

Integrated Coastal Zone Management:

The panacea for the future of the coastal zones?

Integrated Coastal Zone Management is a holistic approach to regulating the use of coastal zones. The example of mangrove use in Pará, Brazil, shows that implementing this concept makes very tough demands on policy-makers, administrations and the users of coastal zones and that successes can only be achieved over the long term.

It is afternoon somewhere among the tropical mangroves on the northern coast of Brazil, and the hot and humid air is stifling. João wades laboriously through the swamp, clambering over the mangroves' tall stilt roots until he reaches his destination – the mangrove creek. Here, he washes off the mud that clings to his body and cleans his day's catch: 130 large mangrove crabs, known locally as Caranguejos.

This species of crab, around 7 cm wide, is an important source of income for the rural poor, including the nine members of João's family. Like many others in the locality, João and his family are landless peasants who migrated to the coast in order to make a living catching the mangrove crabs. But recently, the catches have steadily dwindled and João complains that he is having to move further and further into the mangroves to find large enough specimens. At the same time, the influx of poor families into the coastal regions is continuing.

A much more serious problem, however, is the advance of commercial loggers who are clearing the mangroves on an extensive scale. Mangrove timber has a very high calorific value and is extremely hard

and durable, making it a valuable commodity on the timber markets. The logging is destroying the habitat of the mangrove crabs, which cannot survive without the mangroves.

The political message from Rio

Agenda 21 – adopted at the United Nations Conference on Environment and Development in Rio de Janeiro in 1992 and calling for integrated management concepts to limit the degradation of natural resources in coastal areas and the marine environment – was the first high-profile policy statement on this issue at international level. Since then, integrated coastal zone management (ICZM) has become something of a panacea for the global

João is one of many landless peasants who migrate to the coastal zones with their families in order to make a living catching the mangrove crabs.

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Photo: Foth

management of problems affecting the coastal zones. Numerous coastal management programmes have been launched at national and even at regional level. Ten years after Rio and in response to the continuing destruction of coastal zones worldwide, the World Summit on Sustainable Development in Johannesburg renewed the call for integrated management strategies to be implemented in coastal zones.

The basic aim of ICZM is the sustainable development of coastal zones, which implicates improving the economic, health and social conditions of the local population and enhancing environmental quality in order to maintain the environmental and economic diversity and productivity of coastal zones. The intention is to achieve these goals through improved management – especially by promoting justice and transparency – and dynamic planning processes, which actively involve the relevant stakeholders at local and national level.

Brazil's response

The Brazilian Government has been implementing a national coastal zone management programme since 1988. One outcome was the adoption of legislation to protect the mangrove areas in the federal state of Pará. It banned all use of mangrove timber and imposed stringent conditions on the use of other mangrove resources.

However, this contrasts sharply with reality: Crab fishermen like João use the man-

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groves for daily survival. Others earn a living by felling mangrove timber, which has traditionally been used to build houses, fences and fish traps or as fuelwood for cooking. Current legislation criminalizes these poorer population groups. Large timber companies can circumscribe the government's sanctions through clandestine and unregulated logging on a massive scale. This has accelerated the destruction of the mangroves and encroached upon the crabs' habitat. As a result, the conflicts between the regional-

ly operating commercial loggers and the local crab fishermen are intensifying. The original idea behind the legislation – to protect the environment and natural resources – has thus been turned to its contrary. And yet the policy was not amended even after the 1992 Rio Summit. A resource management policy, which focuses solely on nature conservation to the exclusion of all, else is subject to failure from the onset.

Why is ICZM so difficult?

The above example from Pará State in Brazil raises an important question: Why is ICZM so difficult to implement? Initially, the problem is one of definitions: ICZM comprises three concepts which have to be clarified before ICZM can be implemented as a holistic approach. The concepts in question are management, integration and coastal zones.

Management is a familiar concept in economics and denotes the process of acquiring information, planning, decision-making, implementation and impact assessment. In practice, however, significant weaknesses are apparent driving the every-day reality implementation in the management process.

Integration is more difficult to define. According to one definition by a group of experts, integration refers both to the various stakeholder groups and their individual objectives, as well as to the mechanisms required to achieve the desired goals. Integration therefore also encompasses the various policy areas and the relevant administrative levels. The natural conditions on land and in the water, and how they interact, must also be taken into account. Integration must also incorporate the space and time dimensions of a development process. Hence, ICZM is viewed as a multidisciplinary approach, which cannot be categorized simply as

«environmental protection». Few managers of coastal zones, who usually have sector-specific training, are likely to be successful in achieving integration defined in this way!

The definition of **coastal zones** is no easier: There are many different ways of defining coastal zones, e.g. in terms of distance from the mean high-water line or in terms of contour levels. Depending on the definition used, the strip of «coastal zone» can range from just a few hundred metres to several kilometres wide. These defini-



Photo: Foth

tions take no account of the natural interaction between land and sea (e.g. nutrient and sediment transport, pollutant influx via rivers). Furthermore, such rigid descriptions reveal even less about the socio-economic dynamics of use or, indeed, the degradation of coastal resources. A debate is currently under way about the potential expansion of ICZM to include the river catchment areas. But can the principles of ICZM be implemented effectively in such a context as it is more likely to further reinforce the complexities which are already apparent in a much smaller area?

