Environmental Impact Assessments

The view from the other side

As examples from Brazil show, EIAs often ignore the views of artisanal fishing communities

In Brazil, the Amazonian region represents the last frontier for coastal and inland fisheries. Fish represents the most important source of protein and income for the riverine population in the region. Brazil has the highest per capita fish consumption, equivalent to the consumption in Japan.

Traditional fishermen, however, are today confronted with problems created by the construction of large dams, water pollution by the mercury used in gold mining, the invasion of lakes and rivers by commercial or industrial fishing boats from urban fishing harbours, limits to access to resources through the establishment of large farms along biologically rich lakes and lagoons and, finally, by the establishment of national parks in those very areas in which they used to live.

All these factors are creating serious conflicts among local fishermen, big landowners, commercial / industrial fishing units and state agencies responsible for dam construction and environmental protection.

Since the 1960s, the entire coastal region of Brazil has been suffering from an intensive and destructive occupation of its ecosystems, particularly the estuaries, lagoons, coral reefs and mangroves, where most of the artisanal fishermen live and work.

This rapid occupation of the coastline became more intensive during the 'Brazilian Economic Miracle', during the military regime in the 1970s, when industrialization and urbanization along the coast became the most important socioeconomic processes. Industrial pollution, particularly the dumping of sugar cane waste from alcohol production, was responsible for the biological impoverishment of estuaries and coastal lagoons.

During this period, artisanal fisheries were responsible for more than half of the fish caught, but the so-called 'modernization of fisheries', based on industrial fishing and promoted by FAO, largely disregarded the essential contribution of artisanal fisheries for food production and employment in coastal villages and towns. Many social conflicts occurred between artisanal and industrial fisheries, as large shrimp fishing destroyed the nets of small-scale fishermen.

As a result of this, fish resources were largely depleted by profit-eager industrial fishing companies. The marginalization of small-scale fishermen became more serious when many beaches came to be privatized for the exclusive use of tourist cottages and condominiums.

In the 1980s, to manage the use of the coastal area, the Federal Government started a Coastal Management Programme, institutionalized in 1988 through a law. From the start, however, the whole exercise became extremely bureaucratized, as coastal management was restricted to creating different maps on the land potential and constraints, based on sophisticated remote sensing and GIS techniques.

Wasted years

Consulting firms, interested only in 'selling emerging technologies of remote sensing techniques, were the bases for the initial exercises. Over a dozen years were spent in producing overlays and maps of different coastal states, but until now, not a single coastal management plan has been actually implemented.

As a result, ecologically and socially, the situation in the coastal ecosystems became critical. A new development is taking place in the northeastern state of Ceara, known for its beautiful beaches, growing tourism and lobster fishing (by both artisanal and industrial fishermen). An innovative and grass-roots experiment in coastal management has been undertaken by local associations of fishermen, assisted by a small NGO and a local university.

Instead of wasting too much time in searching *for* information and maps, they have established a Coastal Forum (Forum do Litoral) where negotiations occur among different groups on the use of coastal land and marine resources.

The Forum's activities lie in two areas. The first is a critical evaluation of a large government project called Prodetur, financed by the World Bank. The government's preliminary project proposal does not take into consideration the importance of the coastal fishing communities or the impact on these human cultures of the extensive tourist development projects along the coast.

If these local communities are not ready for an increase in tourism-related activities, the whole traditional production system based on small-scale fisheries, agriculture and handicraft will be severely damaged. Some communities are organizing their own co-operatives to provide tourism services, while controlling the sale of their beach property to tourists. Through negotiations with the government and the World Bank, local associations are preparing themselves for the impact of the expansion of tourism. They thus hope to take advantage of the eventual benefits and restrict the negative impacts.

The second activity of the Forum comprises negotiations on managing the very lucrative lobster fishery, which employs around 12,000 fishermen in Ceara State. Fishermen are worried about the rapid decline of the lobster catch in the last few years.

