems and processes. These interrelationships present a challenge to us in reconciling economic and social progress with safeguarding the global life support systems" (van Ginkel, 1998, Summary section, para. 2).Although sustainable development has many definitions, the most widely used definition comes from the World Commission on Environment and Development in its 1987 report *Our Common Future*, "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (p. 43) It contains within it two key concepts:

the concept of *needs*, in particular the essential needs of the world's poor, to which overriding priority should be given; and

the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs.

It is conceivable that this definition has different meanings for different groups. Much of the rhetoric in *Agenda 21* and similar documents have tones that sustainable development is globally-managed interdependence. This interdependence has international development agencies defining appropriate development strategies for regions in the south, while regions in the north benefit from the south's sale of cheaper goods and natural resources. The critics of this view would argue that such economically driven globalization is not compatible with sustainable development because multi-national corporations and elite groups are more concerned with increasing their own profits than establishing a stewardship for the environment. Unfortunately, it is those corporations and elite groups that have monetary, political, and social power to influence national and international decisions on environmental policy. Therefore, sustainable development should come from a grassroots, community-based, self-reliant approach. An integrated approach of both top-down and bottom-up strategies is necessary to maintain a balance that promotes monitored national growth while minimizing local environmental impact.

Integrated Coastal Management

The concept of integrated coastal management (ICM) has evolved out of the United States' extensive coastal management practices that began in the early 1970s (Thai-Eng, 1998)."Integrated coastal management is a continuous, iterative, adaptive, and consensus-building process comprised of a set of related tasks, all of which must be carried out to achieve a set of goals for the sustainable use of coastal areas" (Bower, Ehler, & Basta, 1994). "Integrated" is the definitive word in integrated coastal management. The term has five separate dimensions (National Oceanic and Atmospheric Administration, 2000). The first dimension, intersectoral integration, is integration among different coastal and marine sectors including oil and gas development, fisheries, coastal tourism, marine mammal protection, and port development. It is also integration between marine sectors and land-based sectors that affect the coastal and ocean environment, such as agriculture, forestry, and mining. Intersectoral integration also implies a consciousness about and desire to resolve conflicts among government agencies in different sectors. This particular type of integration is essential in the planning of effective coastal management. It promotes a sharing of knowledge and commitment among actors.

A second dimension of the word integration is intergovernmental integration. This type of integration helps to realize the variance in perspectives of different levels of government so as to facilitate harmony among national, provincial, and local governments in addressing public needs. This harmony should help to coordinate development policies. A third dimension, spatial integration, further connects land-based activities with coastal impacts.

The fourth dimension of integration is science management integration or the vital sharing of knowledge and information among the various disciplines concerned with coastal resource management. It also comprises the sharing of information and data with other actors in the resource management process for purposes of monitoring changes in the environment and revising coastal development planning. Finally, the fifth dimension of integration poses the greatest challenge. International integration focuses on minimizing and quelling international disputes over fishing activities, transboundary pollution, establishment of maritime boundaries, passage of ships, and other issues.

The Role of International Development Agencies and Institutions

Beginning in the last quarter of the 20th century, there has been a significant increase in the international community's involvement in environmental issues, coastal development, and use of the ocean's resources. Perhaps the most publicized assertion of commitment comes from the United Nations Conference on Environment and Development's *Agenda 21*, chapter 17, that outlines international guidelines for the protection of the oceans. This document includes extensive information on human impact to the environment, plausible measures to lessen that impact, and warnings about possible environmental threats to human such as global warming and rising sea levels.

International agencies like the United Nations Development Program (UNDP), United Nations Environmental Programme (UNEP), UNESCO, NOAA, Food and Agriculture Organization of the United Nations (FAO), and the World Bank are significant actors in the integrated coastal management process. In spite of their pitfalls, they supply undeniably necessary resources to the process. UNEP functions include environmental impact assessments, promotion of regional cooperation, providing technical advice to governments in collaboration with UNDP and the coordination of scientific research. The information technology available to these international agencies is needed for accurate assessment and monitoring of environmental changes. These agencies also have financial capital or the networking means of coordinating the capital for development projects. Another important role of international governing institutions is their ability

to create legally binding instruments to phase out and eliminate persistent organic pollutants and restrict inappropriate practices in the exploitation of ocean resources (Claussen, 1997).These types of agreements must be negotiated multilaterally, but can address land-based marine pollution and other problems.

