# Moving Towards Goal of Sustainable Coastal Ecosystem Management in India

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**Abstract**—*There is a need of clear goals and objectives to guide activities and individuals in the coastal management project. In India goals and objectives for coastal management are defined in Coastal Regulation Zone (CRZ, 2011) and project documents of World Bank. These goals reflect Ministry of Environment and Forests, Government of India's commitment to provide sustainable livelihood security to the residents of the coastal areas as well as protection natural environment and coastal habitats for environmental sustainability. Present paper elaborates these goals and objectives and also suggests pathways to achieve these goals systematically.*

**Keywords:** *coastal management; livelihood security; public participation*

## 1. COASTAL MANAGEMENT GOALS

There are two fundamentally different types of ecosystem-management goals. (1) Substantive goals refer to desired state of the ecosystem being managed (Gardner, 1989). These substantive goals of coastal management are similar worldwide. The ultimate goals are (i) an acceptable and sustainable quality of life in coastal communities and (ii) the sustained well-being and qualities of coastal ecosystems (Olsen, 2000). Procedural goals address how to achieve or implement substantive goals (Slocombe, 1998). Generally the goal of Integrated Coastal Management (ICM) must be consistent with the national and international commitments to sustainable development for all environments (terrestrial and marine), from the headwaters of catchment to the outer limits of exclusive economic zones (GESAMP, 1996). Within this broad framework, individual programs and projects must select short term objectives that address important socio-environmental issues. The procedural goals must facilitate consensus, coordination, integration and monitoring resulting into specific action plans. Ultimately in ecosystem-based management attention to procedural as well as substantive goals is a fundamental prerequisite (Slocombe, 1998). Three hierarchical goals are identified by Slocombe (1998) namely (1) develop consensus (2) develop understanding of the ecosystem and (3) implement a framework for planning and management. Further objectives and tasks for each goal are detailed out.

Coastal management is likely to be most successful when conducted on the basis of "objective based approach". Ideally the goals and objectives will be derived from particular problems of coastal area and will reflect a set of coastal management principles that guide the process (Ehler and Douvere, 2009). Coastal management should be guided by a set of principles that determine the nature and characteristic of the process and reflects the results you want to achieve. These can be derived from examples of good practices, national policies etc.,and are very diverse, representing a thin line between principles and goals. These principles should focus more on sustainable increases and improvements in the quality of life rather than reductions of insecurities. It should cover both Millennium Development Goals and Millennium Declaration which include peace and security and human rights (Khagram et.al. 2003).

On January, 6th 2011, Ministry of Environment and Forests, Government of India, under the Environmental Protection Act, 1986 issued a notification called Coastal Regulation Zone (CRZ). The goal of the notification and ICM in India is defined as

"To ensure livelihood security to the fisher communities and other local communities, living in coastal areas, to conserve and protect coastal stretches, its unique environment and its marine area and to promote development through sustainable manner based on scientific principles, taking into account the dangers of natural hazards in the coastal areas, sea level rise due to global warming, does hereby, declare the coastal stretches of the country and the water area upto its territorial water limit, excluding, the islands of Andaman and Nicobar and Lakshadweep and the marine areas surrounding these islands upto its territorial limit, as Coastal Regulation Zone."

In consonance with its goal two underlying principles are in view in ICM of India (1) to achieve an acceptable balance between economic development and environmental management (2) sustainable livelihood principle that yield positive results in areas of rural and natural resource development. There are two sets of mutually reinforcing

objectives and activities to achieve these goals. One deals with sustainable livelihood security and other with coastal environmental management. To achieve these goals following objectives are enumerated (MoEF, 2010).

1. Reduce vulnerability of coastal areas and communities from natural hazards.
2. To develop the capacity and institutions to implement the CRZ Notification.
3. To develop integrated Coastal Zone Management Plans for better management of coastal areas.
4. To develop an institution to carry out studies and research in the area of coastal and marine management.
5. To conserve and protect the fragile coastal ecosystems.
6. To control pollution of coastal waters from land based sources.
7. To demonstrate and pilot improved livelihood options of coastal communities threatened by coastal hazards and pollution

## 2. SUSTAINABLE LIVELIHOOD SECURITY

The concept of Sustainable Livelihood Approach (SLA) first appearedin the Bruntland Commission Report of 1987, which was later conceptualised by Robert Chambers in 1992 and offered a working definition (Chambers and Conway, 1992).

A livelihood comprises the capabilities, assets and activities required for a means of living; a livelihood is sustainable which can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contributes net benefits to other livelihoods at the local and global levels and in the short and long term (Chambers and Conway, 1992).

