

**Commercialization of Shrimp Trade, Environment and
Rural Poverty: A Socio-Ecological
Exploration in Coastal Orissa**

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Abstract

The potential of aquaculture to improve the nutrition and incomes of the poor has been ignored by the current emphasis on the cultivation of high-value, carnivorous species destined for a market in industrial nations. The primary motives are profit for producers and input suppliers, and export earnings for national treasuries. This is particularly true of shrimp farming ----- the cultivation of shrimp in brackish water ponds in tropical coastal zones of Asia ----- especially in India.

Social and environmental justice concerns associated with industrial shrimp farming stem from degradation of the coastal ecosystem by the shrimp industry, in association with reduced access by coastal residents to vital natural resources. These processes pose a direct threat to the welfare of the rural poor who are reliant upon resources from the coastal ecosystems for their survival. The social consequences of shrimp aquaculture have become increasingly contentious ----- encompassing issues of social equity, loss of goods and services from coastal ecosystems, property rights, etc. The notable local level results include the establishment of highly capitalized, environmentally vulnerable and energy inefficient farming systems and the emergence of grassroots resistance movements of the poor. The present study of coastal Orissa is undertaken in this context. While examining shrimp farming it examines the justification for its commercialization apart from social, environmental and nutritional repercussion that follow it sees poverty as the major outcome. This has led to the emergence of grassroots movements in resistance to the shrimp farm culture of the region.

Introduction

The anti-free market lobby, according to Salih (2001), including environmentalists, argue that trade liberalization is harmful to the environment because it lays more emphasis on growth and development at the expense of global environmental protection. They also

argue for greater decentralization of economic and political activities to empower people and enable them to care for their local environments. Trade liberalization without proper environmental protection policies, legal instruments and economic incentives (or liabilities) often results in land degradation and environmental disasters in the marginal and fragile global commons. Other aspects of global trade and the environment are articulated by Welford (1997:138) who argue that trade and economic globalization have greatly expanded the opportunities for the rich to pass on their environmental burdens to the poor by exporting both waste and polluting factories. Trade has a secondary impact on issues of equity as it results in impacts (positive or negative) on poverty, health, employment, human rights, democracy, labour laws and self determination. According to Eckersley,

One obvious objection to free market environmentalism is that full-scale privatization of the commons is not possible. After all, many environmental assets (eg., clear air) are public goods, which by definition are not amenable to being captured, commodified and bought and sold, i.e., they are non-excludable and able to withstand non-rival consumption (Eckersley 1995, quoted in Salih 2001: 124).

It is a fact that the processes of globalization, liberalization and the policy of development in developing societies and the accompanying forces of the market economy have given rise to questions of far reaching consequences. The questions relate not only to security, welfare and development but also to the very existence of the larger mass of people in general and the lower classes in particular in these developing societies. Under the new market ideology, with globalization, competitiveness and liberalization being the popular catchwords, economic growth alone cannot solve the problem of poverty and backwardness of these developing societies. Rather, it ignores many social concepts such as equality and distributive justice, women rights, empowerment of the disadvantaged, etc. (Singh 1989: 367).

After independence, a few measures had been taken to reduce the extreme economic disparities in rural India albeit only with limited success. The basic exploitative structure has remained the same and the new policies of the government introduced a strong capitalist trend in the primary sector resource use and production.

The pursuit of national economic growth strategies by countries across the globe required international supports. These supports were deemed to be an essential part of development. Foreign aid, technology imports, stable currency exchange, and robust international trade ----- all were deemed necessary to sustain national development policies (McMichael 1996: 45). In the 1970s, development was redefined by the World Bank as successful participation in the world market (McMichael 1996: 109). This participation meant that Third World countries should pursue a strategy of export-oriented industrialization. Specialization in the world economy, rather than self sufficiency in economic activities within a national framework, emerged as the criterion of successful 'development'. This ideology, together with the desire for foreign exchange, was the stimulus for the promotion of extractive development such as the example of the prawn industry by the Indian state.

