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ARE COASTAL ZONE MANAGEMENT AND ECONOMIC DEVELOPMENT COMPLEMENTARY IN SRI LANKA?

Proceedings of the Seminar on
Coastal Zone Management and Economic Development,
Colombo, Sri Lanka
March 19, 1993

Edited by

ALAN T. WHITE
AND
MERVYN WIJERATNE

1993

Coast Conservation Department, Sri Lanka

Sri Lanka Association for the Advancement of Science

Coastal Resources Management Project of
The University of Rhode Island

United States Agency for International Development

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Foreword and Acknowledgments

The seminar *Are Coastal Zone Management and Economic Development Complementary in Sri Lanka?* coincided with the 15th anniversary of the formal initiation of coast conservation activities in Sri Lanka and with the release of *Coastal 2000: A Resource Management Strategy for Sri Lanka's Coastal Region*. The strategies and management options contained in *Coastal 2000* evolved from the experiences gained during the first-generation efforts in coastal management pioneered by the Coast Conservation Department in the 1980s. These efforts generally followed the regulatory measures in *The Coastal Zone Management Plan* (CZMP), which received formal government approval in May 1990. *Coastal 2000* presents the case for a broader perspective of coastal zone management in terms of objectives, participating agencies and levels of government, and the range of geographic areas and environments affected. The document emphasizes that a second-generation coastal resources management program must ensure that concerned government agencies, coastal resource users, non-governmental organizations (NGOs) and local communities understand, support and believe in the planning and implementation process for coastal resource management so that the program becomes self-sustaining.

This seminar addressed the concerns expressed in *Coastal 2000*. Earlier seminars and workshops have been largely of a technical nature, while this seminar dealt with the larger aspects of coastal resources use, conservation and development. Papers were presented by specialists representing a range of

disciplines relevant to coastal resources management. The overall objective was to assist with policy formulation and implementation. Several papers and lively discussions pointed out the need for economic development to rescue Sri Lanka from present poverty and social tensions. Others drew attention to the need for sustainable use of coastal resources to ensure continuing economic growth and environmental stability. The need for better understanding between developers and the government agencies--who are the custodians of these resources--as well as among the government agencies themselves, was discussed. The importance of protecting the investments of developers through proper environmental management was also highlighted.

The unique feature of this seminar was that both developers and environmental managers were asked to present their perspectives. Although some disagreements were evident, the many common objectives of both became apparent.

This seminar was sponsored by the Coast Conservation Department (CCD), the Sri Lanka Association for the Advancement of Science and the Coastal Resources Management Project (CRMP) of the University of Rhode Island through support from the Natural Resources and Environmental Policy Project (NAREPP) of the United States Agency for International Development (USAID). Thanks are due to the Sri Lanka Association for the Advancement of Science (SLAAS) for providing the seminar room and facilities. Mr. John Diandas, who acted as moderator, ensured that the limited time was utilized by the speakers in the most efficient manner possible. All the speakers are thanked for their active participation and timely production of papers for this proceedings. Finally, our thanks to Indira Fernando, Dushyanthi Gunawardena and Manori Wijesekera of the CRMP office who made the production of this book much easier.

Mervyn Wijeratne
Administrator
Coastal Resources Management Project

Preface

The coastal areas and waters of tropical Asian countries have some of the world's richest ecosystems. Productive fisheries supported by coral reef, mangrove, estuarine and lagoon habitats are often cited for their valuable economic contribution to people living in the coastal zone. In addition, these habitats and ecosystems, along with white-sand beaches and pollution-free coasts are a prime attraction for a growing tourism industry on a global scale. But because of ever-increasing pressures on these coastal resources and environments, the potential economic revenues available from them are diminishing. Nearshore fisheries in most Asian countries are overfished, and the habitat quality significantly lower than 30 years ago. Per capita income for people living along these densely populated coasts is generally declining.

Unfortunately, the situation in Sri Lanka is not much different from the Asian norm. Coasts on the southern part of Sri Lanka are densely populated, and most development is focused in this area. Fisheries are at or beyond sustainable limits, and space for building near the sea is increasingly scarce. The resulting crowding is exacerbated by an erosion-prone southern coastline that faces the Indian Ocean's waves and currents. This squeeze for space and the deterioration of habitats made it mandatory that a Coastal Zone Management Plan be developed in the 1980s. This plan is now being implemented, while the concerns continue to mount on how to stem the tide of environmental degradation and conflicts of interest.

Although Sri Lanka must be commended for its progress in planning for protection and management of its coasts, it is now faced with the more difficult question of how to be effective in the implementation of the plan. Because plans must be responsive to the constituency affected by their implementation, the Coast Conservation Department is continually trying to assess the situation and determine what will work. The discussions summarized in this proceedings are an effort to review some of the problems of effective coastal zone management in relation to the development interests of investors and government for the coastal areas.

The reality in most developing countries is similar, the trade-off between environmental quality and foregone opportunities for employment and poverty alleviation is not easy to decide. The pressures to employ and feed people are ever-present and expanding. Yet, the knowledge that deteriorating coastal habitats will ultimately be costly to local communities and government alike is also well-accepted. So, what is to be done? Participants in this seminar offered some answers and suggested that tourism development holds potential for economic development that is environmentally sensitive. Whether or not you agree with this prognosis should be decided after reviewing the six papers presented and the concluding discussion.

Alan T. White
Manager
Coastal Resources Management Project

Acronyms and Abbreviations

CCD	Coast Conservation Department
CEA	Central Environmental Authority
CRM	Coastal Resources Management
CRMP	Coastal Resources Management Project
CTB	Ceylon Tourist Board
CZMP	Coastal Zone Management Plan
DANIDA	Danish International Development Agency
DM	Deutsche Mark
EDR	Environmental Degradation Rate
EIA	Environmental Impact Assessment
ELI	Environmental Loss Index
FAO	Food and Agriculture Organization
GDP	Gross Domestic Product
GTZ	German Technical Assistance Agency
HDI	Human Development Index
km	kilometer
sq km	square kilometer
m	meter
NAREPP	Natural Resources and Environmental Policy Project
NARESA	Natural Resources Energy and Science Authority of Sri Lanka
NGO	Non-governmental Organization
PQLI	Physical Quality of Life Index
SAM	Special Area Management
SLAAS	Sri Lanka Association for the Advancement of Science
SNA	System of National Accounting
UDA	Urban Development Authority
URI	University of Rhode Island
USAID	United States Agency for International Development

Seminar Introduction and Overview

The seminar "Are Coastal Zone Management and Economic Development Complementary in Sri Lanka?" filled a growing need in Sri Lanka to air the increasing controversy between proponents of coastal development and of conservation. The controversy centers around deciding what are the limits to development and what are the essential guidelines required for protecting coastal environments. Since these issues are not easily resolved and are often a matter of opinion, the resulting discussions did not end with definitive answers. Nevertheless, the seminar certainly achieved its objective by pinpointing some of the problem areas with a vision for practical solutions. And, for the first time, development-oriented people and conservationists sat down to discuss the issues.

When planning for the seminar, the six speakers were asked to prepare short papers explaining their own views and ideas on their suggested topics. Guidelines were given to the speakers to assist with the presentation of their papers so that each would address the problem from a different perspective. Although there is some overlap in topics, a wide variety of views are expressed which clearly brought forth some of the underlying issues of "development for whom and by what means?" Equally, questions about the preservation of environment for whom and for what reasons were also raised.

Some of the questions posed to the speakers before their presentations included:

- What can we learn from the history of coastal management in Sri Lanka and from its successes and failures?

- Are the concerns about environmental protection and the need for economic development necessarily in conflict?

- How can coastal management planning be made more effective and responsive to the immediate issues and local constituencies, while still being efficient?

- What are the most important economic benefits derived from the coastal resources of the country?

- To what extent can the dependence of coastal industries such as fisheries and tourism be quantified in economic terms?

- How can the degradation of coastal environments affect tourism in economic terms?

- To what extent is cost-benefit analysis being used in planning decision making involving the use of resources?

- Can increased investment and development in coastal areas stem the tide of increasing unemployment?

- Is tourism the most environmentally benign type of development?

- Can the *Coastal 2000* strategy be made real?

All the above topics were touched on, but certainly not answered. Nevertheless some directions emerged, as noted below.

Director B.S. Kahawita of the Coast Conservation Department started the discussion with a historical review of coastal management in Sri Lanka. He pointed out that more than 50 percent of the population live in the coastal zone and that the competition for space and use of resources is intense. He brought the participants up to date on efforts to manage the coast through the Coastal Zone Management Plan and the very recent *Coastal 2000* strategy. He indicated that although coastal resources conservation is definitely on the national agenda, human and financial resources have been very limited for the national program to be made effective along the entire coast. He also emphasized the need for viable livelihoods for coastal residents and the difficulty of solving this in light of the few alternatives available and the increasing population density.

Ms. Lynne Hale of the Coastal Resources Center of the University of Rhode Island explained that Sri Lanka has had a good but a reactive program of coastal management that helps the country to avoid costly mistakes in development and use of the coastal zone. Now, however, it is necessary to be more forward-looking in order to anticipate and reduce future conflicts and resource misuses. The *Coastal 2000* strategy seeks to accomplish this by increasing the roles of provincial and local government and of resource users in the management of coastal resources. *Coastal 2000* also provides a framework to maintain the integrity of the country's coastal resources and thus their ability to continue to ensure the economic well-being of the people of Sri Lanka.

Mr. N.D. Dickson of the Urban Development Authority stressed the importance of planning, advocating the development of Special Area Management (SAM) Plans at the local level, with representatives from the national agencies offering guidance and helping to expedite the approval of plans. He stressed the need for community participation from the initial stage of planning, with easily comprehended versions of SAM plans available to all for review. Combining delegation of plan implementation authority to local authorities with oversight by national agencies could be accomplished, he added, with the use of a detailed physical plan specifying regulations for development. He emphasized the need for better coordination among government agencies (national and local), Non-government organizations (NGO)s and local communities concerned with coastal resources management.

Dr. Nimal Sanderatne of the Central Bank of Sri Lanka highlighted the growth of population in coastal areas and in the country, and its implications for employment, contrasting the need for jobs with environmental and social problems created by the growth sector. He pointed out that the urgency of resolving low per capita income creates a strong bias against conservation. The ironic result, he said, is that the cost to society of improving standards of living increases as the environment deteriorates! He focused on the lack of accounting in conventional economic analysis for environmental degradation and advocated the development of methods that would take into account--as objectively as possible--the value of environmental losses. This would help turn the often short-term perspective of economics toward the longer-term outlook of sustainable development. Since both economic underdevelopment and economic growth can have adverse impacts on the coastal environment, he concluded, the challenge to economists and ecologists will be to strike a healthy balance between economic growth and coastal conservation.

Professor M.T.A. Furkhan, chairman of the Tourist Hotels Association of Sri Lanka, emphasized the continued need to create employment, while carefully utilizing resources to obtain the highest output at the least cost. He said that the Coastal Zone Management (CZM) Plan has been extremely difficult to enforce due to lack of resources and political interference, and added that tourist development has received disproportionate attention under the Coast Conservation Act, because it is the only area in which the law's provisions can be successfully implemented. As an example, he cited a section in the plan that stipulates setbacks of 10 m for 'dwelling houses' versus 60 m for 'hotels' including 'cabanas' on apparently no scientific basis. He went on to say that shanty towns are obviously not good for the environment, but continue to proliferate in spite of the CZM Plan! Resorts, on the other hand, do not destroy the environment but rather go out of their way to retain pleasant surroundings. He argued that some environmental sacrifices must be made--while balancing conflicts of interest to prevent excessive damage--in order to bring about economic development.