Enhancing capability, improving equity and increasing social sustainability were prescriptions suggested by Chambers and Conway. Over less than a decade between 1987 and 1997, an idea that originated from researchers, conceptualising both emergent theory and practice, SLA was adopted as a guiding principle of UK development policy(Solesbury, 2003).The sustainable livelihoods framework links inputs such as capitals and assets, and outputs such as livelihood strategies connected in turn to outcomes which combined employment levels with wider framings of wellbeing and sustainability (Scoones, 2009). There are several elements of the approach which are relevant and can be applied in different ways. Some of the key elements of the approach are (1) the sustainable livelihood framework and its elements, which helps understanding the issues affecting livelihoods in a household, community or a country (2) sustainable livelihood principles and (3) applying the principles (Khanya-aicdd, 2006).Sustainable livelihood approach retains the same fundamental sustainability agenda, but shifts the focus from maintaining coastal ecosystem integrity towards an explicit people-centre approach,

emphasizing capabilities of poor people (and not constraints), vital role of mediating institutions, social relations; government process (Glavovic and Bonzaier, 2007)

## 3. SUSTAINABLE LIVELIHOOD FRAMEWORK; KEY ELEMENTS AND PRINCIPLES

People's assets, vulnerabilities, policies, institutions, processes (PIP), outcomes, livelihood strategies and opportunities are defined as key elements of SLA by Khanya-aicdd.People's assets or capitals (human capacity and human resources) are not merely means, through which they make a living; they also give meaning to the person's world. These assets are not simply resources that people use in building livelihoods; they are assets that give them the capability to be and to act. It gives them the capability to engage more fruitfully and meaningfully, with the world and the capability to change the world. The conception of livelihood is rooted in a notion of access. Most of the time livelihood depends not only on natural resources, but a wide range of assets such as produced, human, social and cultural capital. Of these assets social capital seems most important. As access to resources and other actors is the most critical asset that rural people need in order to build sustainable livelihoods. Social capital inheres in the types of relationship that allow access and is thus a critical precursor to access being possible (Bebbington, 1999).

The discourse of sustainable development has enlarged the consideration of rights of future generations and present-day socially marginalized groups(Haughten, 1999). The critical message from virtually all quarters of the south is that social concerns, economic issues and intra-generational equity- the very obvious "here and now" disparities in wealth and opportunities- are the keys to resolving the environmental/development crisis (IDRC, 1992). The central issue for environmental and social justice involves community empowerment to further access resources necessary to take an active role in decisions affecting one's life (Ghai, 1994).

The basic idea of expanding human capability or of human development involves the assertion of the unacceptability of injustice and indiscrimination of particular sections of population. Human development is defended as a goal in itself; it directly enhances the capability of people to lead worthwhile lives, so there are immediate gains in what is ultimately important, while safeguarding similar opportunities in future. Good health and good education seem to generate powerful demand for these opportunities and more for our children. This is a relationship that goes well beyond the redistribution of income to the poor at a given point of time, important though that is. Human development have both direct and indirect importance in terms of intrinsic values such as education, health, and quality of life and the material prosperity that is advanced by human development can in turn contribute to further increase in quality of life (Anand and Sen, 2000).However education has no simple correlation with

capability; for some people education is enabling, enhancing capability; and for others it is disabling. Health and physical competence are also clearer: but even here some of the handicapped can find niches, which assure adequate livelihoods (Chambers and Conway, 1991). Human aggression, human aggression, pride, ignorance, greed, class conflict, the idea of hierarchy, and the denial of otherness-lead to contraction of livelihoods (Engel, 1998).A common factor in many internal wars is that armed groups are comprised of young men whose expectations for a better life have been frustrated due to contraction in their livelihoods (Olson, 2000). Vulnerability of some people increases with natural disasters and environmental change resulting in contraction of livelihoods; leading into violent conflicts (Barnet and Adger, 2007).

