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(Centre of Excellence in Environmental Economics)

Newsletter

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Contents...

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Editorial

Integrated Coastal Zone Management (ICZM) has emerged as a priority area on the environmental agenda throughout the world, as a result of natural disasters like the Tsunami and Hurricane Katrina. We devote this issue of ENVISAGE to the economic dimensions of ICZM, particularly the vulnerability of coastal communities and the adaptation measures that can be taken. The summary report of a workshop organized by the South Asian Network for Development and Environmental Economics (SANDEE) and Madras School of Economics on "Coastal Communities, Vulnerability and Adaptation" highlights these aspects and provides an agenda for further research. Dr.K.S.Kavi Kumar discusses the results of a study that he carried out on "Vulnerability of Coastal Communities To Sea Level Rise" under the auspices of the Environmental Economics Research Programme at the Madras School of Economics. The Ministry of Environment and Forests set up an Expert Committee chaired by Prof.M.S.Swaminathan to review the Coastal Regulation Zone Notification of 1991. A summary of their final report is included in this issue. Integrated Coastal Zone Management must also be viewed from a regional perspective. Dr.Bharat Desai introduces the ICZM initiatives taken by the South Asia Cooperative Environment Programme. Bibliography and Web Resources on the "Economics of Coastal Vulnerability" are provided for interested readers.

Resurvey on the Status of Teaching and Research in Environmental Economics in India

A baseline survey on the status of teaching and research in Environmental Economics in India was carried out in 1998-99 as part of the World Bank sponsored Capacity Building Programme (EMCaB) (Report is available in http://envis.mse.ac.in). Now we are carrying out a resurvey to determine the current status of Environmental Economics in universities, colleges and other institutions. We are also assessing the benefits of the EMCaB programme. The information being collected is for the five year period from 2000-01 to 2004-05. An online questionnaire can be found on our websites: www.mse.ac.in and www.mse.ac.in/envis. You can download the questionnaire (in MS Word format) from this site. Kindly provide your responses either by filling the questionnaire online or sending the completed questionnaire in electronic form to envis@mse.ac.in, or posting the completed hard copy of questionnaire to the address below by December 31, 2005.

Participants will receive a CD-ROM of the final report

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Coastal Communities, Vulnerability and Adaptation -

Policy Options and Research Ideas

Both the Asian Tsunami and Hurricane Katrina highlighted the extreme vulnerability of poor coastal communities to natural disasters. Coastal areas have historically supported vast populations and are often drivers of economic growth. Yet, as the evidence from Asia and America shows the coastal poor remain particularly defenseless to both sudden natural changes and to gradual erosion of resources and resource-dependent livelihoods. Clearly, there is an urgent need to ensure that that the risks borne by the coastal poor are minimized. But, how do we prioritize amongst the immense number of ecological and economic problems faced in coastal areas? What are some major issues that need to be addressed and what kind of research is required to meet the challenges of coastal zone management? This note seeks to answer these questions and layout a research agenda for future work on coastal zone management in South Asia.

In March 2005, the South Asian Network for Development and Environmental Economics (SANDEE) and Madras School of Economics (MSE) brought together thirteen experts from around South Asia to discuss some of the challenges South Asian countries face in managing coastal areas. The purpose of the workshop was to consider how vulnerable coastal communities respond to risk and uncertainty associated with sudden and slow-onset natural disasters and what public policies can help decrease the cost of coastal degradation.

The day-long discussions revolved around four major questions:

1) How do current coastal zone regulations in South Asian countries help communities prepare for and mitigate the effects of natural disasters and degradation of coastal resources?

2) What are some adaptation strategies used by coastal communities that allow them to better respond to coastal disasters and degradation?

3) What is the role of credit and insurance markets in reducing risks associated with natural disasters? And

4) To what extent do public or private investments in natural barriers such as mangroves, plantations, and coral reefs as well as infrastructural barriers reduce coastal degradation?

The participants of the workshop on "Coastal Communities and Natural Disasters" on March 2,2005 included: B. M. S. Batagoda, Director, Environmental Economics & Global Affairs, Ministry of Environment and Natural Resources, Sri Lanka; J. Samarakoon, Marine Ecologist, Sri Lanka; A. K. E. Haque, Professor, Department of Economics, East West University, Bangladesh; N. Abdullah, Director, Marine Research Centre, Ministry of Fisheries, Agriculture and Marine Resources, Maldives; M. Baba, Director, Centre for Earth Science Studies, India; S. Ramaswamy, Director, U. Sankar, Professor Emeritus, and P. Appasamy, Member Secretary (Center of Excellence in Environmental Economics), Madras School of Economics, India; R. Ramasubramanian, Senior Scientist, M. S. Swaminathan Research Foundation, India; R. N. Roy, Fisheries Consultant, India; Y.S. Yadava, Director, the Bay of Bengal Programme (Inter-Governmental Organization); M. Duggar, Program Manager, and P. Shyamsundar, Program Director, SANDEE. This note summarizes the presentations and discussions held during the workshop.