The last speaker, Professor Madduma Bandara of the University of Peradeniya discussed the role of policy in preventive planning in coastal management, and offered some thoughts on the implementation of such policies in Sri Lanka. He addressed the five major policy directions set forth in the *Coastal 2000* strategy, noting their importance and scope, while expressing a few concerns and recommendations for its translation from policy to action. For example, on the issue of adopting a national, regional, and local approach to coastal management, he suggested that work at the Divisional Secretaries level and in special management areas might be more successful than at the provincial and district levels, given the country's current socio-political realities. His other suggestions included greater attention to research on social issues, and a coordinating mechanism for research (and perhaps monitoring). Finally, he expressed concern as to whether CCD, as a government agency, will be able to handle the many coordinating responsibilities that it would be asked to undertake as part of the strategy. In summary, he stressed the importance of a greater degree of compatibility between policy and its implementation.

History of Coastal Zone Management in Sri Lanka

B.S. KAHAWITA
Director
Coast Conservation Department
Ministry of Ports and Shipping
Sri Lanka

Introduction

Sri Lanka is an island with a coastline of 1585 kilometers and a land area of 64,000 square kilometers. The development of the country has been closely related to maritime activities. More than half of the country's total population is settled in coastal areas. As settlements have multiplied, the development of coastal infrastructure has increased environmental degradation at an alarming rate. The coastal areas are generally low-lying, and landscapes exhibit considerable variety characterized by bays, headlands, lagoons, coastal marshes and dunes. Marine habitats of coral reefs and seagrass beds are also common.

Historical Development

The coastal problems in Sri Lanka have been the subject of discussion for many years. Government departments like Public Works, Railways, Irrigation, Highways and Water Supply and Drainage have at different times been responsible for coastal protection works. The focus in the 1960s and '70s was mainly on seeking solutions to erosion problems by constructing coast protection structures designed to meet site-specific requirements. However, coastal problems have continued to escalate because of a lack of understanding of the complex inter-relationships that exist between ecosystems and human activities in coastal areas.

During the early 1960s recommendations were made for the establishment of a separate department for management of the coastal belt. In 1964, a coast protection unit was established in the Colombo Port Commission, with the primary task of coordination and construction of coast protection structures. The structures, however, were unplanned and ad hoc.

The drafting of a new coast conservation law commenced in 1972 to facilitate control of erosion control works. In 1974, Prof. F. Gerritsen made the following recommendations after studying the coastal problems in Sri Lanka:

1. establishment of a separate government department for coast conservation;
2. establishment of a coastal environmental research centre;
3. preparation of a coastal zone management plan; and
4. expansion of the draft prepared in 1972 to include coastal zone management planning and coast conservation.

A Coast Conservation Division was established in the Ministry of Fisheries on January 1, 1978. On January 1, 1984, a separate Department of Coast Conservation was established within the Ministry of Fisheries. A Coastal Engineering Research Centre was also formed and later converted to the Lanka Hydraulic Institute Limited, a public company.

Coast Conservation Act

The Coast Conservation Act No. 57 of 1981 came into operation on October 1, 1983. The Act required a permit to be obtained from the director of Coast Conservation for any "development activity" in the "coastal zone". The Act defined the coastal zone as the "area lying within a limit of three hundred meters landward of the mean high water line and a limit of two kilometers seaward of the mean low water line and in the case of rivers, streams, lagoons, or any other body of water connected to the sea, either permanently or periodically. The landward boundary extended to a limit of two kilometers perpendicular to the straight base line drawn between the natural entrance points thereof and included the waters of such rivers, streams, and lagoons, or any other body of water so connected to the sea". These boundaries are shown in Figure 1.

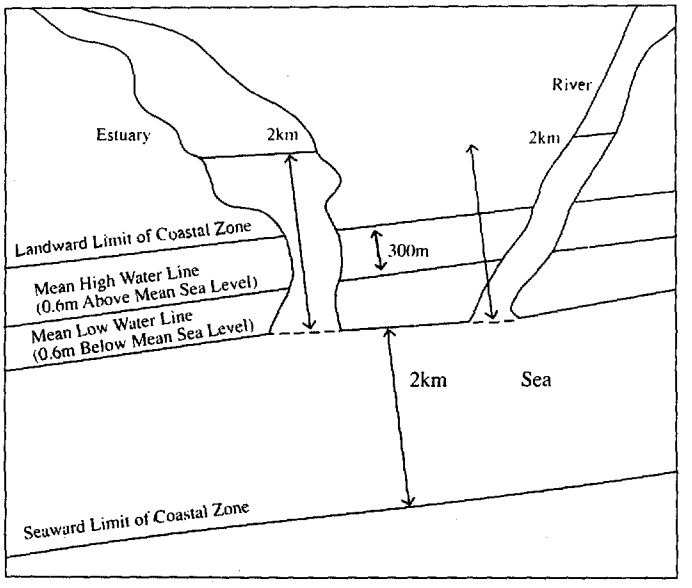

Fig. 1. The Sri Lanka Coastal Zone as Defined by the Coast Conservation Act of 1981.

"Development activity" is defined in the Act as any activity likely to alter the physical nature of the coastal zone in any way and includes the construction of buildings and other structures; the deposition of waste or other materials from outfalls, vessels or by other means; the removal of sand, sea shells, natural vegetation, sea grass or other substances; dredging and filling; land reclaiming and mining or drilling for minerals, but does not include fishing.

The procedure for the issue of permits is laid down in the Act. The Coast Conservation (Amendment) Act No. 64 of 1988 prohibits engaging in the mining, collecting, possessing, processing, storing, burning and transporting in any form whatsoever of coral within the coastal zone. It also requires kilns in the coastal zone to be demolished. Although difficult to enforce, about 230 kilns were demolished from Ambalangoda to Tangalle on the south coast in 1992. The ban on coral mining remains a difficult issue to solve without broader measures and alternative means of livelihood for the coral miners. Sand mining has generally been controlled by the department and is allowed only in selected areas of the coastal zone on particular days of the week under supervision by departmental staff. Nevertheless, violations and infringements of sand mining regulations occur in some areas.

The Act also mandated the preparation of a coastal zone management plan. This plan-- prepared with technical assistance of the University of Rhode Island and support of USAID--was approved by the Cabinet of Ministers in 1990.

Coastal Zone Management Plan

The Coastal Zone Management Plan has three major concerns:

1. Coast erosion management;
2. Conservation of natural coastal habitats; and
3. Conservation of cultural, religious and historic sites, and areas of scenic and recreational value.

The plan defines these problems and describes a management strategy to control coastal erosion, reduce the loss and degradation of coastal habitats, and addresses issues relating to loss and degradation of cultural and historical monuments, and sites and areas of scenic and recreational values.

An important aspect of the plan is the "setback" guidelines, which consider erosion rates, beach dynamics, shoreline ecology and related activities. The CZM Plan describes setbacks as follows:

> A setback is defined as an area left free of any physical modification. It is good planning practice to leave a minimum setback of 60 meters from the mean sea level line. Such a setback is desirable to allow for dynamics of seasonal and long-term fluctuations of the coastline, and to ensure public access to the waterfront and visual access to it. The CCD, however, recognizes that demands of development and land ownership patterns in the coastal zone do not always permit the delineation of a setback of 60 meters. The setback standards for construction activities listed in the CZM plan are designated as minimum standards. Setbacks for water-dependent activities such as hatcheries for aquaculture, boatyards, etc. are to be determined on a case-by-case basis.

Setback standards are laid down in the plan for dwelling units, commercial and industrial buildings, non water-dependent activities and tourist development for various zones in the coastal areas around the country. In "no build"

areas, depending on site conditions, the developer can apply for a "variance" from the Coastal Advisory Council for setback reduction to build in that area. It is for the security of the developer that suitable setbacks, depending on site conditions, are stipulated. Many development structures occurring prior to the Coast Conservation Act of 1981 are not within the setback guidelines and are now being affected by erosion. Nevertheless, some developers demand that newly developed adjacent areas be given the same setback as the original activity. Although contrary to the CZM plan and detrimental for the developer, variances are allowed in certain cases.

During severe weather conditions in May 1991, when waves set height records of over six meters, many structures were damaged. People in coastal areas confirmed that they had not seen such high waves, and most developers thanked the CCD for advising them on setbacks, which prevented damage. Because bad weather conditions can occur at anytime, the importance of setback areas should not be underestimated.

Coast Erosion Management Plan

The Coast Erosion Management Plan is an integral part of the Coastal Zone Management Plan. A prerequisite for the preparation of both plans was firm understanding of the erosion problem, its magnitude, and causes of the problem.

In 1983-84, there were severe erosion problems on the south coast, so foreign assistance was sought to arrest the situation. To obtain foreign funding an acceptable plan had to be prepared for potential funding agencies. First, a master plan was prepared with initial foreign assistance. The department embarked on a project with the Danish International Development Agency (DANIDA) for the preparation of a master plan for coast erosion management, which was completed in 1986.

Once the master plan for coast erosion management was completed, DANIDA provided assistance for two stages of coastal protection structures and beach nourishment. Stage I (1987 - 1989), for the Negombo sand nourishment and revetments at Moratuwa, cost an estimated Rs. 320 million ($US 6,660,000); and Stage II (1990 - 1992), for protection of the main road from Beruwala to Weligama, cost approximately Rs. 500 million ($US 10,400,000).

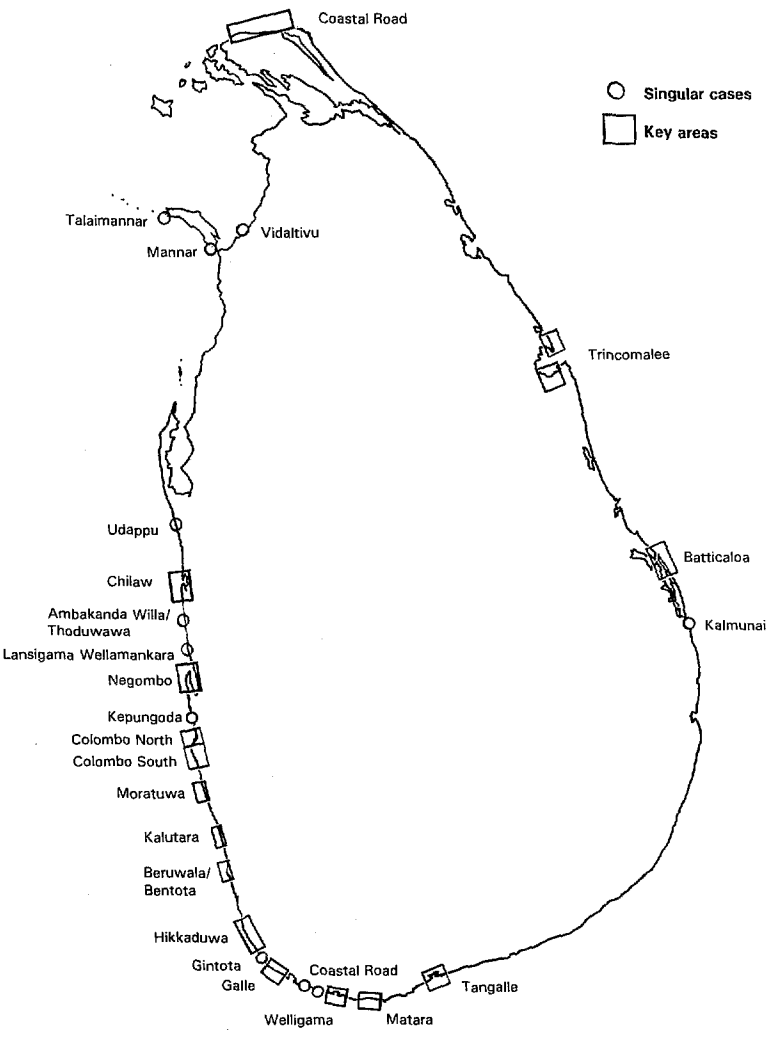

Fig. 2. The Coast Erosion Master Plan categorized the coastal erosion problem under "key areas" and "singular areas".

