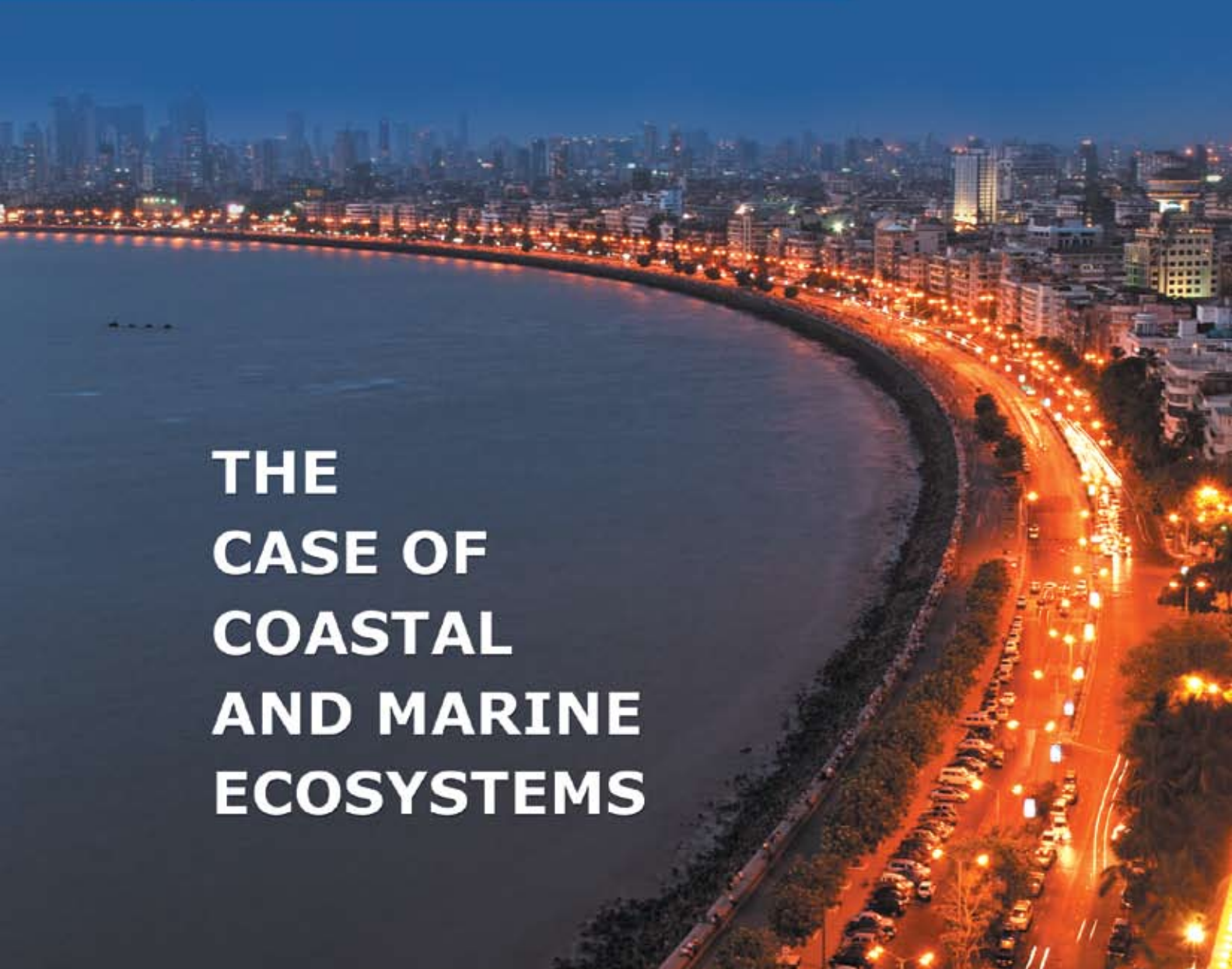


## 3RD TERI-KAS ENVIRONMENTAL GOVERNANCE DIALOGUE

Environmental Governance in the Context of Sustainable Development in India

April 5-7, 2013  
Goa



# THE CASE OF COASTAL AND MARINE ECOSYSTEMS



Konrad Adenauer Stiftung

50 YEARS OF WORLDWIDE COOPERATION

# Dialogues on Environmental Governance in the Context of Sustainable Development

The third Dialogue on Environmental Governance in the Context of Sustainable Development was organised from April 5-7, 2013, at Goa and was focused on the case of Coastal and Marine Ecosystems of India. The purpose of these dialogues is to strengthen environmental governance in India through recognition of the nature of concerns and risks around environment, natural resource management and people in various social-ecological contexts within India. It utilises an ecosystem approach to capture the diversity of stakeholder opinions and major groups involved in governance for sustainable development. Particularly, these stakeholder dialogues have a role to play in:

- Identifying and engaging with multiple viewpoints and outcomes;
- Formulating and observing norms/rules for sustainability; and
- Embracing the concept of 'knowledge' as an enabling factor for 'science' in environmental policy-making and regimes.

The usefulness of the concept is that it enables the discussion to be more focused and brings together three discontinuities: the political and administrative units, the regions which are influenced by development activity and the biophysical characteristics and processes.