After long negotiations between local fishermen's organizations, NGOs, universities, the fishing industry and IBAMA—the Federal Environmental Agencya—plan for the management of lobster fishery was established in 1995. The plan put severe restrictions on the fishing of lobster juveniles by artisanal and industrial fishermen and a complete ban on diving for lobster. The artisanal fishermen's associations bought a boat to be used for the enforcement of fishing regulations.

Good results

This grass-roots coastal management scheme, based on extensive negotiations

with all users, is producing positive results, in contrast to the government's coastal management plan, which is based on long years of producing maps arid ineffective top-down approaches.

Also revealing is the impact on small-scale fishing communities of a large irrigation scheme on the floodplain of the Sao Francisco River, in Marituba, a 'varzea' (a floodplain near the mouth of the river), in the coastal plain of Alagoas-Sergipe, in the northeast of Brazil. It covers about 200 sq km of marshes, resulting from periodic flooding of the river.

The swamp is crossed by the Barreiras Channel (about 20 km long) that connects the Sao Francisco River to Marituba River and Lago do Peixe. This natural channel plays an important role, as many species of fish migrate through it to reach the lakes inside the marsh. The most important lake is Lago dos Peixes, known for its abundant fish resources. The area is mainly marshy and contains several species of palm trees used by the local population for building thatched roof houses, for making traditional medicines and producing food. The Varzea da Marituba also contains important habitats for several species of fish, birds and small wild animals.

In the floodplain are two villages—Marituba de Cima and Marituba do Peixe, containing around 270 hamlets and 1,200 inhabitants who live mainly on small-scale fishing or agriculture, and handicraft. Fish arid other products are sold in the nearby city of Penedo. The territory of the villages is now surrounded by sugar cane plantations belonging to a nearby distillery.

Field work undertaken by the Federal University of Alagoas has discovered that over 48 different species (including surubim, piau, cara and several species of shrimp) have been identified, and consumed and sold by the fishermen. The local fishermen have extensive and precise knowledge of the different habitats of the floodplain. Over 40 different habitats are known by the 'varzeiros' (inhabitants of the varzea) and these are exploited for fishing, depending on the season and fish-eating habits. About 18 different fishing and fish management techniques are used by local fishermen, including a period of rest, when no fishing is carried out in the lakes and the use of 'brush parks'—bundles of branches placed on the bottom of the lagoon to attract fish, similar to the West African 'akaja'.

Two decades ago, the floodplain and their inhabitants started to undergo important changes. The first great set of impacts occurred in the 1960s, when important changes took place in the hydrological regime of the floodplain due to the construction of two large hydroelectric dams (Paulo Afonso and Sobradinho), hundreds of km upriver. The dams have regulated the flow of the river, and now fewer fish enter the varzeas than during the previous flooding period.

The second set of changes has been caused by the expansion of sugar cane plantations during the 1970s, as part of the government programme for the production of alcohol to be used as car fuel. A local sugar cane distillery bought up almost all the available land, and the sugar plantation now surrounds the lakes in the varzea. Intensive use of fertilizers and herbicides has a negative impact on the fish stocks.

The last remaining areas of forest were cut for expanding sugar cane plantations. As a result, many important habitats of game birds were lost, depriving peasants and fishermen of important sources of protein. Also, many fruit and palm trees, from which fibre was extracted for handicraft, have been lost. It is now difficult to find a tree suitable for making the traditional fishing canoe.

New transformation

The third and most important threat to the varzea is from CODEVASF, a government agricultural development agency which plans to transform the entire varzea into irrigated rice fields. This state company has already converted several larger swamps of the Sao Francisco River into rice growing projects. In the already established projects, there has been a complete transformation of the swamps and the entire hydrological regime has changed.

In the project called Betume (involving 10,000 ha), CODEVASF has blocked the waterways to the lagoons and stopped fish migration. As a result fish stocks diminished and local fishermen have found their livelihood affected. Apart from these serious environmental impacts, local populations have also suffered from the conversion of the wetlands.

Having lost their land, they have been forced to live in the outskirts of the project area. They were temporarily employed in the construction of the irrigated fields, but seldom received a plot in the project area. Rice plots with irrigation infrastructure were given to the better-off farmers, who were usually outsiders.