The report of the Independent World Commission on the Oceans (1998) lists the positive developments that have come from international governance of the oceans. Several of these are:

>   Governments have begun to call on civil society in attempts to reconcile conflicts in the oceans. This is encouraging greater awareness within society of the role of stakeholders in ocean policy and of the role of both national and international arrangements in articulating their interests in achieving policy objectives.
>   There are legal foundations for the promotion of greater equity in the oceans, notably the concept of *common heritage of mankind*.
>   The combination of terrestrial and marine uses in the coastal zone has focused new attention on integrated coastal management, and has compelled national and international bodies to assess their disparate approaches and guidelines.
>   There is growing recognition of the need to think in terms of systems that encompass both sea water and fresh water. Recognition of the interdependencies existing between fresh water drainage basins, wetlands and the coastal zone is giving rise to the new international initiatives in integrated watershed management which take into account impacts on coastal and marine areas.
>   The ecosystem-based and precautionary approaches to the management of living resources have spread from the regional level to the global level, reflected in the 1995 Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks.
>   At a policy level, the linkages between international legal arrangements for the oceans, biodiversity, wetlands, rivers, the atmosphere, movements of hazardous wastes, and other related issues have been explicitly incorporated into some regional arrangements, notably for the Mediterranean.
>   Of particular importance is the Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities, adopted in Washington in 1995, which has established a clearinghouse mechanism under UNEP auspices, with the prospect of linkages to the marine and coastal biodiversity issues. (pp. 141-142)

Although there have been positive developments from international agencies being involved in the governance of the oceans, there are many criticisms

about their effectiveness in establishing sustainable development. What is immediately noticeable in the above list is the lack of mention of any improvement to the quality of life as a result of improved environmental conditions for those living in the south. The effectiveness of high-tech monitoring systems and heightened international awareness of environmental degradation is only meaningful if the outcome is improved social conditions as a bi-product of improved environmental conditions. Some critics are very skeptical about the rhetoric in *Agenda 21*. Imber (1994) aptly summarizes this criticism:

> For sustainable development to represent a cultural-shift rather than an additional slogan, the UN system will require more than the paper-commitments of Agenda 21.It will require an overhaul of the mechanisms for coordination, and massive net additional funding. The lesson of the last decade is that whereas finance is definitely not forthcoming without structural reform, such reform is unlikely. (p. 130)

Top-down strategists may argue that this additional funding would come from economic expansion. This is evident in the words of the World Bank (1992): "Rising incomes with sound environmental policies and institutions can form the basis for tackling both environmental and development problems. The key to growing sustainable is not to produce less but to produce differently" (p. 36).

However, without clear definitions of what the World Bank means by "differently", the paradox of the liberal-institutionalist approach to sustainable development remains. Williams (1996) claims that these liberal ideologies of institutions, such as the World Bank, regard environmental degradation as an accidental outcome of development and that the environmental problems can be easily rectified through market-led solutions. It is illogical to believe that a solution will come from the same brand of capitalism that led to exponential increases in environmental degradation since the onset of the industrial revolution. Therefore, a counterweight to the power and influence of international institutions and agencies is needed to balance the perspective on development. This counterweight is the grassroots, bottom-up movement widely supported by NGOs.

The Role of Non-Governmental Organizations

Fernandes (1985) aptly notes, "the function of non-governmental organizations is to serve" (p. 7) Non-governmental organizations (NGOs) offer a *bottom-up* inductive approach to bettering communities and addressing human concerns. Rubem discusses how NGOs in Latin America

have promoted people's participation in slum management and encouraged political involvement. In a specific report on NGOs in the field of education, Archer (1994) reviews how some NGOs have historically focused on providing educational services to communities throughout the world. Although it is certain that many of these organizations serve causes not directly related to environmental issues, some of the other important literature on NGOs makes direct references to their involvement in environmental programs. In an overview of environmental politics in Asia, Schubert (1993) affirms that in most Asian nations, NGOs are "the primary impetus for environmental protection and nature conservation" (p. 241). According to Schubert, many of the thousands of environmental NGOs in Asia are "grass-roots movements of people concerned about specific conditions in local eco-systems" (p. 241).