The discussions on the first day of the dialogue spanned across the diverse viewpoints on coastal resource management and environmental governance of marine ecosystems; the indicators and impacts of climate change and strategies for adaptation; and the legal framework, institutional arrangements and capacity developed for addressing these issues. After the intense discussions of the first day, three overarching issues were identified as themes for further exploration by the participants of the dialogue. Following is a summary of the discussions on the first day and the conversations on the second day to take forward the agenda on strengthening environmental governance of coastal and marine ecosystems.

## The Indian Coastal Region

India has the fifth longest coastline in Asia spread across 7,517 km and surrounded by the Arabian Sea in the west, the Indian Ocean in the south and the Bay of Bengal in the east. The Bay of Bengal and the Arabian Sea coastlines continue to be high biological productivity grounds of the South Asian region, and India is one of the world's largest contributors of marine produce. The sub-continent has a large number of coastal and marine ecosystems such as estuaries, coral reefs, salt marshes, lagoons, sandy and rocky beaches, backwaters, mangrove forests and sea grass beds that support a wealth of national and globally significant biodiversity.

The Bay of Bengal and the Arabian Sea coastlines continue to be high biological productivity grounds of the South Asian region, and India is one of the world's largest contributors of marine produce

The coastal region of India has played an important role in the history of the country, being the connector between the outer world and our heartlands for ages. The ports and cities of the coast have facilitated transportation, trade and communication between nations, cultures and civilisations and therefore have been the centres of commerce and have seen a lot more population, urbanisation and economic activity as compared to other parts of the country.

The Indian coastal region is an extremely vulnerable ecosystem characterised by great spatial and climate variability, rich biodiversity and supporting a large population dependent on its natural resources. The coastal ecosystem and its resources are integrated and have unique functions that provide economic goods and benefits to serve the community. The coasts are under immense pressure from development drivers—urbanisation and migration, tourism, ports, industry, energy infrastructure and aquaculture, to name a few—which have implications for coastal ecosystems such as wetlands, mangroves, dune systems, coastal aquifers and coastal vegetation. Threats to the marine biodiversity also emerge from anthropogenic factors like habitat conversion, land-based pollution, overexploitation of species, destructive harvesting practices (by catch), invasive species introduced through ballast water and hull fouling, demand for fish feeds and exotic species for aquariums and live seafood trade.

## Climate Change and Implications for Governance in Coastal and Marine Ecosystems

To the aforementioned pressures and threats, there are also the additional stresses arising from a changing climate. Along the Indian coast, observed trends show net sea level rise of 1.20 mm/year for Mumbai, 1.75 mm/year for Cochin, 1.09 mm/year for Vishakhapatnam and 5.74 mm/year for Diamond Harbour (Kolkata). Studies have also shown an increase in the number of tropical cyclones in Categories 1, 4 and 5 between 1977-1991 and 1992-2006. The possible impacts on the Indian monsoon due to climate change include extremes in rainfall, delayed onset or early withdrawal, which will shorten the length of the rainy season, prolonged break periods during the monsoon season and increase in intensity of monsoon depression leading to extreme events. In the recent decades, the all-India mean annual temperature has increased at a much faster rate than the long-term average.

The Indian coasts, especially the east coast, are prone to tropical cyclones. They are also heavily populated. These two factors imply that the baseline cyclone hazard level is very high. Climate change adds another layer to this hazard level. While sea level rise and storm surges are the expected main impacts of climate change on the coasts, temperature rise has implications for crop cycles; extreme rainfall events have implications for soil erosion

**Table 1:** Mean Sea Level Rise Trends Along the Indian Coast

Tide gauge station	Number of years of available data	Trends (mm/year)	Glacial Isostatic Adjustment (GIA) corrections (mm/year)	Net sea level rise trends (mm/year)
Mumbai	113	0.77	-0.43	1.20
Cochin	54	1.31	-0.44	1.75
Vishakhapatnam	53	0.70	-0.39	1.09
Diamond Harbour (Kolkata)	55	5.22	-0.52	5.74

Source: Indian Network for Climate Change Assessment, 2010



and there is increased risk of salt water intrusion into ground water aquifers. Each of these impacts has implications for governance.

### **Enhanced Uncertainty in an Already Complex Ecosystem**

Climate change is only one in the long list of impacts influencing the coastal and marine ecosystem but it is the most recent and overarching factor that adds to a range of other interactions that human society has with this ecosystem. And this also makes it difficult to separate the impacts of climate change from impacts of other developmental activities on the coast.

Climate change brings uncertainty to our understanding of how ecosystems work and how humans and ecosystems work together. While we are aware of some fingerprints of climate change (rise in temperatures, sea level rise, acidification, etc.) there are some other impacts about which we have very little understanding. Different marine systems (such as fisheries, sea grass meadows, coral reefs, mangroves, estuaries, coastal dunes, etc.) will respond differently to these impacts and there is little known of how detrimental climate change can be for each of them. Some marine

systems such as coral reefs have been studied much more than other systems and there is a need to be honest that studies are yet to be done about systems' responses and that current studies are equivocal in their results.

There are several examples like that of the coral reefs of Lakshadweep that highlight the importance of recognising arbitrariness in governance. There is a presumption in governance actions that we understand and know how systems work and how they would respond; while phenomena may occur due to actions that were expected to have very different outcomes.