The Coast Erosion Master Plan categorized the coastal erosion problem under "key areas" and "singular areas" (Figure 2). Key areas refer to a coastal stretch where the existing development pressures necessitate extensive solutions over a coastal reach of several kilometers, including the consideration of the morphological complexity. Singular areas are those with isolated problems covering a short coast length, which do not interfere with coastal processes and do not require extensive studies.

Technical assistance has also been provided by the German Technical Assistance Agency (GTZ) of the German government for strengthening the Coast Conservation Department in the following broad areas:

- Database on coastal situation and wave measurement;
- Pilot projects for coast protection;
- Equipment and maintenance; and
- Structures, training programmes and environmental education.

DM 4 million ($US 2.4 million) was provided for Stage I (1990 - 1991), and an additional DM 3 million ($US 1.8 million) was provided for Stage II (1991 - 1993). Stage III of German technical assistance is anticipated to be extended for three more years from 1994 with a grant amounting to DM 3 million ($US 1.8 million).

Conclusion

Significant progress in coastal zone management has been made during the 15-year period of 1978 to 1993. Foreign assistance has been instrumental in developing the Coastal Zone Management Plan and the Coastal Erosion Master Plan. Both plans are now being implemented and have had a significant positive impact on the state of Sri Lanka's coast. Nevertheless, more work has to be done and greater attention focused on the coastal zone, considering the many development activities that are taking place in this area. The future must continue to show progress in coast conservation and management. *Coastal 2000*, a joint effort between the Coast Conservation Department and the Coastal Resources Center of the University of Rhode Island, outlines a resource management strategy for Sri Lanka's coastal region. This can be considered a second-generation coastal resource management programme, which will be implemented simultaneously at national, provincial, district and local levels, with the active involvement of the private sector. The emphasis will be on the provision of reliable information on resource utilization, education and public awareness programmes to mobilize public support for this effort.

Why Coastal Zone Management and Economic Development are Complementary and Mutually Beneficial

LYNNE ZEITLIN HALE*
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The Sri Lankan Context

The topic that I have been asked to address today is perhaps one of the most important facing humankind as we enter into the 21st century. It is my firm belief that Sri Lanka can play a major leadership role in the international community in demonstrating how a workable balance between environmental quality and economic development can be addressed and attained.

I believe this is true because Sri Lanka is a crucible for much of the world. The necessity of economic development is apparent, and the link between productive, healthy ecosystems and both the economy and people's overall well-being is also clear. Sri Lanka is also a nation that has achieved many of the indicators of a high quality of life-- high literacy, long life expectancy and low child mortality--even when average personal income is low. At the same time, and despite impressive gains in slowing the rate of increase, Sri Lanka's population is already outstripping the capacities of the island's ecosystems to support people at what they consider to be an adequate quality of life. Evidence of degraded resources and diminished ecosystem

* *The author would like to acknowledge Stephen Olsen, Director of the University of Rhode Island Coastal Resources Center for his contribution to the ideas presented in this paper.*

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values is too often apparent. Lastly, Sri Lanka, in its recent past, has demonstrated all too clearly the social unrest that occurs when an increasing segment of the population believes that they no longer have reason for hope in the future.

Sri Lanka's economic and coastal management challenges are clearly set out in the recently published *Coastal 2000: Recommendations for A Resource Mangement Strategy for Sri Lanka's Coastal Region, Volumes I and II:*

- There are more people per square kilometer in the coastal region than in the rest of the country--people who want to achieve a better quality of life (good health, a way to support their family, education, a healthful environment), and who in turn put additional demands on the coastal ecosystem.

- The traditional coastal resource base cannot support the number of people already utilizing these resources for agriculture, fisheries, industry and tourism, and there are indications that the resource base itself is getting poorer. To put it in simple terms, the proverbial pie is getting smaller and must be divided among more people.

The potential economic developments that can provide jobs for this growing population either depend on a healthy natural ecosystem for their success and sustainability--for example tourism, mariculture or expanded fisheries--or have the potential--as with industrial estates, ports, energy facilities--of further degrading this resource base if improperly sited, constructed or operated.

Hence the challenges of coastal ecosystem management and of economic development are inextricably intertwined. In my view, the basic problem that coastal management programs should be attempting to address is that of altering current patterns in the utilization of coastal ecosystems, which are reducing the capacity of these ecosystems to produce wealth and sustain human quality of life over the long-term. To put it another way, in classic economic terms, the economic "rent" that can be obtained from coastal ecosystems to benefit people is being reduced. We are living off capital rather than the interest that such capital can produce. Note that I use the word coastal ecosystems rather than coastal resources or the coastal zone,

because the term ecosystem fully incorporates human beings and their activities as a part of the same system.

This pattern of use is all too clear in an island nation like Sri Lanka, where the best agricultural land is all being farmed and much of the best land has already been degraded or lost, where the timber and associated forestry resources have largely disappeared, and where inshore fish stocks are already exploited at their maximum sustainable yield. Again, all this is happening at a time when the human population is increasing rapidly. The projections are that the current population of Sri Lanka--17 million--will grow to 24 million by the middle of the next century.

The World and Sri Lanka

These same kinds of problems are being played out worldwide. According to the World Resources Institute's 1992-93 Report on the *Global Environment and Sustainable Development*, 1.2 billion hectares of land--an area as large as India and China combined-- that was vegetated in the 1940s is now moderately to severely degraded, and is less capable of producing food and other forms of renewable sources of wealth for human societies. The world's marine fish catch, which in 1990 totaled 84.4 million metric tons--a fourfold increase since 1950--is no longer predicted to increase. In fact, eight of the world's 17 major ocean fisheries are exploited beyond their maximum sustainable yields, and collapse of these fisheries would not be surprising. The situation is made worse by the worldwide destruction of estuaries, which provide reproduction grounds for 90 percent of the species included in the marine fish catch; the global trends of degraded water quality point to further degradation and loss. The litany of a degraded environment goes on and today's challenges seem daunting. Yet we must not only address these immediate concerns, but also recognize the challenges of the future. The combined effects of an ever-larger and technologically more powerful human population is already having measurable impacts on the climate of this planet. According to the Intergovernmental Panel on Climate Change, we should all be planning for a rise in sea level of up to one meter by the year 2100. Along with the rise in sea level, we should be expecting major increases in the intensity and the frequency of storms and cyclones, and major shifts in long-established patterns of rainfall. On top of all this we have a continuing rapid expansion in the world's population which is 5 billion today, but is expected to more than double to 11.6 billion before it stabilizes by the middle of the next century.

Looking at the experience both in the United States and in the other nations where I have worked, I must say we are only beginning to learn to plan for all the environmental changes occurring right now, with today's population. To do so for a much larger population can seem overwhelming. Yet, this is precisely the challenge that we face. If we do not act decisively, the systems upon which many livelihoods depend will stop providing the goods and services we use and now take for granted. With any overwhelming task one begins by taking a first step. This is what Sri Lanka has done with the assembly of *Coastal 2000*.

Fortunately, Sri Lanka is better prepared to address the enormous challenge of sustainable economic development than most countries. Sri Lanka is blessed with a remarkably well-educated population with a long tradition of both public service and high-quality intellectual work. This is coupled with an information base more complete and accurate than those in many countries, which allows for a more informed and dispassionate assessment of the nation's problems and opportunities. Much of this information and formidable amount of brain power has been brought together in the *Coastal 2000: A Resource Management Strategy for Sri Lanka's Coastal Region*, which attempts to lay out a strategy for managing Sri Lanka's coastal region in a way that not only harmonizes coastal management and economic development, but indeed facilitates both as we enter the 21st century.

Coastal Management and Development

I will now talk more directly about coastal management and economic development. First, we must define coastal management, which has several definitions. There are three that are of concern: (a) coastal zone management, which typically means managing or regulating all that occurs in a defined narrow strip at the land-sea interface; (b) coastal resources management--managing use of renewable and nonrenewable resources such as coral reefs, mangroves, fish etc., either separately or in an 'integrated' fashion; and (c) coastal area or ecosystem management, where one considers a geographic area or ecosystem and tries to chart a course for its overall sustainable development. In Sri Lanka, as elsewhere, all three are essential to effective economic development, and are incorporated within the *Coastal 2000* vision.

Much of what coastal management programs do--in the United States and in Sri Lanka's internationally recognized program--can be characterized as coastal zone management. This is expressed as trying to bring order to the development process, avoiding siting and construction mistakes, directing development away from critical ecological or high-hazard areas, minimizing adverse environmental impacts of development and reducing foreseeable use conflicts. This is classic coastal zone management. It is both pragmatic and conceptually simple. It also makes good and obvious economic sense.

In the United States we have abundant examples of development "mistakes" in coastal regions, where good coastal management did not occur and very expensive economic consequences resulted. A few dramatic examples come quickly to mind. In Miami, an important center for tourism, a line of expensive hotels was built along a beautiful stretch of beach. We knew at the time and certainly know now that placing such expensive infrastructure so close to a highly dynamic and unstable environment is asking for trouble. The beach, as most beaches do, moved. Since the 1920s, the government and private industry responses to this basic siting mistake have been many, and progressively more expensive. First, individual shoreline protection structures were built at great cost; these had an overall effect of making the erosion problem worse. The current solution is to spend vast sums of money to regularly pump sand to the beach in an attempt to both protect this huge investment from sea erosion, while at the same time maintaining the beach, which is the major attraction drawing people to the hotels. In the United States, we also have our share of boat harbors built in the wrong place, which have either filled in or must be dredged at great expense every few years. We have many documented cases of collapsed fisheries resulting from overharvest and habitat degradation. We have unacceptable water quality in once highly productive estuaries that have for generations supported economically important fisheries, traditional livelihoods and lucrative tourism industries. The costs in all cases of attempting to halt such losses in environmental quality, let alone achieve restoration of what we once enjoyed "for free", have been billions of dollars. We also have a long, expensive and well-documented history of building both houses and infrastructure on coastlines that are subject to recurrent and predictable erosion, as well as utter devastation during infrequent but powerful storms.

Our response to such situations within a "coastal management" framework depends in large part on whether we are dealing with existing or new

development. In the case of existing development, coastal management programs work to mitigate and reduce further problems. In such situations, a program frequently can only address a problem's symptoms and not its cause. Required actions are often quite expensive, as in shoreline protection in Miami!