Whether NGOs focus on environmental issues or seek to provide other services, they provide additional monetary backing for local community efforts. Fernandes' (1985) claim that there are thousands of NGOs administering hundreds of millions of dollars in Latin America (p. 7) gives an example of how NGOs can provide needed resources for grass roots efforts. Schubert (1993) reasons that despite good intentions, many governments lack sufficient funding, training, and enforcement to implement effective environmental protection policies and programs. Therefore, there is a need for NGOs to augment the environmental efforts of national governments. Schubert clearly states, "The insufficiency of resources available to most policy makers in Asian nations calls for, even necessitates, the active inclusion of NGOs in policy formulation, enactment and enforcement" (p. 242). This is one way of integrating the actors involved in coastal management programs.

Although Schubert is referring to a broad view of NGO roles in developing effective environmental policies, there are definite implications for NGO roles in more specific environmental education programs. NGOs can provide resources to increase the probability that community-based environmental programs will be effective agents of change. Ideally, educational programs can promote attitudinal and behavioral changes to facilitate policy formulation, instigate action and reduce the burden of enforcement.

Invasive or Noninvasive?

Fernandes (1985) provides a list of organizational problems that many NGOs have. These include, inconsistencies between goals and budgets, poorly paid staff, and inter-organizational communication problems. Proposing solutions to these problems is beyond the scope of this paper; however, it is necessary to address criticisms of NGOs that are relevant to the theoretical

design of eco-centered community-based environmental education.

Some critics of NGO involvement in local community concerns may argue that many NGOs are actually products of governments that are set up to implement official agenda (Quizon & Reyes as cited in Toh & Floresca-Cawagas, 1997). The argument would be that governments use NGOs to disguise political agenda. Similarly, Toh and Floresca-Cawagas argue that, "there are differences in world views and motivations among NGOs, some of which may not be authentically dedicated to the well-being of their constituents" (p. 534). If NGOs have goals that do not address the real needs of the community it is likely that their involvement will be seen as an outsider attempt to control local social institutions. When locals view NGOs as outsiders, resentment will grow and participation will wane.

It is important that NGOs avoid becoming invasive in their involvement. This is especially true for NGO support in establishing community-based educational programs in rural areas. In addition to the theoretical reasons already discussed in this paper, there are the practical reasons of workability for NGOs to maintain a non-invasive approach to implementing educational programs. In reference to non-formal education, van Riezen (1996) reasons that since specific groups have specific needs, the curriculum used in an educational program must relate to the needs and resources of the local community. People in rural communities will not profit from curriculum and textbooks designed for people in cities or more affluent countries. Van Riezen explains that avoiding invasive involvement includes using the vernacular as a way of showing respect for the local culture. The inclusion of local culture sends a message to communities that their participation is valued. This gives community members a sense of worth and purpose that encourages active participation.

McCormick (1993) gives two factors that influence the effectiveness of NGOs. These, too, apply to NGOs in general, but also have significant relevance to community-based educational programs. The two factors are:

> Their political influence (as measured by the level of political support they enjoy, and their ability to use political structures effectively);
> The importance of having clearly defined constituencies and clearly defined avenues through which to make their appeals and to influence government. (p.142)

Although McCormick contends that NGOs need clearly defined constituencies and strategies to be effective, others may reason that this is not necessary. The famous Chipko movement in India is an example of an effective campaign that grew to a critical mass while remaining loosely organized

(Viswanath, 1991). The Chipko movement is a case where locals' values and love for their forest homeland motivated them to unite in an activist campaign against foreign logging companies. This campaign began without clearly defined avenues through which to make their appeals or to influence the government. Although the group of activists better fits the definition of a movement than an NGO, it exemplifies one type of local organization in developing countries. Viswanath more clearly defines the range of local NGOs in India as being a "mixed bag, ranging from service-oriented groups to militant movements, usually of the left" (p. 37). The Chipko is an example of one community organizing to campaign for a local cause but having far reaching influence in motivating other communities to form grassroots initiatives.