Climate change poses three questions for coastal and marine governance: One, how should surprises and shocks be governed? Two, will large-scale engineering solutions be successful in the absence of more complete information on how they will work and if they do work how will they solve the problem? Three, how can equity and aspirations that differ across communities be accounted for in decision-making and how can people who bear the costs of interventions to restore systems, be compensated, especially when they are least able to bear such costs?



*Sudarshan Rodriguez (second from right), Senior Programme Coordinator, Tata Institute of Social Science, participating in an open discussion during Session I*



## Surprises and Shocks

Coral reefs are an important part of the marine ecosystem and these have been given importance because of how the coral reefs affect fisheries as they are the canaries of the sea. In studies worldwide, there is a simple model for the reef ecosystem with algae, herbivores and corals. If there is low fishing, it allows herbivores to be in large numbers and they keep the algae down which competes with the corals. As long as algae are unable to compete with the corals, the latter will flourish. As soon as there is over-fishing, the herbivores reduce, resulting in algae taking over more space and there would be a decline in corals.

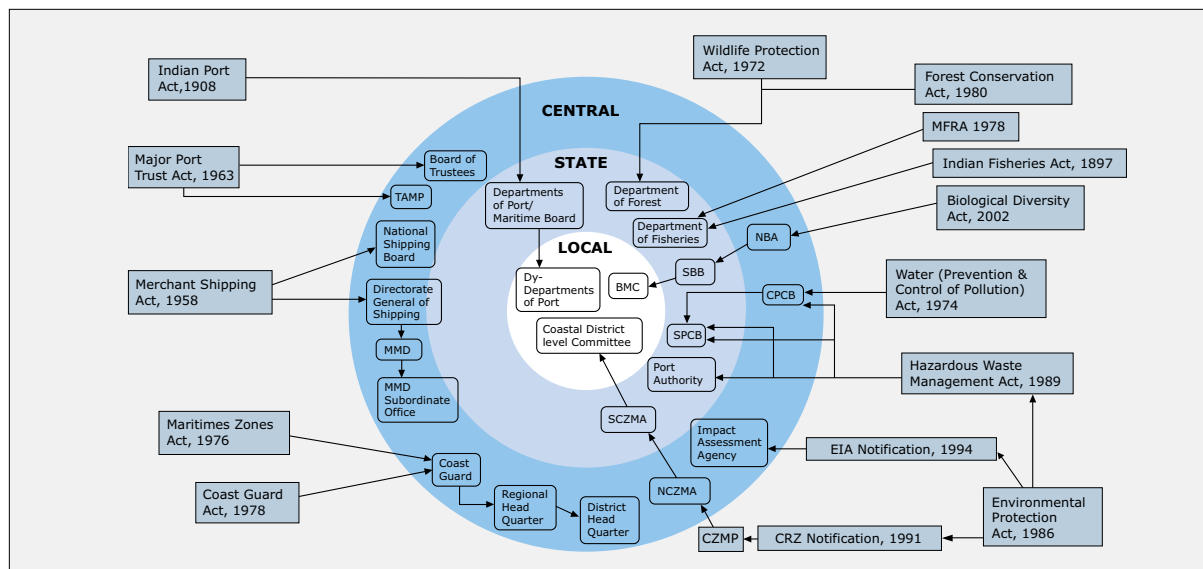
Studies from Lakshadweep showed that the coral reefs there were really affected by the El Nino in the late 1990s and were dying. After a few years, the reefs showed dramatic recovery but in varying trajectories, which even changed the response of the reefs to another bleaching event in 2010. One of the reasons for the recovery to be different from other instances was the kind of fishing taking place in Lakshadweep. Since there was not a lot of fishing happening off the reefs, there were enough herbivores to keep the algae down and provide enough substrata for recovering corals and new coral recruits. Even though fishing has increased on the islands since 1951, major increase has been in tuna fishing, which is not even native to Lakshadweep. Tuna was introduced as a governance mechanism for fisheries development and was not meant for conservation at all but its introduction resulted as a major reef subsidy, leading to recovery effects for the corals.

## Frameworks for Coastal Management

India has numerous agencies and regulations applicable to coastal and marine regions but for the purpose of regulating development on the

coasts, our governance framework uses zoning as a tool to spatially separate incompatible uses and protect fragile ecosystems and vulnerable communities.

**Figure 1: Governance Frameworks for Coastal Management**



Source: Sangeeta Sonak, Prajwala Pangam, Asha Giriyan, TERI



*Ajit K. Pattnaik (standing), Chief Executive, Chilika Development Authority, making clarifications during Session I*

## Coastal Regulation Zone

The Coastal Regulation Zone (CRZ) notification 1991 was replaced by the 2011 notification by the Ministry of Environment and Forests and there are four delineated zones under the new notification:

- CRZ-I Ecologically sensitive areas
- CRZ-II Built up areas
- CRZ-III Rural areas
- CRZ-IV Water area

The CRZ 2011 introduced some changes as compared to CRZ 1991, which were the inclusion of territorial waters, making a separate notification for islands—Island Protection Zone 2011, introduction of hazard lines and delineating areas that require special consideration—Greater Mumbai, Kerala, Goa as well as Critical Vulnerable Coastal Areas (CVCA).

