

Conservation, tourism and fishermen communities in the Toliara region (SW Madagascar).

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In Madagascar, one of the poorest countries on the planet, nature-based tourism is increasing and is considered by the Government as an important driver of economic development. However, it requires extensive investments in public infrastructure that is still limited (i.e. roads, water supply and electricity, waste management) and protection of the environments that visitors come to see. The Toliara area, SW Madagascar, is a region of ecologically important coral reefs (cays; barrier, lagoonal and fringing reefs; seagrass beds and mangroves) bordered by a unique dry forest zone in that is a Biosphere Reserve under the “Man and Biosphere” UNESCO program. Tourism developed rapidly in this area since about 1970. This tourism development allied to nature conservation efforts has occurred in a context of extreme poverty resulting in: (a), the relegation of coastal communities in the margins of profit and (b), the accelerated disappearance of the bundle of rights on which relied the customary reef management. Exploitation of the reefal aesthetic values attracts a new category of actors whose speculative behaviour leads to spatial competition. The power asymmetries between local fishermen communities and tourism operators, often of foreign origins, call into question the validity of an ecological tourism model supposed to be beneficial for environmental conservation and local populations.

Until 1972, the Toliara Great Reef area was considered to house the greatest marine biodiversity in the W Indian Ocean. But in few years, it experienced extensive degradation. Many coral reef habitats documented during the first studies were destroyed. Biomass and reef fish diversity declined significantly; invasions by macroalgae and zoantharians plus changes in sedimentation were observed. However, the Toliara coral reefs are considered highly resilient due to hydro-climatic conditions, presence of a deep canyon and periodic micro-upwellings. This puzzling geomorphology and the existing diversity of biota are favourable to refugia zones, allowing species to adapt to climate change. The causes of this degradation were studied by assessing the effects of (a) over-exploitation and increasing population pressure (urbanization, migration, coastal degradation) linked to regional famines, (b) general climatic changes (dryness's, El Nino high seawater temperature inducing coral bleaching events, increase of tropical storms and cyclones), (c) land deforestation and huge terrigenous coastal inputs. It was shown that overexploitation is occurring mainly involving massive and destructive bottom fishing and destructive gleaning (for octopus, lobsters, comestible shells, collect of corals for chalk making) that is threatening recovery and future restoration. While climatic disturbances are destroying coral reefs in the W Indian Ocean, in SW Madagascar it is: - demographic pressure, - land pressure and deforestation related to the rural migrations, - rice and sugarcane agriculture, - expanding urban development, - tourist facilities development, - mining activities, that are involved. Food shortages were always recurrent there due to irregular rainfalls; the repeated outbreaks of the early 1980s led to a large and continuous influx of rural populations and their settlement on the coast. These “neo-fishermen” villages, specialized in fishing and gleaning on reefs and coastal flats, participate in destruction of habitats, increase in fishing effort and overexploitation of the

coral reefs and lagoons. The customary marine tenure of the native Vezo fishermen communities and their fishing governance (shared migrant fishing, prohibition of certain gears, species and fishing zones) were gradually dismantled with the arrival of an inland population alien to these traditions.

To remedy this degradation, Marine Protected Areas were established, mainly by Non-Government Organisations and recently by the Government, in consultation with local populations. These are mostly temporary reserves that correspond to previous seasonal fishing practices and demonstrate certain efficiencies in terms of increased catches. Sanctuary marine reserves are rare and too small; they correspond to taboo areas traditionally prohibited to fishing. MPA have been systematically accompanied by tourism projects with the aim of offering an additional source of income to local populations while these reserves are tourist attractions. Apart from the marginal cases of ecotourism or humanitarian tourism, profitability in the tourism sector depends on access conditions and on basic services that are often lacking. SW of Madagascar which used to be poorly serviced by transport is now better connected. Export fishing societies, as tourism operators, are associated in the MPA establishment decisions. New roads created to serve tourist zones in remoted areas are being used by fish collectors, leading to increased fishing pressure on species valued for export (fishes, octopus) when the revolving MPAs are opened.

Over the past decade, there was an intense land speculation on the Malagasy coastline to the detriment of fishermen without land titles, who are relegated to small areas or highly degraded and even polluted areas. There was also a rush for purchase of inaccessible but exceptional natural sites, designed to secure property and exploitation rights in the future, freezing the space in expectation of opportunity. In the Toliara area, tourism generates significant urban growth (new coastal resorts, shops, bars, curios markets, with changes in behaviour) with rising demand for food and increasing waste pollution directly along the shores to the lagoons, or indirectly into the coastal phreatic water table. The new settlements sometimes destroy the mangroves or/and sandy shorelines including beaches, beach-rocks, littoral dunes) essential to the ecological functioning of the reefs. A recent analysis of the health or degradation factors, done by comparing 2,500 coral reefs of different conditions, has shown that reef degradation is always associated with the development of roads and markets while the reef health is associated with local management systems or customary governance.

The win-win alliance between MPAs and recreational tourism, between environmental preservation and economy, is in question in Madagascar where roads are developing, and customary management has disappeared. MPAs are mainly used for the tourism development and to increase catches for export species when fishermen, dispossessed of their space and customary rights, are left in patron-client relationships with foreign operators. The exploitation of the aesthetic value of the coral reefs is not without damage and must be regulated as the exploitation of the biomass, in a system considered as a whole.

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