In Sri Lanka, similar expressions of avoidable mistakes are well-known. How much better off we would be today if the British had built the Galle Road and the coastal railway a few hundred feet further inland. The enormous expenditures that have recently been made in shoreline structures to protect this important infrastructure is a testament to the economic costs of such simple miscalculations, which did not consider the nature of the shoreline and had too short a planning horizon. Sri Lanka also has its share of fishing harbors that have filled in and are today used as soccer fields or housing development sites. Large sums of money have been spent to protect hotels at Negombo that are Sri Lanka's equivalent of our Miami Beach mistake. All these mistakes were predictable and avoidable; and if the planning and implementation of these projects had occurred within a proper coastal planning and management framework, major economic and social costs could have been avoided.

Sri Lanka now has much of the framework necessary for such proper planning in the current coastal zone management program--the oldest and most successful in Asia and indeed in the developing world--and has made significant progress in shorefront management. The first-generation plan focuses on regulating new development, extraction of sand and coral, and identifying and directing development away from critical historical, cultural, ecological and recreational sites. CCD has also taken an effective leadership role in resolving user conflicts and promoting more environmentally sound and less destructive development in the coastal region.

The Vision of *Coastal 2000*

As pointed out in the Coastal Zone Plan itself and in *Coastal 2000*, the basically reactive coastal program that CCD now implements can help the nation to avoid costly mistakes, which is not only consistent with, but essential to economic development. What the current program cannot do--and the vision that *Coastal 2000* sets out--is first to expand the role of provincial and local governments, as well as resource users, in taking responsibility for the stewardship of their coastal resources, and second to provide a framework for maintaining the integrity of Sri Lanka's coastal resources and ecosystems so that they can continue and expand their contribution to the nation's wealth and people's quality of life.

Sri Lanka is uniquely poised to get ahead of problems as development takes off in the south and east. *Coastal 2000* attempts to look ahead and to suggest how expensive coastal problems can be avoided, and how benefits can be maximized from essential and inevitable development. Sri Lanka has the available technical expertise--and much of it is in this audience--that is fully capable of making sure that such infrastructure as roads and major facilities--including tourist resorts, industrial facilities and wastewater discharge systems--are correctly sited so that the assets of coastal ecosystems are protected and sustained while both present and future benefits of such developments are maximized. The challenge is to recognize that such input is as essential to the development process as finding an investor. The challenge for us as coastal managers is to make our recommendations in a clear and timely way. This is essential if we are not to be perceived as "impeding development". Hence, I am not overly concerned about Sri Lanka's ability to properly assess and avoid impacts of new developments, through the implementation of the Coastal Zone Management Plan.

In the United States, Sri Lanka and elsewhere, valuable experience is now being gained in coastal ecosystem management, and in the realities of what it takes to integrate ecology, economic development and democratic processes. This experience has reinforced a simple truth that <u>how</u> you undertake resource management is as important, sometimes more so, than <u>what</u> you attempt to do. The focus of coastal management in Sri Lanka to date has been on the what; in *Coastal 2000*, the emphasis is on the "why" and "how" of coastal management.

The "vision" of *Coastal 2000* is that the second generation of coastal management must be perceived as a positive effort to sustain and improve people's quality of life, and that many more institutions and individuals must actively participate in this endeavour. *Coastal 2000* does two things. First, it puts coastal issues into the broader context of development. This is not seen as an effort by an already overworked and understaffed Coast Conservation Department to manage or regulate more activities in a larger area; rather it is an effort to understand and address root causes of issues, include critical ecosystem components, and speak about problems and solutions in a way that is meaningful to coastal residents. Again I emphasize that *Coastal 2000* does not have new regulations. Second, and more importantly, *Coastal 2000* provides a framework and a process whereby the people of a place can participate in a process to define a future they can believe in and actively participate in achieving. "How?" is the question.

Coastal 2000 recommends four major actions:

1. Experiment with participatory, multi-level planning that brings together all "stakeholders" in a process that defines economic and environmental issues and opportunities, clarifies development and management objectives, and then defines strategies for achieving those objectives. It is the premise of this policy that such a participatory approach will both yield a better plan and make effective implementation more likely. Two types of experiments are suggested: (i) special area management plans for specific geographic areas facing critical management issues, and (ii) provincial-level coastal plans. Initiatives in both are just beginning. Special area management plans are being initiated in the Hikkaduwa and the Rekawa Lagoon area. Both are attempting community-based approaches to solving problems and managing resources. CCD is just beginning to initiate discussions with national agencies and cooperating provincial and local-level officials, to more fully define the scope of provincial coastal management plans.

2. Support of policy and relevant research to provide a better understanding of issues related to resource-based economic developments such as fisheries (especially the aquarium fish industry), mariculture (siting and water quality issues) and tourism (its relation to protected areas, habitat maintenance, water quality and beach protection). Such research is essential if these developments are to proceed in a cost-effective manner with minimum adverse environmental impacts, and most importantly, in a sustainable manner.

3. Build human and institutional capacity at many levels. *Coastal 2000* suggests that an urgent need exists to develop cadres of people in various levels of government and in the private sector who can integrate knowledge about both the environment and the economy, who have leadership skills, and can mobilize support for management programs.

4. Redouble effort to create a positive context through both education and participation programs for sustainable development and effective management. This effort needs to be much more than public relations or awareness building. Its goal must be to create a constituency that "demands" sustainable development and effective resource management.

Some have called *Coastal 2000* ambitious. I would call it both conservative and practical. Given the enormity of the challenge, the recommendations are no more than a modest first step to improve the scope and quality of coastal management in ways that directly address the need for encouraging forms of economic development that can be sustainable and will benefit all Sri Lankans in terms of improved quality of life.

Beyond *Coastal 2000*

A more ambitious agenda would call for going much further and would attempt a process whereby the goal of "sustainable development" would be made tangible and defined in specific terms for specific places, and a process would be laid out by which this goal could be achieved place by place on this island. At the moment, this all-important objective appears to be beyond our collective capacity. *Coastal 2000,* however, can get us moving in the right direction. Once this first step is taken, the next step may get clearer. I urge that *Coastal 2000* be taken seriously, and that if nothing else, the inter-institutional and transdisciplinary thinking and participatory actions suggested by this document be carried forward. This will at least ensure that economically, socially and environmentally expensive mistakes are avoided and a foundation can be put in place for thinking seriously about achieving sustainable levels of development. The next generation can build upon this foundation.

To go back to the original question, are coastal management and economic development compatible? Clearly, in my view they are not only compatible, but for economic development to be beneficial and sustainable, essential.

The Role of Planning, Coordination and Cooperation in Coastal Zone Management in Sri Lanka

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Introduction

Sri Lanka is an island with a land area of approximately 64,000 sq km. The 1585 km coastline supports a variety of coastal habitats, including coral reefs, estuaries and lagoons, mangroves, seagrass beds, saltmarshes, sand dunes and sand spits. The sand dunes and spits are subject to severe erosion. It has been estimated that 175,000 to 285,000 sq m of coastal land are lost annually through erosion from Kalpitiya to Yala National Park Bay alone. In the context of growing population pressure on land for a variety of human activities, the conflicting demands on the dwindling and fragile coastal areas can be resolved satisfactorily only through a well-conceived management plan for the protection and sustainable utilization of the coastal resources.

How Planning Can Prevent Some of the Coastal Environmental Problems Seen Today

Planning can be defined as a process of rational decision making to achieve given objectives within given constraints. The objectives to be realised should be well-defined and understood in relation to national,

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regional, local and sectoral priorities. The protection of our coastline is the protection of our country and of our coastal resources, which is the protection of a national asset. Therefore it is a national objective. It is for this reason that coast conservation has been made a central government responsibility. The plan should try to reconcile the different and sometimes conflicting objectives toward an optimal solution.

Such planning requires a very clear understanding of the goals and objectives arising from national policies, constitutional provisions and the mandate given by the enabling statute, namely the Coast Conservation Act. Second, a detailed and an in-depth understanding of the problem situation in all its aspects is necessary. Multidisciplinary expertise is essential. The existing data need to be supplemented by surveys, investigations and research. Experience of other countries in dealing with similar situations has to be studied. Furthermore, our own experience and the outcome of different measures utilized to meet various situations need to be assessed carefully. Some of the situations may have to be studied carefully over time. It might be necessary to carry out laboratory or field tests. The planners should have an adequate and a reliable information base to consider different planning options.

A clear assessment of the different demands for the utilisation of coastal resources should be made. The coastal belt, particularly the southwestern and southern part, is already subject to urban development, since most of the coastal towns have developed along the Galle Road in a linear fashion encroaching into the coastal zone reservation at several places where the road runs very close to the shoreline. Parts of the Galle Road get washed away almost every year during the monsoon, and coast protection devices have to be provided. The existing land uses along the coastal belt consist of a multiplicity of residential, commercial and industrial activities. Buildings associated with such uses have varying implications on the stability of the coastline and the protection of the coastal resources. Such activities are increasing daily with the growth of population and the economy, creating considerable pressure on the coastline. In the context of rapid urbanisation, other activities also create demands on the coastline. For example, the scenic value of the beaches attracts hotels and other tourist activities that affect the stability of the beaches. They also interfere with the traditional beach uses such as fishing. Hotel developers at times attempt

to create exclusive enclaves enclosing parts of the beach, which are public resources. Hotel development should be discouraged where it conflicts directly with the use of the beach for fishing, which provides livelihoods for many people. It is therefore essential that tourist development on the coastline is confined to clusters with adequate reservation to the beach, and where there are no direct conflicts with traditional beach uses, such as fishing. Adequate access should be provided from the main road (Galle Road) to the hotel areas. Existing local roads, which provide the public with access to the beach, should not be allowed to be converted to private roads to be exclusively used by hotels. Already many hoteliers have created problems with the villagers in regard to the use of roads and beaches, which are public areas. It is essential to bring some order into the present practices of beach use by the hotel industry, in the interest of the industry itself, and to ensure a harmonious existence with other beach users.

The Coastal Zone Management (CZM) Plan prepared by the Coast Conservation Department (CCD) has zoned the coastline according to a technical assessment of its stability, vegetation, and social and historical characteristics. It identifies areas suitable for tourism development, but it does not provide all the detailed guidelines regarding the development of tourist clusters. The Ceylon Tourist Board (CTB), on the other hand, prepares master plans for tourist development according to their forecasts of tourist arrivals. There has to be a more effective integration of the two plans, not only to avoid conflicts, but also to expedite approval procedures. The local authorities in the coastal areas are also required to prepare development plans for their respective areas with the assistance of the Urban Development Authority (UDA). These plans will provide basic land use zoning, street lines for public roads, etc., and are to be implemented mainly through development controls. It may be possible to design an integrated development plan for the coastal zone, incorporating the provisions of the CZM Plan, Tourist Development Plan for the coastal belt, and the local development plans for the local coastal authority areas. Such a plan would be comprehensive, providing not only land use zoning guidelines, but also detailed project plans for the development of tourism clusters. It may be possible to provide for different classes of tourism development with different levels of facilities. A cluster approach will also help to provide the infrastructure services to such areas. Such a plan is consistent with the Special Area Management (SAM) Plan suggested in *Coastal 2000*.