The current shortcomings of the CRZ notification are that it does not sufficiently recognise the immensely diverse and dynamic nature of the coasts. Firstly, there are numerous dissimilarities in the methodologies followed by the seven different authorised

agencies that are mandated to demarcate the High Tide Line and Low Tide Line (HTL/LTL). Since there is no concurrence on the methodology, this has been treated as a loophole by those wanting to develop the coast.

The premise of the CRZ—to protect the coast, environment and traditional livelihood dependent on it—has not been met or fulfilled so far in the process and it is not clear how this would be achieved. While all the discussions around HTL/LTL and other technicalities take place, the coastal ecosystem is degrading and there may not be anything to protect by the time the discussions are complete. The other challenge is that common property regime rights are not recognised in the notification. Fishing communities are often in a minority and are not adequately represented in local self-government. Kerala is an exception to this and so there is a need to see how these communities can be mainstreamed into democratic decentralisation. The CRZ management plan has no role for the local self-governments at the village level (gram panchayats). One way to empower and involve the community is making it mandatory that gram panchayats will review plans as done in the Wild Life (Protection) Act and Forest Rights Act.



*Manju Menon (far right), Senior Fellow, Centre for Policy Research, participating in an open discussion, Session II*

## **Coastal Zone Management Authority**

There has been much debate about the institution that is tasked with implementation of CRZ—the Coastal Zone Management Authority (CZMA). The performance of the authority needs to be studied in detail and there is a dire need for an assessment of good practices for institutional framework. The CZMA is loaded with numerous expectations but there are numerous issues of delegation of responsibility and transparency.

The authority comprises mostly of bureaucrats and the new notification introduces district committees, which will be yet another power centre since there is no clarity on challenges to these authorities at the national and state level. Experiences of members of the authority show that there is little clarity on their role and it is possible that members may or may not have an expertise on coastal governance. The selection process is initiated by the state government with the final decision being with the central government. Members may be from specific departments and they may be also sitting in judgment for projects their departments would want to put up on the coastal areas—resulting in them being in a situation of providing clearances for their own projects.

There is a need to ensure that the identification of disciplinary and domain experts on the panel is a judicious process and does not involve candidates that may be limited by department and budgetary concerns. The challenge is to bring multiple perspectives into the working of the CZMA.

With regard to resources available to the authorities, there are disparities in the infrastructural support available to the CZMAs. It has been observed that financial assistance from the Ministry of Environment and Forests (MoEF) available to the CZMAs are inadequate and there is a lack of investment for developing the capacities of these authorities to undertake their requisite tasks. Finances are in fact generated from processing fee from project investors. The preparation of the Coastal Zone Management Plans (CZMP) is a resource intensive task which has faced a tremendous lack of resources and the task has to be supported by donor agencies or other entities instead of the government.

Some experiences shared by CZMA committee members reveal that there are information gaps as well as managerial issues in the workings of the CZMA. Information gaps include incomplete data availability and deficient analysis of the actual impacts of



*Ulka Kelkar (fourth from right), Fellow, TERI, participating in an open discussion during Session II*

their decision considerations. Managerial issues include lack of communication among committee members and a general dependence on the MoEF for routine functions. In the lack of timely and appropriate communication, many routine decisions get delegated to the chairperson or member secretary, resulting in situations where the real decision-maker may just be one person instead of the committee.

## Challenges to Successful Coastal Management

Some of the main challenges to successful coastal management are limited public engagement, poor organisation of conservation and development goals, rise in user conflicts and lack of inter-sectorial integration.

The Coastal Zone Management Plan must be based on scientific principles and at the same time take into account inter-sectorial integration and a bottom-up approach for the involvement of multiple stakeholders. The fishing communities that are interested in protecting the coastline are being marginalised and their land is taken from them to give to purposes of tourism, thermal power, Special Economic Zone developments, etc.

The Chilika Lake case is an example of a lake that was impacted due to anthropogenic factors and its revival highlights the importance of institutions and stakeholders' participation and a need for a focus on outcomes to ensure ecosystem health.

The mapping of ecologically sensitive areas involves actual demarcation, development of nationwide database for decision support, capacity building and awareness. The HTL/LTL demarcation has been difficult, since several agencies have prepared them at different points in time with different methodologies.

There is a need for cross pollination from the Environmental Impact Assessment (EIA) and CRZ notifications and processes, which is clearly missing at the moment. For transparency, all authorities are mandated to put up websites and give out information of project clearances, but all do not have dedicated websites and some are within other departments. MoEF has directed for spatial imagery of violations to be uploaded on the website but there is no clarity on who would take action based on this. The action on violations tends to get held up if the interests of authority and local government are not common.



## The Case of Chilika Lake

Chilika Lake is a Ramsar site spread over 1,000 sq km, and supports marine, fresh and brackish water ecosystems. 0.2 million people are dependent on it for livelihood and it is home to several endemic and endangered species. In the mid-nineties, it was turning into a fresh water lake with declining ecosystem productivity because of poor communication with the sea.

### Strategies to Revive the Lake

- An enabling institution, Chilika Development Authority, was created. Headed by the Chief Minister with secretaries from key departments, strategic partnership with 40 partners drawn across various levels—national, local and involvement of key stakeholders such as watershed associations, fishermen cooperative societies, etc. was established.
- Targeted studies to understand the root cause for degradation in the absence of time series data.
- Adoption of an ecosystem approach rather than a rigid management plan.
- Empowering local communities by building capacities.
- Forging strategic partnerships at local and national level and involving various stakeholders.
- Robust monitoring protocol.