Coastal and riverine communities in South Asia are continuously subject to natural resource changes in terms of a decline in fisheries, forests and other vegetation, climate change, land erosion, and water pollution. In addition, they periodically face rapid on-set disasters in the form of windstorms, floods and cyclones. Four important challenges in managing coastal areas to minimize the effects of these

changes are discussed below.

Coastal Policies and Regulations – The Challenge of Implementation

In Sri Lanka and India, existing coastal regulations appear to do little to protect coastal communities. First, there are informational difficulties, with regulations being mostly unknown to coastal dwellers and even local governments. Lack of clarity over responsibilities shared among different levels of government and sectoral Ministries is another problematic area. Most important, however, is lack of implementation of regulations. Often, regulations are seemingly implemented only when they involve economically weak actors such as fisher-folk. In India, a commission headed by Dr. M.S. Swaminathan recently reviewed the existing coastal zone management framework. Sri Lanka also just completed an assessment of the impact of the Tsunami. Some prevailing policy concerns are being addressed through these efforts; however, the implementation problem looms large.

A recent policy issue in Sri Lanka that has received considerable scrutiny is vulnerability zoning or "the 100 meter rule." There are many experts who question whether a standard rule that applies to all coastal communities will be effective. A better option may be a "coastal vulnerability index" that takes into account variability coastal geo-morphology as well as the size and density of human settlements. The main challenge again is to ensure compliance. Because of the low cost of violations (due to lack of enforcement and low fines), there is little incentive to comply. Here there is a clear need for economic instruments that can promote compliance.

Another policy consideration is whether implementation of coastal regulations can be devolved to local governments. Decentralization in resource management is an important trend worldwide, but there are concerns about whether local authorities can manage delicate coastal ecosystems of national or global importance. Here the Maldives presents a successful example of decentralized management. In the Maldives, the government requires private companies to develop environmental management plans for islands used for tourism. Compliance is partly assured because of a well-developed market for tourism. An interesting question is whether coastal areas in other South Asian countries are being managed better where tourism prevails, and, if not, why not.

How do Communities Adapt to Natural Changes?

Communities adapt to slow and rapid natural changes in various ways. This is particularly obvious in the case of Bangladesh, where adaptation strategies have taken two forms:

1.Risk prevention by adopting ex-ante measure to reduce risks; and

2.Risk coping or ex-post measures to mitigate damage.

Some well-known adaptation and mitigation strategies are:

a) loss-sharing amongst affected households.

b) post-disaster changes in occupations and living areas.

c) physical restoration of disaster zones.

d) cyclone shelters and relief centers to reduce loss of life and help recovery and

e) mangrove protection to strengthen natural barriers.

In general, policies related to natural disasters need to move away from current recovery strategies that are replete with incentive problems and build a "dependency syndrome" amongst coastal communities who are subject to periodic natural disasters. Increasingly the focus needs to be on risk-management, rather than just environment or disaster management. Adaptation policies should also take care to not worsen ecological problems. This may require support for households to switch occupations or to migrate to less risky areas

Participants at the workshop on "Coastal Communities and Natural Disasters" organized by the South Asian Network for Development and Environmental Economics (SANDEE) and Madras School of Economics (MSE) held at MSE, Chennai on March 2, 2005.

- a topical issue being currently debated is whether poor fishermen, who are dependent on a dwindling resource base, should be relocated to less risky areas or trained for new occupations. A final point is the value of preserving traditional knowledge. Anecdotal evidence suggests that tribal communities in the Andamans somehow perceived the 2004 Tsunami and quickly moved to safer ground. More often than not, policies that build on local knowledge are likely to be accepted and successfully implemented.

Insurance Markets as a Partial Solution

Poor households frequently spread risks within their communities and extended families. An important question is whether there is a role for insurance markets to reduce natural hazard related risks that are faced by entire communities and regions? In most South Asian countries, credit and insurance markets that can mitigate the effects of natural disasters either do not exist or are imperfect because of information asymmetries, low affordability, and poor knowledge about implementation of hazard insurance schemes.

There is currently a huge need to develop area-based catastrophic risk indices that can be used to devise insurance premiums proportional to objectively determined risk measures. Other public-private interventions that are required include: a) incorporation of hazard insurance into regular property insurance schemes and maintenance charges for buildings and apartments; b) piloting of programs where an insurance element is integrated into micro finance schemes; c) tax credits for property and other asset insurance schemes; d) subsidized insurance premiums for the poor; and e) government and international re-insurers for catastrophic risks.