Financially strapped national governments with the assistance of international donor agencies frequently became significant promoters of export-oriented aqua-cultural development within the framework of national 'development' regardless of its social and environmental consequences. The goals of broadening the economic base of the rural areas, generating local employment and enhancing food security were suppressed by the overarching objectives of shrimp farming. The export of prawns thus removes a highly nutritious food source out of the reach of the poor (Stonich 1998: 3-4).

The main arguments of the paper are the following:

- In many cases, aquaculture development makes a significant contribution to foreign exchange earnings.
- However, the prevailing models of aquaculture threaten to undermine rural livelihoods and food security, and to degrade aquatic and terrestrial environments in the name of 'development'.
- Even, the FAO admits that to date, aquaculture development has done little to improve the lives of the poor in areas where it has been expanded.
- Low income communities or local communities at the grassroots level are organizing to fight this threat and to advance alternative strategies for

fisheries/aquaculture development that simultaneously protects the environment and reduces poverty.

The introduction of prawn farming or the aquaculture project is referred to as the 'Blue Revolution'— a critical source of high quality animal protein, essential to feed growing human populations in the light of stagnating or declining marine exports (quoted in Stonich 1998: 2). However, these aquaculture projects or the cultivation of shrimp in brackish water ponds which is also called industrial shrimp farming in tropical coastal zones of Asia, especially in India has induced a process of social dislocation, ecological change and environmental destruction that are arguably worse than many earlier Green Revolution technologies (Stonich, unpublished draft paper). The destruction of mangrove and other coastal ecosystems associated with the siting and construction of shrimp ponds, pollution from pond wastes and disruption of hydrological systems (including salinization) are among the most serious ecological threats.

According to FAO, global production of cultured fish and shellfish more than doubled in weight and value between 1987 and 1999, from 15.5 million metric tonnes to 36 million metric tonnes and from US \$ 24.4 billion to US \$ 50.4 billion (FAO, 2001). While yields from capture fisheries reached a plateau around 1989, yields from aquaculture have steadily increased both in absolute amounts as well as in the percentage of total food fish and as a percentage of the global catch. Currently, aquacultural crops account for about 25 percent of the total fish and shellfish consumed directly by humans. Aquaculture's contribution to human food is expected to expand significantly in the future in order to meet the growing demand and anticipated declines in capture fisheries. The FAO predicts that aquaculture crops may increase to more than 50 percent of the total value of the global food fish catch by 2010 (Stonich and Bailey, 2000).

In this context the paper examines the case of Chilika lake in coastal Orissa situated in the eastern part of India which has seen intensive prawn culture destined mainly for export. Chilika lake is the largest brackish water lake of Asia. Its natural

ecosystem is unique. Because of its unique biodiversity and socioeconomic importance, Chilika lake was designed as a Ramsar site in 1981 under the convention of Wetlands of International Importance (CDA: 2003). However, today Chilika lake is facing the environmental dangers of rapid siltation, decreasing salinity of lake water, gradual lowering of depth of water and infestation of weeds. Different prawn culture farms which are established there are exporting prawns and earning foreign exchange. While prawn aquaculture acquires immense importance for its economic nature, it is equally notorious for its ecological destruction of the lake ecology. The local people dependent on the water resources of the lake have not only been victimized, but also been threatened by such a practice of prawn culture. Chilika, today, does not merely spell social problems but environmental disaster too.

The present paper focuses on the following issues:

- The commercialization of shrimp farming in Chilika Lake and its justification,
- More comprehensively, the social, environmental and nutritional repercussions of shrimp farming; the case of poverty as the major outcome, and
- The emergence of grassroots social/environmental movements in resistance to the shrimp culture farms in the region.

Blue Revolution and its impact on the Environment in India

As the Green Revolution was acclaimed as the means to end world hunger, the Blue Revolution often, is hailed as a way to increase incomes and the available supply of affordable food among the poor in the global South. Apparently, increased globalization has enabled producers to transfer production among countries in the event of unacceptable social conflicts, ecological destruction, epidemic disease outbreaks or natural disasters.