For the purpose of administering such an integrated 'cluster-based' approach in the SAM Plan, it has to be arranged according to local authority areas, because each such authority will be the final enforcement agency. Planning subcommittees should be set up in each local authority to take decisions regarding plan details, and advise the local authority on plan implementation. If a representative from each of the agencies is present at the planning subcommittees, decisions can be taken expeditiously and with effective coordination. It could be a 'one-stop-shop' for approvals as proposed by the government. However, in cases where a decision cannot be taken by a planning subcommittee, it could be referred to the main planning committee in Colombo, which comprises the heads of the approving agencies. This procedure will help to overcome the delays that are presently experienced in planning approvals.

Planning Needs to be Participatory

Planning is effective and meaningful only if the people for whom the plan is prepared (the target groups) participate in the planning process from the initial stages. The Town and Country Planning Ordinance, under which plans are prepared by the Town and Country Planning Department, requires that the 'draft plan' should be exhibited in prominent places for 'public objections' before the plan is finalised and approved by the Central Planning Commission and the Hon. Minister. This procedure is mandated in the statute, but still cannot be considered as an effective way of obtaining public participation, because it is too cumbersome to make any fundamental changes in the plan once it has been prepared. Community participation should take place from the initial stage of the planning process as provided in the British town planning procedure.

In the case of the Urban Development Authority Act, the public participation process is not built into the statute, but it provides for a consultation process through planning committees. There is a properly constituted planning committee in each of the local authority areas to which power is delegated by the UDA. There is the main planning committee at the UDA Colombo, presided over by the chairman, UDA and consisting of planners with different professional backgrounds, persons representing local government interests, and business and professional interests. The planning committee also can invite any member of the public or a local authority representative to express his or her point of view at the planning

committee before a decision is taken on a planning issue. The planning sub-committees at the local level have a similar setup. These subcommittees are chaired by the chairman of the local authority concerned, and any aggrieved or interested party, or a specialist on a particular subject (public or private) can be invited to present their views before a decision is reached on a particular issue. Before finalising a development plan under the provisions of the UDA law, representations could be made to the councillors of the local authority before the local authority sanction is obtained. It has been found that most of the development plans are worded in highly technical language that cannot be understood by ordinary members of the public. Therefore, in order to facilitate community feedback, there should be a simplified version of the plan, with illustrations, which can be understood by everyone.

Coordination in Planning and Implementation of CZM Plans

The CZM Plan consists mainly of a set of guidelines to control and regulate beach related activities, which have implications for the stability of the coast. A permit procedure has been introduced to regulate development activities, and is implemented by the CCD officials. The CZM Plan guidelines require interpretation for a particular site by the technical staff of the CCD. This means in its present form, implementation cannot be delegated to a local authority or to a provincial council. However, the delegation of implementation to local authorities would help to expedite the approval procedure. Nevertheless, the danger of abuse of power and misinterpretation of the plan has to be prevented. This could only be done by converting the present management guidelines of the CZM Plan to a detailed physical plan containing zoning, setbacks and other parameters, which will help the hoteliers and other developers to decide on suitable locations for their activities in keeping with the provisions of the plan. In fact, the introduction of a 'one-stop-shop' clearing house would require such a physical plan with the relevant regulations, disaggregated by local authority areas. The same base map, which is used by the UDA for the preparation of its development plans, could also be used in this case. As mentioned earlier, one planning committee to represent the interests of the UDA, CCD, CEA, CTB and other approving agencies could help to a great extent to bring about better coordination among approving agencies, and expedite the approval procedure.

Coast Conservation--The Economic Dimension

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Population and Environment

Demographic developments in the country are at the core of the economic factors bearing on coast conservation. Consequent to a sharp decline in mortality in the mid 1940s population reached a peak annual average growth of about 2.8 percent in the 1950s, and continued to be high in the 1960s (2.6 percent) and 1970s (2.4 percent). Population growth decelerated in the 1980s (1.7 percent) and is currently around 1.4 percent per year. The surge in population in the past decades resulted in Sri Lanka's population nearly doubling between 1950 and 1980, from 7.7 million to 14.7 million. Today's population is estimated at 17.6 million.

Although the annual rate of increase in population has declined to 1.4 percent, the current increase in population of about 200,000 is of the same magnitude as the increase in the 1950s (Abeykoon, 1993). Despite the decelerated growth, the annual increase in the labour force continues to be large, with estimates ranging between 130,000 and 160,000.

To obtain a perspective of the pressures created by this increase in the labour force, one should be reminded that the highest rate of annual labour absorption in the country has been around 70,000 persons. In recent years, the annual labour absorption has been 30,000 to 40,000 persons. Since

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there are an estimated 1 million persons already unemployed, the country must generate about 200,000 jobs each year to resolve the problem of unemployment over the next decade (Gonetilleke, 1991). The creation of such a large number of jobs in the institutional sectors is clearly impractical. Therefore, a large number of persons have to find livelihoods in various informal avenues of self-employment. It is in such a context that we must view the issue of coast conservation.

The demographic pressures are much greater in the coastal region than in the country as a whole. At present, the southern coastal area has a population density of 450 persons per square kilometer, compared to 260 persons in the country as a whole. By the year 2001, the population density on the south coast is expected to rise to about 1,000 persons per square kilometer (Korale, 1992). This increase in population is due to natural increase and the migration of rural people to the more urbanised coastal areas. The coastal region contained a third of the country's population in 1981, and about 45 percent of the coastal population is urban (Savundranayagam et al, 1993).

The coastal zone contains a number of critical habitats, such as lagoons, estuaries, mangroves, coral reefs, salt marshes and sand dunes, which are affected by population pressure and development activities. These habitats, which provide shelter to many forms of aquatic life and act as a buffer zone protecting the land from incursion by the sea, are highly vulnerable to overexploitation, as they are small in extent.

Population pressure is the most important factor bearing on the ability to conserve the nonrenewable and slow-renewing resources of the country's coastal region. The current growth rate, combined with the underdevelopment of the country, result in an insufficient number of employment opportunities and make coastal conservation a difficult challenge. Coral mining illustrates the problem. Once considered a development activity, it is illegal today. Although the mining of coral, its transport and its processing into lime are prohibited by law within the coastal zone, coral continues to be mined. People dependent for their livelihood on it will transgress the law to mine coral, as they do not have alternative avenues of employment. The 'remedy' of removing persons engaged in coral mining and giving them alternative employment is however not a solution in a context of chronic unemployment as others would sooner or later take their place.

Similarly, mangroves, the dominant vegetation in wetlands that provide breeding grounds for a number of commercially important aquatic species, are being overexploited for firewood. In other areas, mangrove swamps have been filled for other uses, mainly housing. These activities have threatened many marine species that feed and thrive there. The root causes of the threat to mangroves have been the growth in population and meeting people's basic needs (Gonetilleke, 1991; Ministry of Environment and Parliamentary Affairs, 1992).

If population growth coupled with underdevelopment have caused severe stress on coastal resources, paradoxically economic growth, new economic activities and expanded traditional activities are also adding considerable stress on resources. Development activities that have a significant impact on coastal resources include the expanding tourist industry, rapid housing development, expansion of infrastructural facilities, industrialization, expansion of urban centres and aquaculture projects. Economic growth has been responsible for increased demand for several coastal resources. Increased sand mining, which is reaching critical levels for the coastline, has been brought about by the rapid expansion of the construction industry. Excessive sand mining has eroded essential sandbars and caused sea erosion, and has also resulted in salt water intrusion into river estuaries. The mining of coral reefs is also encouraged by the continued demand for lime in the construction industry.

The tourist industry, which expanded considerably in the last two decades, has brought another set of problems for the coastal zone. Some tourist hotels have been built right on the beaches, making preventive or mitigatory measures for coastal erosion more difficult, if not impossible. Some hotels, by incorporating the beaches into the hotel premises, have denied fishermen access to the beach, which is essential for their livelihood as well as that of tourist hotels. The disposal of wastewater and sewage from tourist hotels results in pollution in some parts of the coastal zone. (It must be mentioned that hotels are not the only offenders. The Colombo city's central sewage system also discharges its sewage into the sea).

Role of Economics in Management

Unfortunately, the approach of economics has hardly been helpful in the preservation of the environment. Although both economics and ecology derive from the same Greek word *oikos*, meaning house or household, economics has

followed the path of increasing wealth at the expense of natural resources, while ecology is concerned with preservation. The maximising of output, the increment in the value added by human activities, the exploitation of resources to derive the highest margin of profit are the objectives in economics. Whether the increment in output results in the depletion or degradation of the environment is of little concern in conventional economic analysis. This approach is ingrained in the United Nations System of National Accounting (SNA). According to the SNA, if all of Sri Lanka's forests are cut down this year and sold as timber, its value would be added to the Gross Domestic Product (GDP). There is no corrective measure for either the fact that such an increment in output has been at the expense of environmental factors, which would ultimately affect the welfare of people in coming years, or the fact that such exploitation reduces the economic output over a period of years.

It is in recognition of these deficiencies that the concept of "sustainable development" has evolved. Yet, it is a paradoxical term embodying contradictory concepts. It attempts to combine and reconcile the needs of growth with the imperatives of conservation. Growth with conservation is what sustainable development attempts to achieve.

With the wide acceptance of the concept of sustainable development, there is an attempt to incorporate it in the SNA. But given the complexity of the issue, the need for precise definition for international comparability, and the objective methods of valuation of environmental losses, it may take time for environmental depletion and degradation to be incorporated into the SNA. An alternative proposal is to develop a satellite system of national accounts that incorporates these, while leaving the SNA unchanged for the present. Such a satellite system, in my view, would serve the same corrective purposes as was achieved by the Physical Quality of Life Index (PQLI) and the more recent United Nations Human Development Index (HDI).

I would go further to suggest that environmental agencies could, on their own initiative, compile an Environmental Loss Index (ELI) or an Environmental Degradation Rate (EDR), which would be corrective to the conventional economic growth rates. One must, however, admit that subjective judgements are inevitable. Recognising this deficiency, efforts must be directed at achieving a measure of objectivity. Whatever the precise methodology, such efforts would make a useful contribution to sensitising economists and policymakers to the concerns of the environment.

At the micro-level, or in consideration of specific projects, there have been techniques adopted to take into account the externalities of an investment or project. Such externalities could be either positive, as when there are beneficial effects on the surrounding environs, or negative, as when there is pollution. The methodologies used by economists include the imputation of costs for the ill effects on the surroundings and the costs of cleaning up the pollution or waste disposal on the project itself. A project could include a provision for the active party to grant compensation to any aggrieved party (where such parties and loss incurred are identifiable, and compensation enforceable). A project could place a value on 'free' environmental resources that are consumed. Nevertheless, all these methodologies have problems, owing to the lack of a market value and the inevitable subjectivity in estimation of the values to be imputed.

A related issue is when an economic activity is likely to destroy forever a natural resource whose value may not be apparent, such as the cost of preserving plants and animals in order to maintain biodiversity. In such instances, it would be necessary to impute an infinite price for the destroyed natural resource. This at once leads to the cost-benefit analysis yielding a zero return. An economic activity that leads to the destruction of indispensable natural resources, such as mangrove wetlands with their diversity of marine life essential for many species of fish, would by these calculations yield a negative return.