Policy changes are required that can open up the insurance market to facilitate pooling and spreading of risks and also avail of the world-wide experience in calculating risk from natural hazards. Recent developments in international instruments to share risks, such as 'catastrophe bonds,' need to be more carefully explored.

Natural Barriers – Another Solution?

Recent natural disasters have highlighted the role of natural vegetation in mitigating damages. Natural barriers in South Asia include beaches, estuaries, lagoons and vegetation. Estuaries and lagoons serve as natural barriers by transforming a wave front to a less damaging flood, and plantations and coral reefs can act as bio-shields. Interestingly, atolls in the Maldives were not badly affected by the recent Tsunami and the artificial seawall structure of rocks around Male helped to save lives.

Mangroves are considered an important natural barrier that can mitigate wave energy. Anecdotal evidence suggests that villages adjacent to mangroves on the Andhra coast frequently suffer fewer losses from cyclones. Mangrove protection can also provide livelihood opportunities through fisheries, fuelwood collection, eco-tourism etc., as evidenced by projects in Sri Lanka and elsewhere. A better understanding of local incentives structures that promote or inhibit the development and conservation of natural barriers is needed.

Some Research Priorities

The challenges faced by coastal communities are immense. While some of these challenges can be addressed through current policies, several others require inter-disciplinary research. Some key issues for further research include:

- ***Coastal Policies and Economic Incentives*:** What are appropriate criteria for set-back zones or vulnerability zones? Can economic criteria be used to determine zones? What are the economic costs of decreased development in high risk zones? Who bears the costs of actions taken to reduce vulnerability to disasters? What are costs of non-compliance in terms of impacts of natural disasters?

- ***Decentralization and Coastal Management*:** Can responsibility for coastal management be devolved to lower levels of governments? What functions can be undertaken at the village, municipal, district and state levels? What incentives do decentralized agencies have to implement current laws regarding coastal management? What are some economic instruments (fees, permits, charges, subsidies) that can be used to regulate coastal development?

- ***Community Adaptation:*** What incentives and disincentives lead to in-efficient use of coastal resources, particularly fisheries? How and to what extent do disaster relief and re-construction efforts exacerbate inefficient and sub-optimal resource extraction? What conditions lead to successful community responses to coastal degradation? What is the role of collective action and social capital in preparing for and mitigating the effects of coastal and riverine disasters?

- ***Market Strategies*:** What is the role of insurance markets in responding to natural disasters? What policy and regulatory changes are required to strengthen insurance markets to enable them to respond to natural disasters? What kind of data is required for the emergence of insurance markets? What are some other market strategies that can help communities to pool risks?

- ***Natural and Infrastructural barriers:*** What is the role of natural barriers and the services they provide in mitigating slow and rapid-onset disasters? How can we value the services provided by natural barriers? What are some unexpected costs and consequences of man-made barriers? What incentives do communities have to develop and maintain infrastructural and natural barriers?

These issues are under consideration for future research.

Summary of *Prof. M.S. Swaminathan* Committee on Review of Coastal Regulation Zone Notification,1991

The Ministry of Environment and Forests issued the Coastal Regulation Zone Notification (CRZ), 1991 under the Environment Protection Act, 1986 for protecting and conserving the coastal environment. Nevertheless during the last 14 years of its implementation, the Ministry has received representations from various interest groups pointing out the inadequacies of the notification in the view of conservation as well as sustainable livelihoods. A number of Expert Committees have also been constituted in the past to look in to these representations and a number of amendments have been made. However, the need for a more comprehensive review of the notification, the Ministry constituted an Expert Committee under the Chairmanship of Prof. M.S. Swaminathan in July 2004 to review the existing CRZ Notification.

The Committee has evolved the following 12 basic guiding principles to govern future decisions on coastal zone management:

(1) Ecological and cultural security, livelihood security and national security should be the cornerstones of an integrated coastal zone management policy.

(2) The coastal zone will include an area of the sea to form territorial limits (12 nautical miles), including its sea-bed to the administrative boundaries or the biological boundaries demarcated on the landward side of the sea coast. The coastal zone management will also include the inland tidal water bodies influenced by tidal action and the land area along such water bodies. This area should be taken up for an integrated, cohesive, multi-disciplinary and multi-sectoral coastal area management and regulatory system.

(3) Regulation, education and social mobilization should be the three major components of a participatory and sustainable Coastal Zone Management strategy. Panchayati Raj institutions in coastal areas should be fully involved in the educational and social mobilization programmes.