### Targeted Interventions

- Creating a new inlet to allow seawater to enter, which had a positive impact on fish productivity and ecosystem health. Some indicators used to gauge ecosystem health were: salinity flux, expansion of sea grass meadows, increase in dolphin population, and

reappearance of native fish species, sediment flushing and decrease in invasive species.

- Biodiversity conservation was promoted by involvement of local community. For instance, fishing community was trained to provide services related to dolphin watching or as guides for bird watchers, etc.
- Establishing 10 monitoring stations to provide data related to water quality.
- Developing an ecosystem health report card which would communicate complex scientific data to various stakeholders from direct users to policy-makers.
- Studies to generate data, coping strategies in event of climate change.
- Publicise various government schemes to enhance profits for the fishing community.
- Provision of loans at low interest rate (around 4%) through banks so as to enable fishermen to get out of the clutches of money lenders operating at 40-50% interest rates.

### Outcome

Interventions to revive the Chilika Lake are seen to be successful. This success is attributed to the creation of an enabling institution, with public participation and considerable financial support. Involvement and participation of local community has enhanced output in terms of safety/ownership of monitoring stations, protection of bird sanctuary or increase in mangrove cultivation. The locals see themselves directly benefiting from these interventions and so they have a stake to effectively participate in them.



*N. Ramaiah (second from right), Chief Scientist, National Institute of Oceanography, participating in an open discussion during Session II*

Discussion around environmental governance has been bound by the fact that economic development has been prioritised over the considerations of long- or short-term impacts on the environment. While economic theory postulates that once a certain level of economic development has been attained, more importance would be laid on environmental conservation, but it should also

be kept in mind that during this drive towards rapid industrialisation, there is a loss of the natural capital that supports these activities in the first place.

Three key epistemic challenges to coastal resource management were identified: one, to factor in arbitrariness into decision-making and acknowledge that it is so; two, to acknowledge the limits of integration of issues and knowledge for decision-making; and three, to know what kind of information is driving what decisions. In essence, it is the community of people that needs to understand why certain decisions are taken and what source informed them.

At the end of the first day, three key overarching themes were identified that merited further discussion:

- Understanding stakeholder perspectives and development aspirations;
- Bringing knowledge flows into policy; and
- Handling uncertainty, surprises and shocks.

Discussion around environmental governance has been bound by the fact that economic development has been prioritised over the considerations of long- or short-term impacts on the environment



*K.S. Nikhil Kumar (first from left), Lawyer and Journalist, Deccan Herald, participating in an open discussion during Session III*

### **Understanding Stakeholder Perspectives and Development Aspirations**

The discussion around this theme started from a premise that there exists a pre-decided notion of what is good for a region or what would be the developmental aspirations of certain stakeholders, based on what is visible and not based on a wholesome view of the area, the systems within that space or conversations with the stakeholders to ascertain the diversity of the views between stakeholders and among groups themselves. For example, the basis of land ownership for ascertaining environmental governance pathways may not be the most appropriate to take as there are more stakeholders with no ownership of land or resources—this is most prevalent in the case of migrating populations such as landless labourers, tillers and communities dependent on common property resources.

But this raises the question of who can be defined as a stakeholder and when does one become a stakeholder? Typically, stakeholders are defined and engaged with when an

external entity enters and decides on an intervention that may affect the current inhabitants of the area, which is a reductionist approach of aggregating interests as adopted in our current governance framework. The identification of stakeholders, especially when done in a public forum and over a period of time, brings out complex issues such as power relations and associations to light and this is one of the factors that may restrain certain stakeholders or groups from participating. This can perhaps be overcome by not limiting identification and interaction with 'stakeholders' only when there is a need for consensus building or conflict resolution in case of a project, activity or scheme; but making it an on-going process at the planning stage and decision-making stages, which would also help in dealing with the consequences that may arise subsequently.

After the identification of stakeholders, the next challenge is seeking representation from all the stakeholders and reaching an acceptable decision through a process of negotiation. The question of developmental aspirations arises when there is a better





*E.A.S. Sarma (third from right), Former Power Secretary, Government of India, chairing Session IV*

understanding of who is really agitating and responding to certain aspects of the benefit sharing mechanism, that may not have the same results for all groups of stakeholders. In some situations there may also be a need to understand and communicate the associated risks, which may also have an impact on the negotiation process.

There cannot be a standardised approach to participation and consensus building because stakeholders respond differently to projects for different purposes such as implementation of a scheme, conservation activity or acquisition

for industrial or other expansion. Most discussions at the local level (especially for EIA public hearings) are limited to local issues or environmental issues but final decisions are not only based on these discussions—more often than not, decisions are based on national interests and it is assumed that the local community cannot understand these issues. This is a differentiation in the way information is shared during the participatory and decision-making processes, which should be avoided. It is important to recognise particular interests that may shape decisions at every level of the process.

### **Bringing Knowledge Flows into Policy**

On the theme of 'Bringing knowledge flows into policy', the deliberations highlighted that the process of taking knowledge to science, policy and then to the community is a reinforcing feedback loop that involves numerous stakeholders as knowledge generators—community groups, scientists, bureaucrats, policy-makers and even industry to some extent. These stakeholders need to be sensitised towards their role as knowledge

**There cannot be a standardised approach to participation and consensus building because stakeholders respond differently to projects for different purposes**



generators and the impacts of their actions in the process of policy-making in general.