Sometimes psychological factors also make people vulnerable. As noted by Vivekananda "there are hundreds of thousands of microbes surrounding us, but they cannot harm us unless we become weak, until the body is ready and predisposed to receive them. There may be a million microbes of misery flouting about us, we must learn that nothing can happen to us, unless we make ourselves susceptible to it. No disease can come to me until the body is ready, it does not depend alone on the germs but upon a certain predisposition. We get only that for which we are fitted. We ought to knout that every blow you have received came to you, because you prepared yourself selves for it (Vivekananda, 1921). Thus there are three main reasons because of which people become vulnerable resulting into contraction of their livelihood (1) social injustice (2) negative environmental change and (3) psychological weakness. Three interventions are possible at this stage (1) individuals to gain control over themselves through various mechanisms, (social, cultural, spiritual) then the blow will never come (Vivekananda, 1921) (2) adopting capabilities that include being able to cope with stress and shocks, and being able to find and make use of livelihood opportunities. These capabilities are not only reactive but they are also proactive and dynamically adaptable. They include gaining access to and using services and information, exercising foresight, experimenting and innovating, competing and collaborating with others, and exploiting new conditions and resources (Chambers and Conway, 1991) (3) states play important role by creating conditions, whereby community is empowered by providing access to resources, so that they can lead effective life. These factors include access to employment and essential resources, capital, labour power, knowledge, time etc (Ghai, 1994). They can provide guarantee to assist people, when their livelihood suddenly contract. They can provide economic and political freedom (freedom of speech, freedom of media, civil liberties and freedom to vote). State can provide social opportunities such as education and health care, transparency to ensure openness and accountability to mitigate corruption. When all these functions work harmoniously and effectively, then people have opportunities to develop and have less anxiety about the future (Sen, 1999).

Diana Carney after initial set of principles (2002) reviewed normative and operationalprinciples in a review of progress with SLA for the SLSO.

Normative principles include

- **People centered**: giving respect for human freedom and choice and development of focused interventions
- **Empowering:** support should result in increased voice, opportunities and wellbeing of people, including poor people
- **Responsive and participatory:** people must be key actors in identifying and addressing their livelihood priorities, outsiders need to listen and respond to people's views
- **Holistic:** needs to understand people's livelihoods and how these can be, enhanced in a holistic way
- **Sustainable:** there must be a balance between environmental, social, cultural and economic development
- Operational principles
- **Strength- based**: recognize and understand people's strengths and not just their problems. This is respectful and provides a platform on which livelihood strategies can be developed.
- **Multi-level (micro-macro links):** while working at multiple levels, micro level activity should inform the development of policy, whereas macro and meso- level structures and processes should recognize micro realities and support people to build upon their own strength. Top down strategic action as well as bottom-up participatory processes are required
- **Conducted in partnership:** implementation requires using the strengths of different organizations
- **Disaggregated:** it is vital to understand how the livelihoods of various disadvantaged groups, differ in terms of strengths, vulnerabilities and voice- and what effect this has
- **Long term and flexible:** poverty reduction requires long term commitments and flexible approach to providing support, which can respond to emerging circumstances

## 4. ECOSYSTEM MANAGEMENT

Ecosystem management of land-based systems began in the 1950s. But its application in the environment is relatively new. Although it was recognized that there is no single correct path to Ecosystem management, a paper by UNEP (2006) *Ecosystem-based management, markers for assessing progress* is considered as a best practical tool for achieving progress in ecosystem management. Ecosystem Based Management (EBM) offers a framework for disaggregating the goal of sustainable development into a sequence of tangible levels of achievement. EBM recognizes connections across the ecosystem, utilize an ecosystem services perspective, address cumulative impacts, manage for multiple objectives and

embrace change, learning and adapting are key overarching considerations that set EBM apart from traditional management (UNEP, 2010).

Given the strong interest of policy makers and the public, there are considerable prospects for scientists to contribute to the implementation of EBM approaches through research, development of scientific capacity, and scientific communication and synthesis. While there will always be opportunities to increase our understanding of the ecological and social dynamics of particular systems, sufficient information and experience already exist to move forward with implementation of EBM (Leslie and McLeod, 2007). Even though ecosystems are complex, we don't have to understand every bit of that complexity to make management successful and human use sustainable. It comes down to having sound social and economic incentives. Getting started in EBM is something we can do today, by identifying priorities that fairly requires urgent attention. Once priorities are identified, then you have find out solutions to those as far as possible with maximum benefits for minimum costs (EBM, Tool Network, 2009). Implementation of this framework involves, finding leadership, building on existing administrative units and institutions, ensure consistency of institutions, ensure adaptable and flexible processes, involve people, and provideincentives for cooperation and coordination and undertaking periodic reviews (Slocombe, 1998).

## 5. CONCLUSION

By withdrawing earlier Coastal Regulation Zone (CRZ, 1999) notification, Government of India introduced a new CRZ (2011) notification. With the introduction of this notification new challenges are created. These challenges include procedural goals and need of essential characteristics of change in India to achieve goal of ICM. In Indian context most important and perhaps effective interventions include strong leadership, widespread environment education and awareness, projects which are long-termist, focussed, comprehensive and create sense of co-operation. Public participation, leadership, environment education, diverse project activities and continuous monitoring of these activities will definitely help achieve coastal development goals effectively.

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