(4) The protection and sustainable development of the marine and coastal environment and its resources should be in conformity with international law, as laid down in 1982 UNCLOS, as well as with the suggestions contained in Chapter 17 of Agenda 21. The Draft National Environment Policy of India also contains useful guidelines. Every effort should be made towards ensuring an Integrated Marine and Coastal Area Management (IMCAM) as prescribed in the 1995 Jakarta Mandate under the 1992 Convention on Biological Diversity.

(5) Coastal regulation needs to be based on sound, scientific and ecological principles and should safeguard both natural and cultural heritage. Heritage sites need particular care and should be conserved in their pristine purity. These include buildings, artifacts, precincts of spiritual, historical, aesthetic, architectural or areas of environmental significance such as richness of biodiversity and scenic beauty. Bird sanctuaries and parks and breeding grounds of migratory birds should be protected.

(6) The precautionary approach should be used where there are potential threats of serious or irreversible damage to ecologically fragile critical coastal systems and to living aquatic resources. Scientific uncertainty should not be used as an institution for the unsustainable exploitation of coastal resources - both living and non-living as well as to prevent environmental degradation, injustice, and harm.

(7) Significant or irreversible risks and harm to human health and life, critical coastal systems and resources, including cultural and architectural heritage, would be considered unacceptable. Ecological economics should underpin economic activities, so that present day interests and future prospects are not antagonistic. Significant biological, cultural and natural

assets should be considered incomparable, invaluable and irreplaceable and should receive overriding priority in the allocation of resources for coastal area protection and conservation.

(8) Coastal policy and regulations should be guided by the principles of gender and social equity as well as intra-generational equity, (i.e., the interests of future generations). They should be based on Mahatma Gandhi's dictum, "Nature provides for everyone's needs, but not for everyone's greed." All stakeholders should be involved in decision-making. Precious biological wealth, coming under Marine Biosphere Reserves, should be managed in a Trusteeship biological wealth, coming under Marine Biosphere Reserves, should be managed in a Trusteeship mode, with all the stakeholders protecting the unique natural wealth of biosphere reserves as Trustees and not as owners. A case study should be made on how the Gulf of Mannar Biosphere Trust is functioning, so that the Trusteeship pattern of sustainable management can be replicated by the principal stakeholders.

(9) Coastal protection and bio-resources conservation policies should be guided by techno economic efficiency, the precautionary approach, 'polluter-pays' principle(s) and 'public trust' doctrine. There should be strict liability on the part of those engaged in hazardous or inherently dangerous coastal activities, including the liability to compensate the victims of all human made hazards such as marine pollution and fish contamination. They should also bear the cost of restoring the coastal environmental degradation. The onus of proof in such cases should be on the developers/ industrialists for demonstrating that their "development" activities are environmentally benign.

(10)The principles contained in the Biodiversity Act (2002), should be applied to coastal bio-resources management. This will involve concurrent attention to conservation, sustainable use and equitable sharing of benefits. To address the issue of pressures on marine and coastal ecosystems, as defined in the Johannesburg Plan of Implementation (Part IV) adopted at the 2002 World Summit on Sustainable Development, every effort should be made to promote sustainable fisheries, prevent loss of biological diversity, prevent all forms of marine pollution and ensure that coastal area development and urbanization are eco-friendly.

(11)The regeneration of mangrove wetlands, coral reefs and sea grass beds as well as the promotion of coastal forestry and agro-forestry will confer both short and long term ecological and livelihood benefits. Carbon sequestration through coastal bio-shields will make an important contribution to promoting a balance between carbon emission and absorption, in addition to offering protection during coastal storms and calamities like Tsunami. An important lesson taught by the tsunami disaster is that the rehabilitation of degraded mangrove forests and the raising of coastal plantations of *salicornia, casuarina* and appropriate species of halophytes will represent a *"winwin"* situation both for nature and coastal human habitations. No further time should be lost in initiating a national coastal bio-shield movement along the coasts of the mainland of India as well as islands. This can be a priority task under the National Rural Employment Guarantee and Food for Work Programmes.

(12)The severe loss of life and livelihoods as well as property caused by Tsunami in Andaman & Nicobar Islands and in the coastal regions of Tamil Nadu, Kerala, Andhra Pradesh and Pondicherry teaches us that short term commercial interests should not be allowed to undermine the ecological security of our coastal areas. Human memory tends to be short and neglecting the lessons of Tsunami will be equivalent to writing off the future of coastal communities.

The Committee has recommended the reclassification of the coastal zone into four Zones i.e.

