

Conclusions - India

Important examples of ICZM development and initiatives in India relate to the following topics:

1) Integrated approaches to river and coastal management to reduce vulnerabilities

Integrated, interdisciplinary water management of the Ganges Brahmaputra Meghna (GBM) river basin including its coastal zone is proposed to start with trans-boundary discussions. Such trans-boundary cooperation, based on economics, would have beneficial effects for all the riparian countries, faced with increased future droughts and flooding. Economical valuation of water for use for people and ecosystems is regarded as a common base for discussion focused on measures to reduce vulnerabilities and increase resilience of the river system. Examples of successful riparian cooperation and negotiations can be found in Europe e.g. the International Commission of the Rhine Basin.

In the last decade, several developments in ICZM planning have taken place in India supported by international cooperation. The Indian Department of Ocean Development with support of World Bank and the Netherlands, started the Integrated Coastal and Marine Area Management (ICMAM) project, in 1999. The project focused on producing a development plan and strengthening institutional capacity, in the Chennai area (State of Tamil Nadu). The first results included the development and application of a framework for analysis and an integrated modelling system based on intensive participation of stakeholders, to identify solutions. In about the same period and also with the support of the World Bank and the Netherlands, a project commissioned by the Andhra Pradesh Government involved the development and application of the ICZM approach in the Andhra Pradesh (AP) State, focusing on using ICZM to reduce vulnerability to cyclones. This project included a model of coastal development and an assessment of vulnerability for the Godavari Delta, describing the impacts of cyclones and flooding on the coastal community and their possible recovery over time.

The results led to the identification of promising measures to reducing vulnerability and provided a basis for integrated spatial planning of the AP coastal area exposed to cyclone and flood hazards. Although these developments have enhanced the capacities at the planning level it also became clear that the 'real' problems in protecting the coast are those that are less visible. The coordination and harmonisation among and between stakeholders can strongly be improved through strengthening the community participation, while effective management needs improved legislation, clear mandates and financial resources.

2) Coastal protection Guideline available on the CCC website

ICZM applications have focused on measures to cope with coastal erosion. This has led to the development of a coastal Guide for the protection of sandy coasts considered from a broad ICZM perspective. The coastal Guide was developed in a number of logical steps, which involved analysing the erosion problems (by the collection and interpretation of data), the identification of developments and evaluation of possible solutions. The Guide stresses the need to consider the trade-offs between hard engineering structures and other solutions taking a long term, land use planning and ICZM perspective in order to achieve sustainable solutions.

3) Local initiatives for improving environmental and livelihood conditions

The variety of specific coastal problems and local circumstances requires tailor made approaches at the grass root level. An excellent example of such an approach is the programme to install artificial reef (AR) modules in the Gulf of Mannar (the South-Eastern tip of the State of Tamil Nadu), which took place in the period between 2002 and 2008. The modules consisted of triangular slabs of ferro-cement with holes of different diameters, which were produced from locally available materials. A monitoring programme revealed clear beneficial effects on fishery production, coral recruitment and creation of new food chains. Hence, it was concluded that such small-scale applications have significant potential for improving the livelihoods of local people. The strong involvement of the local fishery communities, greatly increase awareness of the AR benefits. It contributed to the reduction of the destructive fishing and coral mining. The cooperation between the local Marine Biological Research Station (SDMRI) and Netherlands (expertise and funding) was a healthy one, illustrated by the fact that after the Dutch left, the monitoring and the high sustainable yield of fish continued.