In 1985, CODEVASF decided to start a new project in the Marituba swamp that would lead to a complete transformation of the last existing varzea of Sao Francisco River, with the disruption of the fisheries and the hydrological regime. The peasants / fishermen would be resettled elsewhere.

The Environmental Impact Assessment (EIA), funded by the CODEVASF, argues that yields from irrigated rice plots would be higher than from the traditional planting methods of the villagers. Also, the scheme would create a large number of jobs. The EIA claims that there are no endangered species in the area and that the income people would get from irrigated rice planting will be higher than from fishing and handicraft. Overall, claims the EIA, the project has a positive regional impact.

In 1988, the University of Sao Paulo, in co-operation with the Federal University of Alagoas, started a participatory and interdisciplinary research project involving ecologists, biologists, anthropologists, historians and agronomists, and based on the ethnoscientific approach.

This project has shown that the conservation of this last remaining floodplain and its value for the livelihood of the inhabitants was higher than the benefits that might be generated by the transformation of the floodplain. It became also clear that the state company only considered as 'productive jobs' those generated by the irrigated rice projects and not the jobs already existing through traditional activities. The varzeiros would lose their sources of income and would not receive plots in the modem rice projectthese were given to farmers outside the area, as had already occurred in the other irrigated schemes of the company. Very often, the choice of farmers for the project is made on a political basis, with preference given to those nominated by local or regional politicians. Another conclusion of the research is that the whole hydrological system of the varzea would be damaged, and traditional fishing would disappear, along with the important endangered species found during the research period.

As result of this research, at the public hearing to evaluate the EIA for the project, in February 1991 in the state capital of Maceio, an alliance of environmental NGOs, scientists and Marituba residents was set up. During the public hearing itself, the varzeiros made clear their disapproval of the project, but the political forces in support of the project were very strong. Thus the EIA was not rejected by the state authorities. However, new complementary studies were requested.

From this experience, it was clear that the criteria for costs and benefits were different for the different social groups involved. Since non-governmental funds and research expertise was made available, the point of view of the villagers, supported by ethnoscientific knowledge, was made clear in the public hearing. EIAs, funded by those who are responsible for the project, are usually biased against the interests of the local populations whose livelihood will be affected. Local populations and their organizations should receive specific public funds to implement their own EIAs.

Protected areas

The establishment of protected areas in coastal regions affects small-scale fishing communities. Bra-Al has around four per cent of its territory within different types of protected areas, mainly national parks, ecological stations and national forests. These correspond to around 380,000 sq km, an area larger than many European countries.

Most of the environmentally protected areas are located in Amazonia, covering around 13 per cent of the total Amazonian region. In addition, there are some protected marine and coastal areas along the coast of the Atlantic and Amazonian forests, covering adjacent coastal area ecosystems such as mangroves, estuaries and coral reefs, used by artisanal fishermen.

According to the Brazilian legislation on protected areas, which follows the model of the Yellowstone National Park in the us, people living inside have to be resettled elsewhere. This imported model has had a catastrophic impact on the livelihood of thousands of small-scale fishermen and other small producers who have lived in the area for many generations and who, due to their mode of production, were able to protect the forests and adjacent seas.

These traditional communities, often living in isolated areas, depend almost exclusively on the use of natural resources. They have a complex relationship with the natural environment which is not just of an economic nature.

Values, traditions and cultural perceptions built over centuries, play an essential role in defining their relationship with the environment and natural resources. These traditional peoples have a deep knowledge of the environment where they live and of the natural resources, and have developed, in coastal areas, knowledge-intensive management schemes.

Very often, when the government establishes a protected area, not only are the interests of local populations ignored, but the traditional territory of these people is also taken away, to be transformed into protected areas.

In coastal areas, where the pressure on ecosystems by land developers and speculators is high, leading also to the expropriation of the beaches of fishermen, the establishment of protected areas may actually hinder this process and, in the beginning, may benefit traditional fishermen. However, the park administration soon starts prohibiting most of the traditional activities of the inhabitants. Their situation then becomes unbearable, ultimately leading the communities to abandon the land of their ancestors.