- ***Coastal Management Zone-I :*** Consists of areas designated as Ecologically Sensitive Areas such as

Mangroves, Coral reefs, Sand Dunes, Inland tide/water bodies such as estuaries, lakes, lagoons, creeks & straits, Mudflats, Marine parks and sanctuaries, Coastal forests & wildlife, Coastal fresh water lakes, Salt Marshes, Turtle nesting grounds, Horse shoe crabs habitats, Seagrass beds, Sea weed beds, Nesting grounds of migratory birds.

- ***Coastal Management Zone-II :*** Consists of areas identified as Areas of Particular Concern such as economically important areas, high population areas and culturally/strategically important areas. The administrative boundaries of these areas would be boundaries of CMZ-II.

- ***Coastal Management Zone-III :*** Consists of all other open areas including the coastal seas but excluding those areas classified as CMZ-I, CMZ-II and CMZ -IV.

- ***Coastal Management Zone-IV :*** Consists of Islands of The Andaman and Nicobar and Lakshadweep.

For the implementation of the recommendations, the report also suggests creation of an organisation:

Institutional Structures Suggested for Sustainable Coastal Zone Management

National Board of Sustainable Coastal Zone Management

- **National Coastal Zone Management Authority**
  - **National Coastal Zone Management Action Plan**
    - **Coastal Zone Management Division of MoEF**
- **National institute of Sustainable Coastal Zone Management (Policy and Legal issues; Conflict Regulation Studies; Capacity Building of Coastal Zone Management)**
- **All India Coordinated Project for Sustainable and Integrated Coastal Zone Management (Platform for inter - agency and inter - institutional Partnership)**

The Ministry of Environment & Forests has broadly accepted the recommendations made in the Report and has initiated an action for implementing the recommendations.

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DISSEMINATION PAPER SERIES

The Centre of Excellence in Environmental Economics was asked by the Ministry of Environment and Forests to explain the concepts of environmental economics to non-economists through a series of short dissemination papers. The authors welcome feedback on the papers from readers. The following three dissemination papers have been posted on the Centre Website (**http://coe.mse.ac.in**)

No	Title	Author
1.	Environmental Externalities	Dr. U. Sankar
2.	Vehicular Pollution Control	Dr. Vinish Kathuria
3.	Environmental Accounting	Dr. G.S. Haripriya

Relative Vulnerability of Indian Coastal Districts to Sea-level Rise and Climate Extremes

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Climate change and associated sea-level rise (SLR) is one of the major environmental concerns of today. While changing climate poses a challenge to humanity as a whole, the available evidence suggests that the developing countries particularly are more vulnerable. Most of the available impact estimates, however, do not account for impacts due to extreme climate events such as cyclones and droughts, whose frequency and intensity could also increase under climate change conditions. These natural disasters currently cause significant damages in developing countries. Asia, for example, accounts for almost 38 per cent of hydrological and meteorological disasters which occurred during the period 1991 - 2000 all over the world. Of those reported killed by natural disasters, 83 percent lived in Asia, while 67 percent lived in the nations with low human development indicators (IFRC, 2001). Thus, from the developing country perspective the present day vulnerability due to natural disasters, the possibility of increase in frequency and intensity of such events under climate change regime, and potential high impact of climate change on the performance of climate sensitive sectors make a strong case for focus on adaptation options as part of climate change policy.

The threat of rise in sea-levels as a result of changing climate makes the coastal resources, coastal infrastructure and population living the coastal areas highly vulnerable. At the same time, as the rise in sea-level is likely to be a gradual process numerous adaptation options, such as building dikes and floodwalls, wetland restoration, afforestation, and relocation of threatened buildings, also exist. Moreover, climate change could manifest through extreme events like cyclones and hence a proper understanding of the current coastal zone management practices, such as early warning systems and hazard insurance, could provide useful insights about the potential future adaptation strategies.

A recent study conducted at Madras School of Economics examined these issues and estimated relative vulnerability of coastal districts of India using an integrated vulnerability index that takes into account *impact* – induced by present day and future climate pressures, as well as the *adaptive capacity* of the districts characterised by a range of physical, economic, social and demographic parameters. Using information on area under different hazard levels in the coastal districts, the study also estimated the human casualties across coastal districts due to potential storm surges associated with cyclonic storms. Relative rankings of Indaian coastal districts based on an integrated vulnerability index indicate that districts on the Eastern coast are relatively more vulnerable than those on the Western coast. Relative rankings of the coastal districts based on predicted storm induced casualties are similar to the rankings based on integrated vulnerability index, indicating the robustness of the finding. Map 1 provides overview of the differential vulnerability across districts.

Adaptation can be understood better through proper characterization of two implicit questions, namely *adapt to what* and *how to adapt.*

Adapt to what?