Some economic enterprises that degrade the environment may be affecting their own viability in the long run. For instance, it is in the long-run interest of tourist hotels to ensure that they do not damage or pollute their environment. The exploitation of the coral reef could reduce the number of tourists who come to see the splendour of the marine life beneath the surface. Even more pertinent is coastal erosion, which would wash away the very beaches tourists come to enjoy, as well as threaten the hotel structures, as has happened in several instances here and abroad. Sometimes, it may be necessary to restrain tourism to proportions within the carrying capacity of the industry. The industry must not be exploited in a manner and to the extent of "killing the goose that lays the golden eggs." This must be borne in mind, especially in tourism development.

One of the deficiencies of economic perspectives is that they are generally short-term in outlook. Although the difference between short-run and long-run analysis is well-ingrained in the tools of economic analysis, there is a bias in

economic rationality toward the short-term. Lord John Maynard Keynes said "In the long-run we are all dead." This bias is also at the root of the different perspectives and approaches of economics and ecology. Very rarely are economic decisions based on intergenerational considerations. On the other hand, the concerns of environmental management are with the long run when "we are all dead," but our children and our children's children live on.

Conclusion

To recapitulate the economic issues relating to coastal conservation, both economic underdevelopment and economic growth in their different ways affect the coastal environment. Just as underdevelopment and its attendant severe unemployment problem results in overexploitation of these resources, growth and new economic activities increase the demand for coastal resources, such as coral for lime and sand for construction. Tourism brings about sewage disposal and pollution in the seas, while industries deposit their chemical pollutants in the waterways.

The most significant factor bearing on coastal conservation is population growth pressures on coastal resources. The present severe unemployment problem creates enormous pressures to overexploit coastal resources such as coral, sand, mangroves and fisheries. Solutions based on a legalistic approach may have little effect in such a context.

It has to be recognised that the perspectives of economics are not conducive to environmental protection. Yet, the wider acceptance of the concept of sustainable development may bring about adaptation in the techniques of economic analysis to incorporate environmental concerns. One such area is national accounting, which at present does not take into account the depletion, degradation or permanent loss incurred in the process of increasing output. Since the adaptation of the SNA may take a considerable time, an alternate satellite system incorporating environmental losses could be developed. It would be extremely useful if an alternate index of environmental degradation or loss is computed to give the necessary signals. Environmental economics, which has developed more recently, has its antecedents in natural resource economics, welfare economics and the concept of externalities. It is exploring the development of techniques that would effectively incorporate environmental losses and gains in economic evaluation of projects.

It must be stressed that quite often environmental concerns do not necessarily imply that a project should not be undertaken. Rather, such analysis may suggest a different location or manner of operation to meet environmental concerns. Therefore, all the available alternatives must be explored to determine the option that causes least environmental damage. In other words, it is not necessarily a question of whether an economic activity should be undertaken, but how it is undertaken. In the case of renewable and slow-growing resources like coral reefs and sandy beaches, the need is to contain exploitation at a pace that allows regeneration or deplete them at levels that do not endanger these critical habitats.

Given the enormous economic pressures on resources, the realistic option available may be to contain the coastal degradation to manageable levels, rather than prevent it altogether. The challenge before economists and ecologists is to strike a healthy balance between economic growth and coastal conservation.

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Balancing the Conflict of Interests between National Development and Coast Conservation

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Introduction

In keeping with the theme of this seminar "Are Coastal Zone Management and Economic Development Complementary in Sri Lanka?," the speakers at this seminar were requested to ensure that their contributions are so designed to find answers to the questions selected for them by the organizers. The questions given to me to discuss are:

a) Why the country needs increased development and investment in coastal areas and by what types and means?
b) How can such investment benefit coastal communities outside the normal growth centres and business class of entrepreneurs?
c) What models of growth and investment are best suited for enhancing employment in densely populated coastal areas, while at the same time not being detrimental to the environment? and,
d) To what degree should environment and coastal resources management be the burden and responsibility of private enterprise in the Sri Lankan context?

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Economic Problems in Sri Lanka

In the context of Sri Lanka's economic development, the main problem facing the country is how to use its available resources with a view to maximizing output, so that the country will benefit both from additional employment and increased foreign exchange earnings. Whenever a nation decides to make a change from one system of economic development to another, there is always an initial intervening period that includes the trauma of change. Today for example, there is an extensive debate going on in the world as to whether the change in the command model economy, as experienced in the East European and other socialist states for the last 45 years--characterized by full employment, but with a low level of economic development--should be continued. The alternative is to suffer the traumatic period of five to 10 years when the changeover to the market economy takes place, in the hope that at the end of a decade or so, the well-being of all the people would be higher in comparison to what has so far been offered by the controlled economy models.

Notwithstanding the various economic and social difficulties--especially those caused by inflation--that a nation has to go through as a sacrifice to achieve a better state of economic development, it is obvious that from 1990 onwards, nations have been rapidly changing to the market economy model.

When one looks at the history of the developed countries in the world, it is clear that practically all of them in the early stages of their development sacrificed environmental quality and resources, in the short and medium-term, to bring about full employment. The cost benefits to the environment were overlooked to achieve rapid development. Once these countries reached a very high level of growth, they have had the funds and the technology to turn their attention to environmental issues such as the pollution of rivers and coastal areas, and global warming.

A developing country such as Sri Lanka (with a population of Australia confined to the land area of Tasmania), where the vast majority of the people are barely eking out an existence, is faced with the problems of alleviating poverty. While Sri Lanka has an educated, skilled and literally capable population, the per capita ratio of man to land is intensive. Equally, unlike other developing countries such as Malaysia, Indonesia or even India, Sri Lanka has very few natural resources. For development, a country

needs capital. To generate investment capital, it has to have the potential to save. For an underdeveloped country such as Sri Lanka, with a per capita income of US $450, whatever saving that could be managed is a drop in the ocean compared to what is required for investment for real economic development.

What Type of Economic development?

With poverty a critical problem faced by the country, the obvious question is, how can we best utilize our resources to obtain the highest output at the least cost? In this context, the conservation of coastal resources is of paramount importance and demands top priority. The question is to what extent are we prepared to sacrifice a portion of the coast to create employment, which is a critical national priority.

The problem of resource utilization to maximize output at minimum cost is not confined to coast conservation alone. It affects the entire population, environment, culture, religion and basic values of people. In our present situation in Sri Lanka regarding economic development, we have tremendous responsibility to balance the conflict of interest between the loss to the environment with the potential gain from economic development.

Admittedly, all economic development does not result in unquestionable benefit to the people. In the longrun, there is a price that has to be paid in the final cost-benefit analysis to achieve development. One example is the 250,000 Sri Lankan housemaids who are working in the Middle East. If, for example, 10 percent of the young females who go to the Middle East have their morals and ethics eroded, 25,000 young females would be directly affected. That is one price we are paying today for our situation of poverty. In addition, when those housemaids return home after their term of contract, they come back with new values learned in alien cultures. They, being the mothers of the next generation of children, will influence their children and families in new directions, different from those traditional to Sri Lanka. That is the price to be paid for trying to achieve a solution to our economic problem by allowing our young females to seek employment such as a housemaid in an overseas country.

Relating these employment and values problems to coast conservation and the development of tourism, it is once again a question of how much of the coast we are prepared to sacrifice in order to generate new employment and earn additional foreign exchange?

Coastal Setbacks and Development

Although the Coastal Zone Management Plan prepared by the Coast Conservation Department (CCD) sets out certain limits with setback standards for different categories of development in the coastal belt, it is not clear whether such setback standards are based on the results of scientific studies. Even though sediment budgets have been measured for long stretches of coast upon which setbacks are based, it is not known whether particular development sites follow the general rule for larger areas. For example, the coastal belt between Panadura and Kalutara River has setback standards as follows:

a) Dwelling unit: 10 meters.
b) Commercial/industrial building: 60 meters.
c) Tourism development: 50 meters.

According to the present setback standards, 50 dwelling units (the type of development that is likely to take place in the near future) can be constructed in a row on a setback line of 10 meters. However, 50 two-bedroomed cabanas occupying less ground area will not be permitted at a 10-meters setback; they have to move back to 50 meters. On what scientific basis can such setback standards be justified when one realises that the 50 dwelling units may have 50 septic tanks, whereas the 50 cabanas will be serviced by one septic tank?

The tragedy in making setback standards without any scientific or other supporting data is that a tourist hotel plan, which would be the ideal agent to safeguard the coast, will be endangered by the same Coast Conservation law that allows a house builder to build a house with a 10-meter setback. Practically, what has happened is that as soon as a tourist hotel plan complies with the Coast Conservation setback of 50 meters, a large number of houses, restaurants and other commercial establishments spring up overnight in the adjoining lands, following the 10-meter setback rule. Thus another Hikkaduwa is created for want of proper planning and enforcement of the law!

Sections 24 to 26 of the Coast Conservation Act of 1981 set out the circumstances under which development in the coastal belt could be

undertaken. Unfortunately, sections 28 to 31 of the same Act, which define the penal measures against the violators, are rarely enforced. This is not for lack of will, but simply because the department does not have the resources to enforce the law. This scenario, incidentally, is not peculiar to coast conservation alone, as is evidenced in several other areas of legislation, especially in those relating to food standards and environmental standards. The statute books are full of legislation, but the violations of the law are rampant, because the laws are usually not enforced for one reason or the other. One of the biggest difficulties in implementing the law in Sri Lanka is political interference, which is now an integral part of our life pattern.

Tourism Development and Conservation

Tourism development has received disproportionate attention in relation to coast conservation, because it is the only area in which Coast Conservation Act provisions can be implemented with some measure of success. In all other areas, such as coral mining, removal of sea sand, beach pollution and even the construction of dwelling houses, there is very little control and monitoring that can be exercised by the CCD, which has insufficient resources to exercise regular control. Furthermore whenever control measures are introduced, there is always the danger of political interference, which frustrates CCD efforts. However, it is the writer's experience that tourism has been the greatest conserver of the coast when one realises that in every single beachfront where there is a tourist hotel project, the coast has been preserved. But in areas where there are no tourist hotels, the beaches are left open to the ravages of both man and nature. One of the prime examples of coast conservation is the Beruwela Golden Mile strip from Moragalla to Kaluwamodara at the Bentota River mouth. This area has been turned into one of the finest beach resort areas, offering new employment opportunities and also at the same time earning foreign exchange for the country. The owners of the hotels themselves have spent enormous sums of money from their private funds to prevent environmental damage such as beach erosion. One of the distinct advantages of the Moragalla beach is that it is situated about half a mile away from the main Galle Road.

On the other hand, areas such as Hikkaduwa or even Negombo are prime examples of how tourism can endanger the coast, and more importantly, cause irreversible damage to the socio-cultural patterns and values of the people. Unfortunately, the main culprit here is not tourism per se, but the unfortunate location of the Galle Road so close to the beach, which has

produced an enormous impact on the environment. Hikkaduwa is a prime example of unplanned tourism and equally unplanned coast conservation, partly because the location of the road forced development is too close to the beach.

Some miles away to the south is the Weligama Bay, which could have been an ideal location to encourage tourism. Once again, however, due to short-sightedness and bad planning, the Government diverted the main Galle Road traffic from the old road (closer to town), which was far way from the beach, and in its place built a new road right alongside the beach! If coast preservation had been considered of paramount importance, the new Galle-Matara main road at Weligama should never have been built on its present site. There is now the danger that in a few years time, Weligama Bay can turn into another Hikkaduwa.