The knowledge flow under consideration here can be split into three heads—taking science to communities; taking traditional knowledge from communities and incorporating it into science; and taking this combined knowledge into policy formulation.

### ***Science to Communities***

Firstly, it is important to simplify the technologies and jargons using local language and nomenclature so that communication between the two partners may be accurate and relevant. There are examples such as the case of Chilika Development Authority where scientists and the community came together to generate valuable data and information, which was immensely more relevant as compared to only scientists endeavouring to do the same. This process of participatory research can bring about participatory action where the community is involved in initial research giving its inputs as well as in the final implementation phases where the community takes stewardship as well. In order for the community to play a role in this participatory process, there is a need for providing training to monitor resources, empower them to have more faith in the knowledge they possess so that they may contribute to the knowledge generation process. Currently, there is an issue of inequities between different disciplines and introduction of new and complex technologies to communities will only exacerbate this inequity.

### ***Traditional Knowledge from Communities to Policy Processes***

Though there is widespread agreement to the existence of traditional knowledge, there have been questions about the validity of the knowledge and whether they can act as a basis for policy decisions. There are numerous innovations by communities that require horizontal networking of innovations so that they can be fed into the policy-making process and to policy-makers themselves. Traditional knowledge has been seen as non-formal, experiential knowledge that stands as a counterpart to formal scientific knowledge

and it tends to give a sense that it is a timeless, unchanging repository of knowledge held by elders. On investigating further, it is revealed that it is also knowledge gained out of experience and an outcome of living in a certain place and dealing with situations. It is by nature very dynamic as it is a result of constant reinterpretation of the world and how it has changed. It may not provide answers to problems in scientific fields, queries of causation, effects and outcomes as it is constantly recalibrating and so it may also not have responses to a lot of new technologies being introduced.

### ***Combined Knowledge Flows into Policy Formulation***

Often policy dialogues occur in silos and different groups are asked for their feedback separately in the absence of an exchange between them. It is important to gather information from different stakeholders through dialogue to help them understand each other's perspectives and issues with the other party that they may not have an opportunity to understand otherwise.

On communicating with different stakeholders, it was pointed out that industry should be sensitised to be more voluntarily compliant to regulation and there should be more information available on legal implications of violations that the industry may commit. That could help mobilise urban groups as partners to put pressure on industry to comply with regulations.

While we are trying to find a common language for everybody to come together on various environmental governance issues, it should be recognised that there is value in diversity and also there is a need to try to understand the other person's point of view.

Even within the scientific and academic community there are a few features about the CRZ notification that are still not very clear and there should be attempts to decode the notification in such a way that any common person could understand it, find it interesting to deal with such a complex issue with



multiple facets and find workable solutions. Oversimplifying communication directed to communities may be patronising, because members of these communities are dealing with complexities and have demonstrated the abilities to deal with these complexities.

### **Handling Uncertainty, Surprises and Shocks**

Good governance generally assumes a certain knowability and predictability about the socio-ecological systems being dealt with and the confidence in this predictability guides actions and plans for governance. But our ability to govern may be undermined due to something inherent in the system rather than our assumptions about it. While the scientific community is seen as all-knowing of the system under consideration with precise data, models, analysis and predictions, this knowability of scientists can be a myth. Uncertainty is inherent to natural systems and the science about these systems but communicating this uncertainty has always been a challenge. Ecological systems are known to be non-linear, to have thresholds and we are often unaware of the existence

of these thresholds as well as their specifics. This characteristic uncertainty of systems has implications for science and the policy that it informs. There is a need to overcome the gap between the common public, bureaucrats, legislators and the scientific community about the current state of knowledge of the natural systems and its competence to predict socio-ecological systems' behaviour.

Even interventions that seem small can have a great impact on socio-ecological systems and cause uncertainties and it is not possible to consider all the scenarios that may happen due to an intervention before it is actually implemented. But it is possible to invest in the enhancement of our understanding of the complexities of the system, communicating them, the adaptability of systems and factors that make them resilient in their functions. The current understanding indicates that encouraging diversity of options for socio-ecological systems enhances the stability of the system. At the same time it is encouraging redundancy of functions and forms, which may also increase the stability in the face of changes.



*P. Krishnan (standing), Scientist, National Centre for Sustainable Coastal Management, participating in an open discussion during Session IV*

## Key Messages for Environmental Governance in Coastal and Marine Regions

- Be pragmatic—acknowledge the arbitrariness in decision-making in the absence of perfect knowledge.
- Take into account 'dirty information and actions' and the role of political priorities in decision-making.
- Clarify what is factored in and what is excluded in decision-making processes.
- Demystify concepts without over-simplifying them, depending on audiences and contexts.
- Allow for participatory generation of knowledge and consent-oriented decision-making that takes developmental aspirations of stakeholders into account.
- Identify ways in which multiple perspectives can be brought into the working of the CZMA.
- Identify the level at which the CZMA fits and information exchange is easiest, working within the framework of the subsidiarity principle.
- Give the Gram Sabha in CRZ areas the same *locus standi* as in scheduled areas and include the Gram Sabha Resolution into CRZ clearances.
- Focus on outcome-based governance, not legal templates.
- Ensure credibility of institutions and avoid appearance of conflict of interests between different bodies.
- Use the power of visualisations, digitised information and other technology-oriented solutions that will improve openness, transparency and accountability.
- Make NCZMA a statutory body.