As climate change may actually be experienced as a change in frequency and/or intensity of extreme events, disaster preparedness is an important component of climate change action plans. Understanding vulnerability to present day climate extremes such as cyclones would provide useful insight about the adaptive capacity of a region. Adaptation measures taken in anticipation of climate change can and usually should be harmonized with responses to current extreme events. However, human

activities are not always as well adapted to current extreme events, as one would want them to be. As argued by Burton et al. (1993) the losses suffered due to climate extremes cannot be ascribed to the events alone because lack of appropriate human adaptation and sometimes maladaptation account for significant losses.

In this context it may be worth noting the experiences with the super cyclone in 1999 that devastated the state of Orissa. There is general agreement that cyclone devastation was worsened significantly by deforestation on the coast. Satellite pictures show that 2.5 square kilometres of mangroves were lost in the 70s every year. Without the protection of forests, the Super cyclone was believed to have travelled as much as 50 kilometres inland. The mangroves make ideal places for conversion into ponds for shrimp farming. India is one of the top four exporters in the world, with production growing by 15 percent a year. Orissa, a major centre for the business, specializes in raising tiger prawns.

A rough estimate by FAO (1999) indicates that in the past three decades Andhra Pradesh lost 40 percent of its mangroves to shrimp farming, while the corresponding loss in Orissa, Tamil Nadu and West Bengal are 26 percent, 26 percent and 1.25 percent, respectively. It may be noted that majority of the highly vulnerable districts as per the estimations in this study are located in these four states. An important policy lesson is to avoid these maladaptations and aim at sustainable resource management practices.

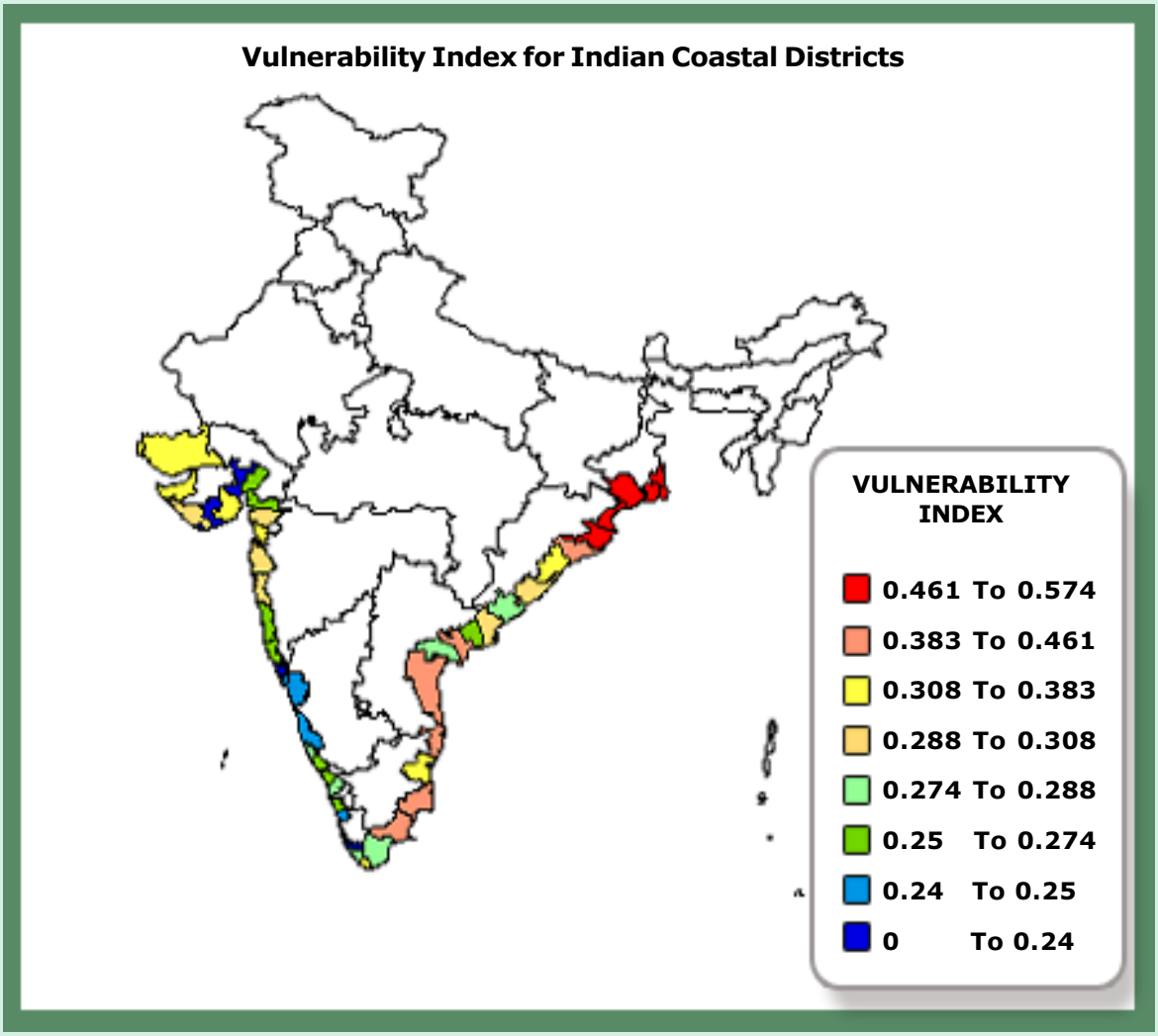
How to adapt?