Tourism depends on the choice of the site. Unfortunately, some of the most beautiful beaches in the southwest coast have been experiencing severe erosion in the last few decades. It is also observed that to prevent further erosion, the government is continuing to build revetments, for example in Habaraduwa, in the same way the British built revetments from Galle Face to Mount Lavinia. Today, there is hardly any beach left between Galle Face and Mount Lavinia, and the same misfortune is awaiting Habaraduwa and other coastal belts where enormous sums of money are spent on building revetments. The writer is not technically qualified to say whether we should build revetments or groynes as they do in the Maldive Islands, but certainly the building of groynes will assure the continuing presence of some beaches at least, whereas if we continue to build revetments, the whole island could eventually have revetments all round!

Conclusion

As in Kandalama, we have to accept that if we are to optimise the use of our resources then we have to make some sacrifice in the environment in order to bring about economic development. Obviously, it is a matter of balancing the conflicts of interest in such a way to ensure that not too much is sacrificed, as in Hikkaduwa. It is always the question of what we are prepared to give up from the environment in the context of the poverty and the scarcity of natural resources on the one side, and of the ever-increasing population seeking avenues for subsistence on the other?

Finally, I would recommend, in keeping with the Chairman's comments that "the market knows best," and that the private sector be invited to participate in every forum where coast conservation matters in particular, and environmental matters in general, are considered.

Policy Needs for Promotion of Preventive Planning in Coastal Management

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Introduction

As in medical practice, actions needed in coast conservation can be both preventive and curative. The latter often takes a 'fire brigade' type approach, where resources are directed, sometimes under emergency situations, to combat a problem that has emerged in a critical location. In the early years of coastal zone management, most coast conservation efforts necessarily followed this approach. Preventive actions, on the other hand, require advanced planning with differing time horizons such as medium-and long-term. They also involve innovative multidisciplinary approaches that can address identified issues from all fronts. This paper examines these types of actions as exemplified by the Coastal Zone Management Plan (CCD, 1990) and the *Coastal 2000: Recommendations for A Resource Management Strategy for Sri Lanka's Coastal Region* (Olsen et.al. 1992).

Policy, by definition, is a course of action adopted by a government, a party or an institution of authority, which can be declared or undeclared and is often reflected only by actual practice. There can also be occasions where the practice can be at variance with the declared policy. Policies in general reflect the 'attitude of mind' of governments, institutions or individuals in authority. In a social democracy, the attitude of government in power is often

assumed to reflect the attitude of the people. This thinking can sometimes lead to the imposition of restrictive attitudes where long-term interests of a nation are compromised for short-term political or economic gain. In a time-space graph of human concerns, the number of citizens who think about the next century or about problems of global or even regional scale can be few and far between. Still, their contribution should not be underestimated, even though some local efforts can be negated by unforeseen global or regional forces.

Conceptual Framework

Any policy on coast conservation has to be seen against the backdrop of a few general postulates, which may be used as guiding principles.

- Coastal lands, like all other common property, belong to the entire nation and must be devoted to national welfare. They also belong to all people who inhabit Sri Lanka today, as well as to those generations yet unborn.

- A democratically elected government, by virtue of its popular mandate, assumes the role of a trustee of these common lands, and to be worthy of the trust, owes an inalienable obligation to devise ways and means of ensuring the conservation of these lands.

- In order to discharge such obligations cast upon it, the government must erect institutional structures, which must then be permitted to function efficiently without fear or favour.

- All development plans in environmentally sensitive and vulnerable lands such as those in the coastal zone, should be rooted in scientific knowledge of biophysical processes, as well as in a deep understanding of economic and social imperatives.

- The policies adopted by the government must be based on the philosophy of living in productive equilibrium with the natural resources base.

The Coast Conservation Advisory Council, established under the Coast Conservation Act (1981 and 1988), has established a set of principles along these lines on which the Coastal Zone Management Plan is based.

Coastal Zone Management Plan

The need for a coastal zone management plan for Sri Lanka is briefly but adequately explained in the preface, foreword and in the opening paragraphs of the plan itself. As the Hon. Minister in charge of the subject puts it, 'until recently, much of the coastal zone was considered a wasteland having only marginal value unless reclaimed or converted to other uses. It is now well established that the coastal zone contains some of the most productive ecosystems, which, if managed for sustainable development, can support progress and help meet food, health, housing and other critical national needs. With rapid population growth and rapidly diminishing national resources, we need to plan our development strategy in concert with resource conservation and environmental management.'

As a geographer, I often wondered how blessed we are by nature as a tropical island in comparison with many other nations. Our coastline, extending over some 1585 km has one kilometer of beach for every 42 km of coastline. When I stand on the beach of Kapparatota on the southern coast and look to the south, the thought that the entire Indian Ocean up to Antarctica is open to us begins to fill the heart with pleasure. One may get the same feeling when looking toward the east from the eastern coast or to the west from the western coast. But then, what have we achieved after more than four decades of national independence? We still depend on other countries for the supply of our needs of fish protein. Similarly, have we adequately exploited our geographical advantage of being an island in terms of our transport needs? If we had, we should have been transporting heavy goods by sea to most of our urban centres which are located on the coast, relieving the much-congested inland transport routes, and at the same time making significant savings in valuable foreign exchange. Our spacious sandy beaches and the warm sea have been the major attraction for an increasing volume of tourists. If properly planned, this country can live by tourism alone in the next century, provided that we protect our coastline from short-sighted and haphazard development. What has been happening over the years with increasing population is a 'free-for-all' development process, where the law of the jungle more often predominates. This is why planning has become an urgent necessity and a priority, rather than merely another routine activity of the government.

The Coastal Zone Management Plan (CZMP) was not conceived as a panacea for all these ills resulting from neglect and past mismanagement. The plan

addresses only certain critical coastal issues, with initial emphasis on problems causing significant economic and social losses, which are more amenable to accepted management practices. In particular, the plan has attempted to address problems related to coastal erosion, coastal habitats, and the loss and degradation of historical and cultural sites and scenic and recreational areas. It also deals with the regulatory system, including the legal, administrative and fiscal functions of the Coast Conservation Department (CCD), while paying attention to research and education. It is emphasized that the plan is an incremental one, and coastal zone management planning is a continuing effort. Thus, the CZMP should be considered as a first-generation plan, and the policies and management strategies outlined therein will be tested, and their successes and failures evaluated over time.

Coastal 2000 Resource Management Strategy

As already indicated, the first-generation coastal zone management programmes, were mandated by the Coast Conservation Act of 1981, which entrusted the CCD with primary responsibilities for policy formulation, planning, research, administration of the permit programme, and the construction and maintenance of shoreline protection works. The last responsibility had of course been the primary concern of coast conservation authorities from the early years. The *Coastal 2000* strategy signifies a second-generation coastal resource management programme with a broader vision. While recognizing the successes of the first-generation plans under the direction of the CCD, the *Coastal 2000* document is based on the realization that the scope of ongoing coastal zone management activities needs to be expanded through an identification of long-term goals, and made more holistic and multidisciplinary.

Coastal 2000 is both diagnostic and prescriptive. Its first volume outlines the present status of coastal management in Sri Lanka and provides the rationale for a second-generation coastal resource management strategy. It analyses the demographic, economic and environmental context that sets the conditions for resource management. The present population of almost 18 million is projected to reach 25 million before the middle of the next century, creating unprecedented demands for food, fibre, energy, land and other natural resources. Even at present, much of the human settlements and economic activity are concentrated in the coastal zone. Thus, one-third of the population, two-thirds of urbanized lands, 90 percent of the industrial establishments and nearly 80 percent of the

tourism-related infrastructure are found in the coastal Pradeshiya Sabha divisions. It is likely that, particularly with the end of civil disturbances, these human activities will continue to aggregate along the coast. Therefore, coastal resources will come under increasing pressure, causing greater competition and conflicts of use, while predicted global changes in sea level may add another dimension.

The second volume of *Coastal 2000* highlights the outstanding issues in coastal resources management, with a view to identifying necessary strategies for their solution. They include issues such as the lack of adequate institutional arrangements, the need for clarity in the definition of coastal zone boundaries, environmental degradation caused by accelerated development activity and the unrealized potential for economic alternatives. The most interesting, and perhaps the most innovative and important part of the *Coastal 2000* document, is the section that deals with policies and strategies. Five major policy directions are identified and their implementation strategies discussed. The identified policy directions are:

Policy I	Adopt a national as well as a regional and local approach;
Policy II	Implement a research programme directed at a better understanding of ecological processes and social issues of critical importance;
Policy III	Launch a monitoring programme to keep track of conditions and use of the coastal ecosystems and the impacts on them of development projects;
Policy IV	Strengthen institutional and human capacity for more efficient management of coastal ecosystems; and
Policy V	Enhance public awareness of the management strategies undertaken.

This is undoubtedly an impressive array of policy directions that are expected to address many of the predominant resource management issues in the coastal region. An underlying assumption behind all these policies appears to be that many of the actions to be implemented will have catalytic and multiple effects. The adoption of Policy I would result in the decentralization of the management processes, leading to focussing of planning and management efforts on geographically distinct sites. Thus, the Special Area Management (SAM) plans will address unique combinations of problems and opportunities of specific sites requiring community support and participation.

Policy I as outlined above is an undoubtedly rational and academically elegant approach. Translating it into actual practice, in the context of our socio-political realities and existing administrative structures may, however, prove to be a challenging task. The present provincial structure, which was introduced recently under the 13th amendment to the Constitution, was an attempt at decentralization of political decision making, as distinct from administrative decentralization, which had been attempted earlier. However, there are many uncertainties about the whole future of provincial governance. Even if it becomes entrenched in the future, the four landlocked provinces (out of the total nine), inherited from the colonial past, may not have much interest in coastal resource management. Of the other provinces, the northern and eastern provinces, if merged as proposed by some political parties, will manage around 60 percent of the total length of the country's coastline. In such a context, the location of the CCD may be more appropriate in Trincomalee than in Colombo! The ethnic and other socio-political and even strategic implications of a policy of decentralization as envisaged in the *Coastal 2000* strategy are hard to imagine.

Similarly, the districts as administrative units are rapidly losing their former status. Unlike the provinces, they have little statutory standing except for some administration purposes. The Government Agent system has already ceased to be operative from this year. The current status of former Government Agents as District Secretaries is only an administrative arrangement, and is hardly comparable with their former role as Government Agent. Therefore, any decentralization of coastal management functions at district level is beset with a lack of proper executive authority. The only viable administrative unit for decentralization at present seems to be the Divisional Secretaries (former Assistant Government Agents) division, which is coterminous with Pradeshiya Sabha areas and is increasingly strengthened as a matter of government policy. Therefore, while accepting the rationality of Policy I of *Coastal 2000* to proceed with coastal management programmes at national as well as subnational levels, it is likely that the work at Divisional Secretaries level, as well as under special area management (SAM), are likely to have a greater degree of success and sustainability than at provincial and district levels.

A few areas of critical importance have been identified for implementing a research programme as proposed in Policy II. These include shoreline stabilization, maintaining habitats, sustaining fisheries, promoting mariculture and protected area management. Many research issues related to these areas tend to surface often in seminars and symposia on coastal management.