Aside from the obvious difficulties in defining ICZM, by far the greatest problem associated with implementing ICZM is the requirement for stakeholder participation. Every stakeholder (persons or institutions) has specific needs, expectations and interests in relation to the habitat in question. The objectives and intentions pursued by these individuals or stakeholder groups often clash. Environmental activists have different perceptions of coastal zones as a habitat and have different interests than artisanal fishermen or investors wishing to invest in shrimp production, for example. Devising a common vision and realistic shared goals from this complex set of interests and expectations is the real challenge in ICZM.

What went wrong in Brazil?

In the case of the Brazilian mangrove protection programme, no attempt was made to consider the local communities' interests or the likely impact of the legislation on them. This type of participative approach was beyond the scope of the authoritarian «command and control»



Mangroves: A tropical ecosystem

Mangroves are tropical intertidal forests in coastal zones. They form a unique ecosystem comprising a diversity of flora, fauna and microorganisms, which have adapted to the dynamic coastal conditions. Their most prominent feature – their stilt roots – makes them highly inaccessible. Mangroves are the characteristic vegetation of more than 70 percent of all delta estuaries in tropical regions. Brazil has the second-largest mangrove stocks in the world (after Indonesia). Today, more than 50 percent of the world's mangrove stocks have been cleared, and the trend is increasing. At an extremely conservative estimate, 1 percent of mangrove stocks are cleared every year in the Asian region. In most cases, large-scale mangrove clearance makes way for shrimp farms, a sector which offers the promise of substantial profits in the short term. However, after roughly ten years of intensive aquaculture, the comprehensive degradation of these zones makes them unsuitable for any further fish farming and prevents the mangroves from re-establishing themselves. Mangrove clearance is continuing, despite wide recognition of the fact that the mangrove ecosystems are vital nursery grounds for many commercially useful species of fish and crab and also afford important natural coastal protection during tropical storms.

style of politics being pursued by the Brazilian military dictatorship, which remained in power until the 1980s. Moreover, it did not conform with the political experience of the public at large, who were traditionally not used to being consulted. If there had been an involvement of the local communities in the decision-making process, attention might have focussed on the complex causes of the pressure on the mangroves. For example the ongoing migration of the poorest from the interior, who see the coast and its resources as their last chance of survival. Or the lack of integration and control of the large corporations which pursue their economic interests with complete disregard for the law. It is their activities in particular which increase the pressure on the mangrove resources.

ICZM requires an adequate political framework

ICZM is a social and political approach based on consensus-oriented political opinion-forming processes that involves a range of stakeholders. The intention is to influence a region's development in such a way that the entire spectrum of societal activity ultimately culminates in the sustainable development of the respective region. All forms of coastal management affect the economic interests of users, from traditional fishermen to international investors. It is essential to ensure that the compromises negotiated in a participative process are upheld by all stakeholders over the long term. That means that these compromises must be forged on the basis of current legislation: This is the only

way to prevent influential actors from withdrawing from the process and, instead, utilizing their well-established «clientelistic» relations with political decision-makers to promote their own interests. At the same time, a well-functioning administration must be capable to monitor the implementation of the agreements reached through user participation.

The central role of participation must be recognized and learned, as well as the key role of effective techniques for communication, coordination, cooperation among stakeholders and the constructive dealing with conflicts. This can only take place gradually. ICZM is best developed for small-scale local problems at first and then progressively adapted to more complex regional issues. The various policy areas can also be integrated on a step-by-step basis. All the ICZM pilot projects then take on equal importance, as does the exchange of experience about strategies, approaches and results achieved and there is a growing willingness to learn from mistakes.

Is ICZM the wrong approach?

No, but its complexity is often underestimated. In a global society that focuses on short-term profits, a medium- to longer-term approach like this is difficult to

implement and requires patience and commitment. The ad hoc introduction of ICZM with all its theoretical requirements (see above) is a strain on everyone: Project initiators, user groups, administration and policy-makers.

ICZM's strength lies in its innovative approach to resolving the classical problems of the commons. However, the complexity and long-term nature of the process generates a number of risks: Stakeholders' lack of experience in dialogue approaches may lead to massive misunderstandings and a total boycott of ICZM initiatives, and may even result in accelerated depletion of natural resources. To counter these risks and make ICZM a successful model over the long term, a great deal of development work is still required at three levels:

Human resources development: To complement their technical knowledge, key personnel must acquire social management skills so that they can guide social and political change processes successfully.

Institution-building: As they evolve into centres of excellence, the institutions involved have to receive advice and support on programme implementation, effective coordination and monitoring, and programme development.

Strengthening political systems: Intensive support is often required in order to build up stable political systems, based on dialogue and consensus-building, that promote decentralized decision-making and provide for the establishment of legal security as a precondition for the long-term involvement of civil society (not only in coastal zones!).

And the perspectives for the mangrove fishermen?

João wants his children to have other income-generation opportunities apart from the mangroves. He is considering migrating to a different mangrove area where there are fewer new immigrants, although he feels at home where he is now. Faced with dwindling catches, he has joined forces with the other crab fishermen to lobby the local administration for the creation of exclusive rights of use in a bid to keep the major commercial timber companies out of the mangroves. The fishermen also intend to catch only male crabs in future to allow the regeneration of the crab stocks. These could be preliminary steps towards setting up innovative agreements with the local administration on the use of the mangroves.