Coastal zone management is about making trade-offs aimed at resolving competing sectoral demands, rather than optimising the output of a single resource. Solving such problems requires integration of management objectives and hence there is increasing interest in integrated coastal zone management (ICZM). In terms of responding to climate change, ICZM can be seen as an essential institutional mechanism that can deal with all competing pressures on the coast, including short, medium and long-term issues. Vulnerability assessment of the type addressed in this study is often described as one possible trigger for ICZM; at the same time ICZM will increase the need for more sophisticated and detailed assessment of implications of climate change – while accounting for other climatic and non-climatic stresses on the coastal zones. Thus, an interactive evolution of vulnerability assessment within ICZM framework can be envisaged, progressively contributing to an improved knowledge base for decision-making. In India ICZM plans are being drawn for more and more coastal regions. The coastal zone regulations can be cited as an early manifestation of the ICZM plans.

Though the risk management is well developed in the Indian context with early warning systems and post-disaster management systems well in place, use of effective mechanisms for enabling people to better manage their own catastrophic risks are still lacking. While government's role in disaster management cannot be ruled out completely, efforts should be made to reduce the burden substantially. Once disaster assistance is institutionalised, as it is done in the Indian context, then it has many of the longer term effects of an insurance subsidy that inadvertently worsen future problems by encouraging people to increase their exposure to potential losses. For example, compensation for cyclone damage to homes can lead to building more houses in cyclone prone areas. Insurance to natural disasters should have little or no government subsidy to avoid moral hazard and adverse selection problems. New approaches like index-based or area-based contracts to insure natural disasters should be attempted and these approaches in conjunction with developments in micro-finance could make insurance an increasingly viable proposition for poor people to better manage risk.

The insurer often faces high risk because of the covariate nature of the insured risk. When a payment is due, then all those who have purchased insurance against the same risk must be paid at the same time. To hedge against this risk the

insurer can sell part of the risk to the international reinsurance and financial markets. Even though the global reinsurance market is well developed the benefits of this market are reaped almost entirely by the developed world. While the US, the UK and Japan account for almost 55% of the total reinsurance market, the developing countries in Asia, where most of the natural catastrophe related damages are borne, accounts for less than 8% of the global market. It is in this area that government should put most of its efforts rather than in actual disaster assistance.



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South Asia Cooperative Environment Programme (SACEP)

The SACEP region has eight member countries: Afghanistan, Bangladesh, Bhutan, Indian, Maldives, Nepal, Pakistan, and Sri Lanka. Three of them – Afghanistan, Bhutan, and Nepal – are landlocked. In January 2003, the Governing Council of the SACEP decided to include in the SACEP work programme for 2003-2004 the development of a common legislative framework and delivery mechanism at regional level relating to coastal zone management. SACEP is in process of developing a framework for managing land based activities that impact the marine environment in South Asia.

The UNEP Global Programme of Action for the Protection of the Marine Environment for Land Based Activities (UNEP/GPA) in May 2003 completed "A Comparative Review of Coastal Legislation in South Asia". The study examines existing legislation in each of the five countries presumed to be the focus of this initiative and makes general recommendations for how the legislation of all the countries could be strengthened. In August 2003, UNEP/GPA completed "A Framework for Protection of Marine Environment from Pollution Due to Land Based Activities in South Asia", based on a literature review, that includes "A Strategy for protection of South Asian Seas from pollution caused due to land based activities".

Also in May 2003, IUCN's Regional Marine Programme, Asia (RMP), completed a South Asia regional technical assistance project (RETA) on Integrated Coastal Zone Management (ICZM) for the Asian Development Bank in four of the five countries to be involved in this initiative (Bangladesh was not involved in the ADB project). Among the outputs of this project is a "Regional Strategic Plan: Towards Integrated and Pro-Poor Approaches to the Management of South Asia's Coastal and Marine Environments". The project also produced, in June 2003, a fully-costed pre-feasibility study for the first three years of implementation of the Regional Strategic Plan, which provides for SACEP's role as a member of the regional steering committee envisioned to guide the process. In addition, the project produced an "Institutional Capacity Assessment Study and Capacity Building Concept" for ICZM in South Asia. The study's governance component made recommendations for improving governance in the ICZM context through national legislation and other national mechanisms and for strengthening regional cooperation to ensure good governance.