Social revolt

The establishment of strict environmental protection units in large coastal areas have led local communities to a situation of social revolt, as the conditions for their subsistence are abruptly suppressed. As a consequence, the dwellers consider the newly established areas as nobody's land and start to overuse natural resources and to fish illegally, practices that they had refrained from earlier.

In addition, when these traditional communities move outside the park area, other users, such as tourists, poachers, mining and sawmill operators, may act more freely, leading to the degradation of the coastal area. Some conservationists may argue that, without uninhabited protected areas, biodiversity may disappear. However, in tropical countries, it is becoming clear that biodiversity is also protected—and even enhanced—by traditional practices.

It is becoming increasingly clear that this imported national park model, bereft of traditional dwellers, is becoming a failure, and is not achieving an adequate level of conservation. A new model of conservation has to be devised and implemented, making the traditional knowledge and management schemes of local communities the cornerstone of an effective conservation that also benefits traditional people.

In this sense, a new model of protected areas may lead not only to effective conservation but to an amelioration of the living standard of thousands of small-scale fishermen and producers. A new form of management, negotiated with the local dwellers, inside and outside the protected area, could be the basis of actions to protect simultaneously the ecosystems and the diversity of cultures of coastal dwellers in tropical countries. In the last few years, however, local fishermen in Brazil are getting organized with the assistance of the Catholic Church (Pastoral of Fishermen) and the recently established MONAPE—National Movement of Fishermen.

In the beginning, local fishing communities started closing the entrance of the most important lakes to the commercial/industrial fishing boats. These actions led to violent conflicts. They attracted the attention of socio-environmental organizations which then started fisheries management schemes involving all the actors, particularly local fishing communities (as in Lago Grande de Monte Alegre in the middle Amazon).

The basic idea was to create areas where access to resources is restricted to local fishermen, while retaining other areas for commercial/industrial fisheries. In these restricted areas, local fishermen agreed to regulate their fishing activities so as to achieve a socially and ecologically optimal sustainable yield, applying the same principles that orient the extractive rubber tapping industry.

Ecological station

One example of these efforts is the establishment of the Mamiraua Ecological Station in a wetland area covering one million hectares along the Japura and Solimoes River, where 4,500 people live by

fishing and harvesting forest products. According to existing legislation, all the 50 small communities should be resettled outside this protected area. However, with the assistance of local organizations and NGOs, including the World Wide Fund for Nature, a conservation project was established in co-operation with the fishing communities. The communities themselves organized management institutions that regulate fishing, particularly during the dry season when several lakes are formed.

The management plan delineates six different types of lakes, some of them being considered as exclusive conservation areas, some left for subsistence fishing and others reserved for commercial fishing, also for upcountry commercial boats, provided that rules (particularly those banning the use of some predatory nets) are respected.

Overall, however, it is clear that not only ill-devised development projects but also ill-conceived protected areas may lead to the degradation of ecosystems and their natural resources, as well as to the increasing impoverishment of local populations who should actually be benefiting from these activities. It is also clear that local populations, particularly the traditional dwellers, should be involved, from the outset, in the planning of these projects, including the establishment of protected areas.This might appear contradictory, as national parks are supposed to protect biodiversity. In many cases, however, coastal protected areas, based on the imported model of the Yellowstone National Park, may lead to opposite results. These efforts lack the people's support, particularly of those directly affected by the resettlement measures or by the prohibition of traditional activities.

From these examples, it appears that protected areas should be established only after an EIA is made, taking as a priority the interests, knowledge and traditional management schemes of local dwellers. In any model, these should be actively incorporated in the management plans. The state should give the material and technical means to local communities to undertake their own environmental and social impact analyses.

Clearly, these examples reveal that costs and benefits of large projects, as stated in official environmental impact reports, very often do not take into account the views and interests of local fishermen. Presenting their own conclusions during public hearings will enable local communities to negotiate with the state and other social actors to arrive at a better solution to their problems. ❦

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