Comment

Time to shift gear

Only three per cent of global aquaculture production comes from the *Penaeus* species—the backbone of the shrimp aquaculture industry. Yet, culturing these species has posed some of the greatest threats to the coastal communities in Asia and Latin America, so much so that it has been nicknamed the rape and run' industry. Fishing communities, in particular, have been very concerned with its negative impacts. These include the destruction of fish larvae and removal of gravid females, the obstruction of fishing operations by coastal installations, and the fishermen's loss of access to the fishing ground from the landward side.

For the coastal communities, there are additional problems like the depletion and contamination of ground water, loss of access to the village commons, and incursion of salinity into the paddy fields. Further, the loss of mangrove cover has several particularly negative implications. These problems were making life almost impossible for the coastal communities in countries like India, Bangladesh, Ecuador and Thailand, especially in the past five to 10 years. The severity of these problems has been compounded by the lack of proper legal and management regimes, and the existence of rampant corruption in administration.

In this context, the judgement delivered by the Supreme Court of India—the highest court of the country—striking down all brackish water operations within 500 m of the high tide line is quite a significant landmark, as pointed out by several articles in this issue of SAMUDRA. The judgement is, perhaps, the one with the greatest impact on the shrimp aquaculture industry anywhere in the world.

We hope the Indian Supreme Court judgement will mark the beginning of a fining shift from feed-intensive, carnivorous, monoculture systems of aquaculture that are clearly unsustainable, to the freshwater polyculture systems for herbivorous and omnivorous species, dependent on locally available nutrient inputs. The sustainability of these systems has been proved by the age-old practices in countries like China and India. In China, for example, such practices have existed for at least 3,000 years. More significantly, they have been contributing to greater local food security in several food-deficit countries in Africa and Asia.

As Albert Tacon, Fishery Resources Officer, Inland Water Resources and Aquaculture Service of the FAO points out, all intensive and semi-intensive farming systems for carnivorous fin fish species and penaeid shrimp are net fish protein reducers': the total input of fish and fishery resources as feed inputs far exceeds the output of new fish protein by a factor of two to five, depending upon the farming system and fishery resource used.... This is in sharp contrast to the net fish protein producing status of the majority of semi-intensive and intensive farming systems employed by farmers for the production of herbivorous/omnivorous ... species".

Tacon concludes that if aquaculture production is to ... continue to play an important role in the food security of developing countries as an 'affordable' source of high-quality animal protein, then herbivorous or omnivorous species (feeding low on the aquatic food chain) should be targeted for production rather than high-value carnivorous fish/shrimp species; the latter being energy efficient in terms of resource use and dependent upon the use or high-cost, protein-rich feed inputs."

It is also important to prevent the degradation of agricultural land and overfishing of fisheries resources, since such phenomena could sometimes lead to desperate measures, even from the small-scale farmers and fishers. Inadequate supply of water in the downstream areas of rivers (due to construction of dams, for example) could cause farmers to make distress sale of land to the aquaculture industry.

Clearly, in a context where only three per cent of the total aquaculture production in the world comes from shrimp, the culturing of which has been causing immense hardship to the coastal communities in several developing countries, it is high time to shift gear and move towards sustainable practices that have a proven track record. This is absolutely imperative, both from the point of view of food security and greater environmental responsibility, especially in low-income food-deficit economies.