From a Concept Note by
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Web Resources on Coastal Communities and Management

A Guide to International Coastal Zone Management
http://www.netcoast.nl/

American Fisheries Society
http://www.fisheries.org

Australian Fisheries Management Authority (AFMA)
http://www.afma.gov.au/

Bay of Bengal Programme
http://www.bobpigo.org/

Center for Marine and Coastal Zone Management
www.abdn.ac.uk

Central Marine Fisheries Research Institute (CMFRI)
www.cmfri.com

Coastal Management
http://www.coastalmanagement.com

Convention on International Trade in Endangered Species of Wild Fauna and Flora
www.cites.org

Coral Reef Alliance
www.coral.org

Department of Ocean Development
www.dod.nic.in

Disaster Management - Ministry of Home Affairs, Govt. of India
http://www.ndmindia.nic.in/

Food and Agriculture Organization of the United Nations
www.fao.org

Global Mangrove Database and Information System
http://www.glomis.com/

Global Programme of Action for the protection of marine environment from land-based activities
http://www.gpa.unep.org/

Integrated Coastal area Management
http://ioc.unesco.org/icam/

Integrated Coastal and Marine Area Management (ICMAM)
www.icmam.gov.in

Institute for Fisheries Management and Coastal Community Development
www.ifm.dk

International Maritime Organization (IMO)
http://www.imo.org/home.asp

Indian Ocean
www.indian-ocean.org

Indian Ocean Tuna Commission (IOTC)
www.seychelles.net/iotc

Intergovernmental Oceanographic Commission (IOC)
http://ioc.unesco.org/iocweb/

International Collective in Support of Fish workers (ICSF)
http://icsf.org

International Ocean Institute (IOI)
www.ioinst.org

International Tsunami Information System
http://ioc3.unesco.org/itic/

Large Marine Ecosystems
http://www.edc.uri.edu/lme/

Land-Oceans Interactions in the Coastal Zone (LOICZ)
http://www.loicz.org

National Fisheries Institute
www.icfa.net

National Fisherman Online
http://www.nationalfisherman.com/

National Institute of Oceanography
http://www.nio.org/jsp/indexNew.jsp

National Institute for Ocean Technology (NIOT)
www.niot.res.in

National Oceanic and Atmospheric Administration
http://www.noaa.gov/

Partnership in Environmental Management for the Seas of East Asia
http://www.pemsea.org

United Nations Convention on the Law of the Sea
http://www.un.org/Depts/los/index.htm

United Nations Regional Seas Programme
http://www.unep.org/regionalseas/

ENVIS Centres on Coastal Management

ENVIS Centre on Mangroves, Estuaries, Lagoons, Coral Reefs
Centre for Advanced Studies in Marine Biology
Annamalai University
http://aucasmbenvis.org

ENVIS Centre on Marine Ecosystem
Department of Geology
University of Kerala
www.marinecosystematuok.net

ENVIS Centre on Coastal Regulation Zone Management
Institute for Ocean Management
Anna University.
www.annauniv.edu/iom/COZMA.htm

Forthcoming Events and Conferences

Third International Symposium on Deep-Sea Corals
Miami, United States.
November 28-December 2, 2005
http://conference.ifas.ufl.edu/coral/

Berlin Conference on the Human Dimensions of Global Environmental Change
Berlin, Germany. December 2-3, 2005
http://www.fu-berlin.de/ffu/akumwelt/bc2005/

Third Global Conference on Oceans, Coasts and Islands
Paris, France. January 23-27, 2006
http://www.globaloceans.org/

Delhi Sustainable Development Summit 2006
New Delhi, India. February 2-4, 2006
http://www.teriin.org/dsds/2006/index.htm

Sharing the Fish Conference 2006
Perth, Australia
Feb 23 2006 to Mar 2 2006
http://www.fishallocation.com.au/

The 17th Global Warming International Conference
Miami, United States. April 19-21, 2006
http://www.globalwarming.net/

International Conference on Economics of Poverty, Environment and Natural Resource Use
Wageningen, Netherlands 17-19 May 2006
http://www.socialsciences.wur.nl/enr/

Third World Congress of Environmental and Resource Economists
Kyoto International Conference Hall, Kyoto, Japan. July 3-7, 2006
http://www.worldcongress3.org/

Electronic version of the Newsletter can be accessed from
http://envis.mse.ac.in/newsletter