Governance today presumes a 'business as usual' scenario for planning but there is a need to prepare for unknowable scenarios as well. Making use of what we do know from our experiences—the successes and failures—are the low hanging fruits. There may be a repository of practices in local ecological knowledge that have helped people deal with uncertainty, surprises and shocks and can be used as a template in dealing with such situations.

One single solution cannot be valid for every location and a chain of interventions would be required (in decreasing order of value) to deal with uncertainty, surprise and shock.

- Protecting what is left—if there are successful socio-ecological systems they

must be sustained through whatever means possible;

- If what we have left is not good enough then the resilience potential of the system must be enhanced by exploring the factors that may add to resilience;
- For degraded habitats, non-interventionist restoration must be attempted of understanding what caused degradation in the first place, removal of those factors and then management of the system, all directed towards enhancing the ability of the system to recuperate on its own in case of surprise or shock; and
- Active restoration strategies including retreat, rezoning, replacement strategies spanning biological, ecological and civil engineering solutions.

# Conference Agenda

## Friday, April 5, 2013

- 6.00 pm onwards **Registration**
- 6.45 pm – 7.00 pm **Welcome Address** by  
**Tomislav Delinic**, Resident Representative to India, KAS (officiating)  
**Ligia Noronha**, Executive Director, TERI
- 7.00 pm – 7.30 pm **Opening Remarks: Setting the Agenda for the Dialogue**  
**Harsha Meenawat**, Associate Fellow, TERI  
**Fraddy D' Souza**, Fellow, TERI

## Saturday, April 6, 2013

### SESSION I

9.30 am – 11.15 am

### Diverse Viewpoints on Coastal Resource Management and Problems of Environmental Governance on the Coast

*Chair:* **Gopal K. Kadekodi**, Honorary Professor, Centre for Multi-Disciplinary Development Research

*Framing the Issues:*

- **Ajit Kumar Patnaik**, Chief Executive, Chilika Development Authority, Odisha
- **R. Ramesh**, Director, National Centre for Sustainable Coastal Management

*Discussants:*

- **H.R.V. Reddy**, Director of Research, Karnataka Veterinary, Animal and Fisheries Sciences University
- **Sugandh Juneja**, Researcher, Centre for Science and the Environment
- **Susmita Sahu**, Independent Researcher
- **Debi Goenka**, Executive Trustee, Conservation Action Trust
- **Anjali Parasnis**, Associate Director, TERI-WRC

### Open Discussion

**Rapporteur:**

**Saltanat Mehmood Kazi**, Independent Researcher

11.15 am – 11.30 am

Tea/Coffee Break



**Saturday, April 6, 2013**

**SESSION II**

11.30 am – 1.15 pm

**Views on Challenges of Environmental Governance for Marine Areas and Ecosystems**

*Chair:* **S.W.A. Naqvi**, Acting Director, National Institute of Oceanography

*Framing the Issues*

- **B.R. Subramanian**, Former Director, Integrated Coastal and Marine Area Management Project Directorate
- **Kanchi Kohli**, Independent Researcher

*Discussants*

- **Aarthi Sridhar**, Programme Head, Dakshin Foundation
- **G.N. Nayak**, Dean, Faculty of Life Sciences & Environment, Goa University
- **Sangeeta Sonak**, Director, Srujan

**Open Discussion**

**Rapporteur:**

**Fraddry D' Souza**, Fellow, TERI

1.15 pm – 2.15 pm

**SESSION III**

2.15 pm – 4.00 pm

Lunch

**Indicators and Impacts of Climate Change and Implication for Governance**

*Chair:* **Satish Shetye**, Vice Chancellor, Goa University

*Framing the Issues*

- **M.S. Madhusoodanan** and **Ulka Kelkar**, Fellow, Centre for Global Environmental Research, TERI
- **Rohan Arthur**, Senior Scientist, Nature Conservation Foundation

*Discussants*

- **P.K. Mohanty**, Department of Marine Sciences, Berhampur University
- **Abhijit Mitra**, Department of Marine Sciences, University of Calcutta
- **T.N. Prakash**, Scientist F, Centre for Earth Science Studies
- **N. Ramaiah**, Chief Scientist, National Institute of Oceanography

**Open Discussion**

**Rapporteur:**

**Mareen Haring**, Project Officer, KAS

4.00 pm – 4.15 pm

Tea/Coffee Break

## SESSION IV

4.15 pm – 6.00 pm

### **Laws, Institutions and Capacities for Environmental Governance on the Coast**

*Chair:* **E.A. Sarma**, former Power Secretary, Government of India

*Framing the Issues*

**Manju Menon**, Project Director, CPR

*Discussants*

- **S.A. Abbasi**, Head, Centre for Pollution Control and Environmental Engineering, Pondicherry University
- **N. Varde**, Former Joint Secretary, DTSE, Government of Goa and Member Secretary, Goa CZMA
- **Sudarshan Rodriguez**, CAMP, TISS, New Delhi
- **P.P. Balan**, Director, Kerala Institute for Local Administration
- **Krishna Dwivedi**, Associate Fellow, TERI