In their discussion on people-centered education in the Philippines, Toh and Floresc-Cawagas (1997) suggest four themes. The four themes are: a pedagogy of dialogue; a praxis of critical empowerment; active nonviolence for peace and justice; and walking in solidarity. Consideration of these four themes allows community educators and NGOs to negotiate how to maximize the positive impacts of McCormick's two factors. The first theme can begin to clearly define participants, methods and approaches to achieving the goals of a community-based education program. As previously discussed, empowerment, the second theme, can lead to political clout beyond the local level. Thus, the first two themes address McCormick's second conditional factor for effectiveness. The second, third, and fourth themes are all significant in optimizing the political influence that an NGO backed grassroots environmental program might have.

It is essential to carefully weave all four of the themes in the planning and implementing of community-based coastal resource management programs. Inclusion of these themes will help to strengthen ties between any supporting NGO and the coastal community. Inclusion of these themes will help to ensure a greater effectiveness in achieving the goals of a community-based environmental program.

Examples of Integrated Coastal Management

SEACAM

One of the newest examples of the implementation of an ICM program is in East Africa. In 1997, the Secretariat for East African Coastal Area Management (SEACAM) was formally established to work with stakeholders in 10 coastal countries; Comoros, Eritrea, Kenya, Madagascar, Mauritius, Mozambique, Reunion, Seychelles, South Africa, and Tanzania. The objectives of the SEACAM project are to assist the Eastern African coastal

countries in implementing and coordinating coastal management activities in the region. After one year, Voabil, Engdahl and Banze (1998) conducted an evaluation of the project. This section summarizes their findings.

In the first year SEACAM was able to implement the most intensive effort in coastal management training ever held in Eastern Africa. The authors claim that almost 80 stakeholders benefited from SEACAM's courses in Project Development and Management, and Environmental Assessment of Coastal Tourism. However, the authors do not specify who the 80 stakeholders were or to what degree they benefited.

A major priority in the first year of the program was the capacity building of local NGOs. This includes a series of five week-long training courses throughout the region. These courses are based on SEACAM's training manual. This program was able to reach over 60 NGOs in six of the countries. The authors report evidence that these programs help build confidence for designing projects among NGO representatives. Self-designed projects alleviate the need for outside consultants.

SEACAM has elicited the advice of other coastal management programs so that the projects in Eastern Africa can learn from the successes and failures of existing activities. SEACAM brought together 66 coastal management practitioners from 18 countries around the world. These practitioners represented research organizations, national and international NGOs, donor agencies and national governments. Representatives from the World Bank were present at four of the courses. This is an important component for newly established programs. Shared experiential learning from other organizations can save time and money, thus increasing effectiveness.

Since the project was only a year old at the time of the report, the focus was on the success of training and dissemination of information. The authors concluded that the efforts in these areas were successful and with sustainable financing should grow to be even more effective. From their report, it is evident that this is a major first step toward integrated coastal management in Eastern Africa. However, a longer case study at specific sites is needed to determine the true effectiveness of the ICM process in this region. The following section summaries a report on a group of case studies conducted in Asia.

Integrated Coastal Management in Southeast Asia

Chua Thai-Eng (1998) assessed the performance of eight ICM projects in Southeast Asia. These projects were developed through the ASEAN/US Coastal Resource Management Project and the Global Environment Facility

(GEF)/UNDP/IMO Regional Programme for the Prevention and Management of Marine Pollution in the East Asian Seas. These section summaries the author's discussion of lessons learned during the 13 years of practicing ICM in seven countries; Singapore, Malaysia, Thailand, China, the Philippines, Brunei and Indonesia. This first ICM was launched in Southeast Asia by the United States Agency for International Development (USAID). An international NGO, the International Center for Living Aquatic Resource Management, was in charge of implementing the program from 1986 to 1992. Since 1994, the GEF and UNDP have been involved in ICM programs in Southeast Asia. The International Maritime Organization (IMO) is in charge of executing these programs. Swedish International Development Agency (Sida) and Science of Anticipation*Recognition*Evaluation*Control of Health Risks (SAREC) are working collaboratively in the training process. One advantage of this collaboration is that it leads to closer south-south cooperation through staff exchange and training workshops. It also helps to strengthen institutional capacity in Southeast Asian developing nations such as Vietnam.This type of exchange helps to take the place of hiring foreign experts (Hallak, 1990).