Although the potential for coastal research is vast and virtually untapped in Sri Lanka, the above identification certainly covers a wide spectrum. One area that should have received greater attention is that related to social issues pertaining to land tenure, relocation of people and the problems of identifying alternative forms of employment. The strategy also lacks recommended action for a coordinating mechanism for research, either at the CCD or in a chosen university or a research institute which can function as a lead agency in this respect. As it is now, CCD's functions are primarily technical and regulatory rather than research, for which it may need special arrangements. Similar comments may hold true for the monitoring programme, which should ideally be combined with research.

Strengthening institutional and human capacity to increase the efficiency of coastal management is a vital policy in the *Coastal 2000* Strategy with long-term benefits. This is often felt with the occasional changes in management personnel. As generally assumed in the administrative service, the belief that no one is indispensable may not hold true in coastal management, since it requires special skills and aptitudes. There is certainly a need to promote professionalism in this field.

The fact that the CCD has achieved commendable successes in many areas of its activity, such as in technical and promotional fields in recent years, cannot be refuted. These are functions that the CCD can continue to perform with competitive efficiency. When considering the great expectations of the *Coastal 2000* strategy, however, one tends to doubt whether it can shoulder all the coordinating responsibilities that would be cast upon it. As another government department, it has its own limitations, particularly where conflicting interests begin to push and pull. A dynamic leader may, with great courage and at considerable personal sacrifice, be able to pilot it through stormy waters, but then such persons are rare.

Policy and Practice

It seems appropriate to conclude this paper with reference to a specific issue with which the CCD as well the Advisory Council had been grappling for some time. This issue reflects the realities of translating policy into actual practice. Since the implementation of the coastal zone management plan commenced,

CCD and the Advisory Council have been receiving a flood of applications from the hotel industry to grant variances from the stipulated setback limits. Many hotel developers display an insatiable urge to extend their buildings and other structures closer to the waterfront. From their perspective, rooms closer to the beach have a greater demand, since the scenery and the sound of waves can attract more tourists. Setback zones, on the other hand, are based on considerations of coastal stability, needs of the local communities and other long-term conservation needs. Even for the hotel industry, having a good setback zone can be in its own interest in the long-run. However, there appears to be little appreciation of this, rather the motivating force seems to be short-term economic gain. Attempts at reconciling these conflicting interests tend to convert the decision making bodies into virtual battlefields.

In this context, it is interesting to observe the role of policymakers at both administrative and political levels. The government as the trustee of common property and the riches of nature, both for the present as well as for posterity, has an inviolable obligation, as stipulated by the Constitution of the Republic and the Coast Conservation Act. The Coastal Zone Management Plan, which forms an integral part of the Act after its approval by the Cabinet of Ministers, is the basic policy document of the government with regard to coast conservation. Any variance from it can be granted only under exceptional circumstances. Therefore, any government agency or any other agency attempting to disregard or circumvent its stipulations, either through direct or devious means, is guilty of subverting the will of the people.

In cases of doubt, CCD and the Coast Conservation Advisory Council, as part of their statutory obligations, have the discretion to subject any development project on the coast--including hotels--to an environmental impact assessment (EIA) in terms of the National Environmental Act. A necessary part of the EIA process is its openness to the public, and particularly to the local communities who are directly affected by such projects. Any attempt to bypass this process--by discouraging public hearings or the deferment of the EIAs altogether even for a limited period--may prove to be not in the best interest of the country. Thus, for effective coastal resource management, there should be a greater degree of compatibility between policy and its implementation.

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Summary Discussion and Conclusions

Panel and Open Forum

A discussion led by a group of panelists drew out the questions of many participants in the seminar. Highlights of the statements are:

J.I. Samarakoon: The assumption that job creation must come from investments is flawed. Externalities create job loss. For instance, when considering the 1500 jobs gained in a tourism development, are the 500 to 800 jobs lost to the local fishery considered? We may need to relocate people or consider their alternative employment.

N. Perera: Management and planning need to go hand in hand with engineers and scientists working together. We need to encourage preventive measures.

H. Scheffer: There are lengths and time-scales to consider, and natural forces such as sea level rise and storms. It is not possible to maintain the present coastlines even with the best engineering. It is simply not economically feasible, nor a priority. Besides, the present investment in coastal management is much too small.

H. Wickremeratne: Hotels are NOT more 'beautiful' than the open space they occupy! In a survey of those employed by local hotels, only 1 out of 140 people in an extended family work in the hotel. Moreover, tourism adversely affects the culture of the community.

A. White: We need a mechanism to account for the cost of environmental degradation and resources overexploitation so that such losses are not pushed aside and forgotten about. Development interests should pay the true costs incurred.

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Madduma Bandara: We need to improve our research efforts and capacity so that they can assist with planning. At the present, research is too superficial, misdirected and not coordinated.

M. Furkhan: Tourism has improved the plight of local people in Beruwela through direct employment and the multiplier effect for services in the vicinity of the hotels. Hikkaduwa, although a mess in terms of environmental management because of poor planning, is also economically better off than neighboring towns. But, regardless of our opinions, planning for coastal management and tourism development should include local communities to be effective. Only solutions which include compromise and are holistic in perspective have some chance of succeeding.

L. Hale: Different types of tourism create different benefits. Planning for tourism should consider what kind of tourism is desirable, the capacity of the area both physically and socially to absorb tourists, and the economic benefits to be derived. In planning for tourism or coastal management, the private sector should be involved early in the process so that mutual exchange of ideas and development of alternative options can occur in a collaborative manner.

N. Sandaratne: Cost accounting needs to be addressed at the macro and micro levels to identify externalities. Values of the externalities are subjective, and therefore can create problems, as values can be both positive and negative and are often not easily measured in a scientific manner.

N. Dickson: Politics play a large role in coastal zone management planning because of all the decisions to be made which significantly affect various stakeholder groups. Nevertheless, whenever possible, a scientific basis for decisions should be pursued.

B. Kahawita: The Coastal Zone Management Plan is flexible. It will evolve with time as was intended by its creators.

Conclusions

For a seminar of such a short duration and with only six papers presented, the range of topics covered and opinions expressed was broad. This may reflect the dilemma of integrated coastal management in general which does not have easily defined boundaries so that simple conclusions can be drawn. Even so, certain themes recurred throughout the discussions, and many of the original questions posed were answered or discussed.

The objectives of the seminar were to answer or discuss a series of questions given to the speakers and elaborated in the introduction of this proceedings. The following resulted:

How can we learn from the history of coastal management in Sri Lanka and its successes and failures? A recurring theme was that the present CZM Plan is too rigid, being based on a legal act that cannot be easily or effectively implemented, given the magnitude of the problems. The suggestions in response to this, which are very similar to what is proposed in the *Coastal 2000* are:

- Planning should be decentralized to the regional and local levels, with direction provided by the national agencies.

- More intensive and comprehensive plans for local areas, which include local communities in the planning process, may be more effective in the long run.

- Coastal zone management should be integrated and holistic so that more of the factors causing environmental, social and economic problems are addressed in the planning process.

- Regulations such as setback guidelines should be simple, consistent and supported by sound and understandable scientific evidence.

Are the concerns about environmental protection and the need for economic development necessarily in conflict? The consensus on this question was that they are not necessarily in conflict if certain approaches and attitudes are taken. These include:

- Being conservative in planning for development, e.g. being careful to show real economic benefits while preventing excessive damage to the environment or culture.

- Inclusion of both development and resource management interests in planning and decision making processes.

- Developing a CZM Plan that can consider more than simply physical processes in its guidelines.

- Using economic and social costs and benefits in planning.

How can coastal management planning be made more effective and responsive to the immediate issues and local constituencies while still being efficient? The consensus on this question revolved around limiting the scale of planning to manageable areas where interest groups are involved in the process and all relevant factors can be addressed in the planning process. The Special Area Management (SAM) plan as elaborated in the *Coastal 2000* addresses this question.

What are the most important economic benefits derived from the coastal resources of the country? Since the theme of the seminar was economic development and conservation, an obvious value placed on coastal areas is for economic development, particularly tourism development, which according to some participants holds a large potential for expansion. It was pointed out that the quality of the coastal environments will directly affect the type and quantity of tourism. Other resources mentioned as being of significant importance are fisheries, sand and limestone, aesthetic appeal, cultural resources, space for housing, and sites for recreation.

To what extent is the dependence of coastal industries such as fisheries and tourism quantified in economic terms? How does the degradation of coastal environments affect tourism in economic terms? These questions were answered by default, as no one presented any hard data on the economic contribution of coastal environments to industry. Fisheries are known for the country as a whole, but those dependent on nearshore habitats are not usually segregated. And, although tourism located in coastal areas is known in gross terms, many questions remain about the actual dependence of tourism on environmental quality, and about the benefits from tourism accruing to local communities or to environmental protection.

To what extent is cost-benefit analysis being used in planning decision making regarding the use of resources? The obvious answer here is that cost-benefit analysis has not yet been touched as a tool for decision making in coastal management. Although alluded to at various times, solid information on values of resources and benefits from exploitation are not available. This area is a fertile ground for research in Sri Lanka.

Can increased investment and development in coastal areas really stem the tide of increasing unemployment? The seminar participants were split on this question. Some said that areas such as Beruwela and Hikkaduwa have benefited significantly from investment in tourism through employment and demand for services outside of hotels. Others said that people are displaced by hotel development by losing their jobs and that local cultures are adversely affected by the presence of tourist money. This is another area where more and better research could assist to solve the problem. It was also pointed out that the type of tourism development and class of tourist determines the environmental, social and economic impacts on a given area.

Is tourism the most environmentally benign type of development? Though much of the discussion focused more on the negative social and economic impacts of tourism, it was never emphasized that tourism causes environmental degradation. Although environmental impacts can certainly be negative, the consensus was that tourism tends to be environmentally benign compared to other development activities because of its inherent desire to preserve pleasant surroundings for the visitor. It is well known that since tourists come to use clean beaches and seawater, pollution will drive them away!

Can the *Coastal 2000* strategy be made real? Although not answered because no one knows for sure, it was clearly stated that *Coastal 2000* includes many of the directions required for coastal management to become a more integrated, comprehensive and responsive endeavor in the context of Sri Lanka. Several policy directions were suggested to improve the chances of *Coastal 2000* becoming a reality. These were:

- Planning must include all relevant sectors and their economic interests in discussions.

- The different perceptions of desirable and undesirable outcomes between consumers and providers, and between different economic and social classes need to be addressed in the planning process.

- Integrated planning is required for siting of structures and activities in coastal areas.

- Engineering is only the very first step in coastal planning and management, and must be accompanied by a whole range of ecological, social and economic considerations.

- Management of coastal areas must be shared, not fragmented.

- Research and monitoring must be targeted to the needs of conservation and management and integrated in design.

The final discussion of the seminar was particularly relevant because it highlighted pertinent points that we too often tend to forget. In response to the title of the seminar, it was repeated that we must stop thinking of conservation and development as isolated issues. Considering them in isolation will lead to futile outcomes. But by addressing the issues together and finding a balance of solutions that consider relevant factors, we can move ahead to implement plans for which there is a general consensus. In short, more decentralized, participatory and focused planning efforts can lead to positive results. Compromise and discussion will be an inherent part of the process.

Annex

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