#### **Open Discussion**

**Rapporteur:**

**Harsha Meenawat**, Associate Fellow, TERI

7.00 pm – 7.30 pm

#### **Formation of Discussion Groups for Breakout Sessions**

- Understanding stakeholder perspectives, development aspirations and power relations
- Bringing 'knowledges' into science and policy and taking it to the community
- Handling uncertainty, surprises and shocks

## Sunday, April 7, 2013

9.30 am – 10.30 am

### **Discussion in Breakout Groups**

10.30 am – 10.45 am

Tea/Coffee Break

10.45 am – 11.30 am

Reporting back from the groups and open discussion

11.30 am – 1.30 pm

### **Panel Discussion: Way Forward for Sustainable Development of the Coastal and Marine Ecosystem**

*Chair:* **Ligia Noronha**, Executive Director, TERI

*Panellists*

- **Gopal K. Kadekodi**, Honorary Professor, Centre for Multi-Disciplinary Development Research, Karnataka
- **E.A.S. Sarma**, former Power Secretary, Government of India
- **Purvaja Ramachandran**, Division Chair, Futuristic Research, National Centre for Sustainable Coastal Management
- **Maya Mahajan**, Head, Department of Continuing Education, Karunya University
- **Tapas Paul**, Senior Environmental Specialist, World Bank, India
- **K.S. Nikhil Kumar**, Lawyer and Journalist, *Deccan Herald*

#### **Open Discussion**

#### **Concluding Remarks for the Dialogue**

## List of Participants

<b>Name</b>	<b>Designation and Organisation</b>
S.A. Abbasi	Senior Professor, Pondicherry University
Tasneem Abbasi	Assistant Professor, Pondicherry University
Rohan Arthur	Senior Scientist, Nature Conservation Foundation
P.P. Balan	Director, Kerala Institute of Local Administration
Tomislav Delinic	Resident Representative to India, KAS (officiating)
Krishna Dwivedi	Associate Fellow, TERI
Asha L. Giriyan	Research Associate, TERI
Debi Goenka	Executive Trustee, Conservation Action Trust
Mareen Haring	Project Officer, KAS
Soy Joseph	Administrative Assistant, TERI
Sugandh Juneja	Deputy Programme Manager, Centre for Science and Environment
Gopal K. Kadekodi	Honorary Professor, Centre for Multi-Disciplinary Development Research
Saltanat Mehmood Kazi	Independent Researcher
Ulka Kelkar	Fellow, TERI
Kanchi Kohli	Independent Researcher
P. Krishnan	Scientist, National Centre for Sustainable Coastal Management
K.S. Nikhil Kumar	Lawyer and Journalist, <i>Deccan Herald</i>
Pankaj Madan	Advisor, KAS
M.S. Madhusoodanan	Fellow, TERI



Participants of the third TERI-KAS Environmental Governance Dialogue held at Goa from April 5-7, 2013

## List of Participants (continued)

<b>Name</b>	<b>Designation and Organisation</b>
Maya Mahajan	Head, Department of Extension & Continuing Education, Karunya University
Marianne Manuel	Research Associate, Dakshin Foundation
Harsha Meenawat	Associate Fellow, TERI
Manju Menon	Senior Fellow, Centre for Policy Research
Abhijit Mitra	Faculty, Department of Marine Science, University of Calcutta
Pratap Mohanty	Professor, Berhampur University
S.W.A. Naqvi	Acting Director, National Institute of Oceanography
G.N. Nayak	Professor, University of Goa
Ligia Noronha	Executive Director, TERI
A.P. Panandiker	Research Assistant, TERI
Anjali Parasnis	Associate Director, TERI
Kavita Patil	Research Assistant, TERI
Ajit K. Pattnaik	Chief Executive, Chilika Development Authority
Tapas Paul	Senior Environmental Specialist, World Bank
T.N. Prakash	Scientist, Centre for Earth Science Studies
Ramesh Ramachandran	Director, National Centre for Sustainable Coastal Management
Purvaja Ramachandran	Scientist, National Centre for Sustainable Coastal Management
N. Ramaiah	Chief Scientist, National Institute of Oceanography
H.R.V. Reddy	Director of Research, Karnataka Veterinary, Animal and Fisheries Sciences University
Sudarshan Rodriguez	Senior Programme Coordinator, Tata Institute of Social Science
Nandini Sahai	Director & Chief Executive, The International Centre, Goa
Susmita Sahu	Independent Researcher
E.A.S. Sarma	Former Power Secretary, Government of India
Satish R. Shetye	Vice Chancellor, University of Goa
Nishitha Shrivastava	Senior Correspondent, <i>Herald Review</i>
Sangeeta Sonak	Director, Srujan
Fraddy D' Souza	Fellow, TERI
Aarthi Sridhar	Programme Head, Dakshin Foundation
B.R. Subramanian	Senior Scientific Consultant, National Centre for Sustainable Coastal Management
A.S. Unnikrishnan	Scientist, National Institute of Oceanography
Naraina Varde	Former Member Secretary, Goa Energy Development Agency and former Director, Science & Technology, Goa

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*Policy paper prepared by Ligia Noronha and Harsha Meenawat, TERI*

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