The author found that in most of the project sites, people's organizations and NGOs were less significant than other actors because stakeholders were confined mostly in government agencies and local authorities. Still, there was a significant increase in public awareness of environmental degradation at all sites. The two most successful sites were Batangas, Philippines, and Xiamen, China. Both sites have benefited from the experiences and lessons learned in other ICM initiatives around the world. At these two sites, perception and attitude changes lead to stronger political commitments and allocation of financial resources for environmental projects. In Xiamen there was definite evidence of improved environmental conditions, a first step toward sustainable development. The Yaundang lagoon clean up in Xiamen resulted in improved water quality through management interventions, and use conflicts were minimized. Similar results in Batangas prompted the government to establish the Provincial Government-Environment and Natural Resource Office. The author notes that an important development of the ICM process in Batangas was the change in perception of industries' relationship with the environment. "Perception changes occur when people are convinced of the values and significance of ICM initiatives" (Hallak, 1990, p. 605). Creating public awareness among stakeholders should be a continual process. Public awareness helps to generate support, raise consciousness about environmental issues and promote civil advocacy for environmental protection and sustainable development. Another positive aspect of the ICM process was the development of a critical mass of technical experts from participating countries.

Outside of creating awareness and developing ICM projects, there was little evidence of impact at the other six sites. However, there have been several successful initiatives for mangrove reforestation at several sites.

Despite the lack of technical know-how and experience of local governments, their participation is essential. This is evidenced in the comparative successes of the Xiamen and Batangas initiatives, where local government ownership of the ICM programs was apparent. In the other sites, local governments were only minimally involved. The author stresses the importance of stakeholder's participation in ICM:

> The stakehoders denotes all sectors of society at the local level that are directly or indirectly affected by exploitation and use of coastal resources. They include sectors that exploit or use the natural resources for profit, coastal communities that traditionally use natural resources for their food and livelihood, and the public sectors (local and central) that govern and manage the use of these resources. (Hallak, 1990, p.606)

The author also warns against an ICM initiative trying to solve too many problems at the same time because many of the issues that are related to political, cultural, or socioeconomic systems can take a long time to work through. Therefore, ICM initiatives should not try "quick fixes" and expect miracles.

Conclusion

This paper has attempted to demonstrate how an integrated top-down and bottom-up approach to coastal management is necessary to provide a balanced perspective of sustainable development. International governing institutions, aid agencies, and local communities differ not only in their perspectives, but also in their strengths and weaknesses. Therefore, integration of these actors is quintessential in the continual strife toward sustainable development. This integration should focus on the strengths of each, while seeking ways in which each actor can compensate for the weaknesses of others.

International governing agencies have the financial capital and technological resources to fund training programs and gather information about environmental changes. Often communities in the south lack these resources. City governments in Africa, Asia and Latin America often have one hundredth or (in their most extreme) one thousandth of the revenue per capita available to most city or municipal governments in Europe (Hardoy, Mitlin & Satterthwaite, 1992, p. 162). In spite of this, these cities have

similar responsibilities that are possibly even greater due to poverty and environmental degradation. Therefore, outside assistance is necessary to provide additional financial capital and technological resources.

The power and global perspective of international governing agencies also facilitates their role as legislators in creating legally-binding instruments for environmental protection and resource management. Although legal agreements are fundamental in changing inappropriate practices of nations and industries, they may be difficult to enforce due to lack of human resources in some regions.

The main criticism of top-down strategies is that they often do not share the same perspective of sustainable development as local communities. International institutions' liberal approaches may actually preclude sustainable development by advocating wider-scale market economies that will encourage more exploitation of resources. To counter this force and safeguard the resources of local communities, bottom-up grass roots movements need to be integrated into the coastal management process.

It is from the bottom-up aspect of ICM that NGOs and social movements emerge as counter weights to international institutions and corporations. Hillary Clinton (1995) aptly describes the role of NGOs as counter weights:"It is the NGOs who have pressured governments and led governments down the path to economic, social, and political progress, often in the face of overwhelming hostility" (p. 674).NGOs have an important role in planning policies, networking, implementation, and monitoring of programs. Perhaps, though, the most important role NGOs have is the raising of consciousness about environmental issues and educating citizens about more appropriate behaviors for sustainable development. Outside the formal education system, NGOs can promote local, experiential non-formal education. Many proponents of environmental education affirm the workability of eco-centered educational programs in non-formal education (van Riezen, 1996; Taylor, Hadsell, Lorentzen, & Scarce, 1993). Eileen B. Claussen (1997), U.S. Assistant Secretary of State for Oceans and International Environmental and Scientific Affairs, describes the need for this education:

> Locally, education is absolutely critical. In our increasingly urbanized societies, it is all too easy to forget how our daily activities affect the marine environment. The way we change the oil in our cars, the methods by which we apply pesticides in the garden, the choices we make about using toxic substances in our homes and the way we dispose of those substances-all of these actions end up affecting marine ecosystems. Changing our habits

in response to environmental concerns requires massive education at the local level, yet the result of such an effort is sure to be a substantial reduction in the flow of pollutants into the marine environment. (Effective implementation section, para. 2)

In his book, *Earth in the Balance*, former vice president Al Gore (1992) also advocates education to develop more eco-centric views in his proposal of a "Global Marshall Plan" for the environment.One of his strategic goals is "the establishment of a cooperative plan for educating the world's citizens about our global environment" (p. 306). He reasons that such a plan could "foster new patterns of thinking about the relationship of civilization to the global environment" (p. 307).These new patterns of thinking can give rise to change just as social movements incited new ways of thinking about communism in Eastern Europe led to many political changes. Unfortunately, the extent of Gore's advice for educational reform is merely to use technology for retrieving and passing on information about environmental concerns.Although this can foster an awareness that is vital in changing attitudes; more is needed to create a workable and effective environmental education curriculum in schools around the world.

Consideration of future generations is a key element in environmental education as C. A. Bowers (1995) notes in his discussion of trans-generational communication in the educational process. Bower expresses the need to shift away from student-centered learning and toward a process "of encoding, storing, and renewing a cultural group's ways of understanding and valuing the primary life sustaining relationships between humans and the rest of the biome" (p. 135). This is an eco-centered approach that emphasizes tradition and culture in a way that will require the elder generations to act as "carriers of essential knowledge and values." The environmental education process that Bower describes echoes with words like "stewardship," "nurturing," and "emancipatory education."

Education can also take place in the form of social movements that aim at assembling critical masses to gain media attention and further raise public awareness of their campaigns. Alberto Melucci (1996) explains this process:

Movements touch upon the most sensitive mechanisms of society and they come to coincide with the frontiers of change; both as expressions of the forces of resistance ("reactionary" and conservative forms of opposing change) and in the form of innovation (creative social initiatives) the issues raised by social movements are always crucial for a given society as a whole. They are in effect indicators of what is taking place in a given

society, and today they reveal in many ways the core processes of national societies and our global system alike. (pp. 146-147)

A New Environmental Paradigm

Education and social movements can be driving forces in developing a new social paradigm that views the environment as an important resource that needs to be protected to ensure a better quality of life for future generations.Environmental education is emancipatory in that it leads to the reproduction of environmental values. The passing on of environmental values from one generation to another begins the process of structuring a new social paradigm.Environmentally based non-formal education can change the way people think about their relationship with nature.Lester Milbrath (1989) aptly argues for the need to promote new social paradigms that focus on sustainability and reconsider the way society dominates the environment. Some of Milbrath's ideas are radical in that they require a massive restructuring of political institutions and society. Milbrath also advocates a shift toward placing a higher valuation on nature, carefully planning action to avoid risks and limiting growth.

Through education and consciousness raising, non-formal education can help citizens realize the dependence humans have on the environment.This could create a more holistic perspective that tightens the relationship between humans and nature.The ultimate goal here, however, is to encourage behavior that favors environmental protection over economic growth.Economic growth is not necessarily harmful; this simply means that environmental protection should be a priority.To maintain a balance, careful planning is needed. Planning should consider all short-term and long-term risks. Education is an important element in the planning process because knowledge allows communities to make informed decisions about their lives. A crucial element of informed planning is the ability to realize the limits of growth.Thus, one major goal of integrated coastal management programs is to determine what types of growth could lead to the sustainable development.

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