Despite notable achievements, the rapid expansion of aquaculture production of some species has raised serious concerns regarding their environmental and social costs. The Indian state has not relied adequately on other policy options and due to its adoption of economic liberalization, it is being pushed into those exports and export projects which

can have a very harmful impact on rural nutrition, livelihood and environment. In the area of food exports, the export of fish, particularly prawns has been specially emphasized in the context of its market in the hard currency areas (U.S., Japan and Europe). The high and rising trend of exports of prawns has been visualized since late 1970s and early 1980s. Prawns are being produced from the sea, estuaries, brackish water lakes and fresh water areas both by capture and culture methods. The major share of the India's export basket is increasingly constituted by shrimps (or prawns). The national government justifies its efforts on the ground that shrimp production and farming in brackish water can contribute to the country's food supply by compensating for the decline in capture fisheries, generating significant foreign exchange earnings for the nation and enhancing employment opportunities and incomes in poor, coastal communities.

As many as 70 percent of the foreign exchange derived from marine exports has been obtained in the recent years from the exports of prawns from India (Dogra 1992: 4). It is reported that the world shrimp farming produce of 6,90,000 metric tonnes comes mainly from the developing countries especially China (1,45,000 m.t.), Indonesia (4,40,000 m.t.), Thailand (1,10,000 m.t.), Ecuador (1,00,000), India (35,000 m.t.), Bangladesh (25,000 m.t.) (Dogra 1992: 5). During the 1990s, the total production of farmed shrimp has grown at a faster rate than any other aquaculture product worldwide. In 1997, the world production of cultured shrimp was an estimated 6,60,200 m.t., which constituted about 30 percent of the total amount of shrimp produce globally through both capture fisheries and culture (quoted in Stonich 1998:3). Approximately, 70 percent of culture shrimps are raised in Asia while the rest come primarily from Latin America. Production in 1997 was 5 percent lower than in 1996 (6,93,000 m.t.) due to a decline in Asian production brought about by serious disease problems. While 99 percent of cultured shrimps are raised in the Third World, virtually all are exposed to industrial countries principally to the USA., Europe and Japan raising serious doubts about its capacity to improve nutritional status among the poor. The primary motives are profits for producers and input suppliers and export earnings for national treasuries. India is thus following the export policy of prawns basically for its interest in earning foreign exchange.

It has been pointed out that, India, after introducing the new liberal policy in late 1980s and early nineties, launched its shrimp mono- culture officially in the country in several states through the Coastal Aquaculture Projects of 1986 in its Sixth Five Year Plan (implemented during 1988-93) and offered special infrastructure facilities to multinational corporations (MNCs), transnational corporations (TNCs) and the national corporate sectors to invest in shrimp culture (Halim, unpublished paper). The Brackish Water Fishery Development Authority (BFDA) and Marine Product Export Development Authority (MPEDA) have, thereafter, been established in the country to ensure the smooth development of shrimp culture. The Government of India also received multinational assistance from the World Bank and development aid for aquaculture projects from consumer countries like Britain. Thus, shrimp mono-culture, and species specific commercial culture of brackish water shrimp gained momentum in India in the mid 1990s and the total potential area for brackish water shrimp culture was estimated to be 1,190,800 hectares among which 13,816 hectares was under cultivation in 2000. Martinez-Alier in this context also argues that the shrimp aquaculture strongly supported by the World Bank until the 1990s and even later, was considered as being part of the drive for non-traditional exports to repay the external debts and to enter the path of export-led growth. He goes on to argue that the 'Blue Revolution' was going to produce 'pink gold' (Martinez-Alier 2002:80). India, with an annual production of 70,000 metric tonnes of shrimp, occupied the fifth ranking in shrimp production in the world in 1998-99 (Halim, unpublished paper). The contribution of shrimp to India's export reveals why the government has taken such a promotional role to develop the industry. By 1997-98, India had registered the export turnover of Rs. 4,120 crores of which shrimp alone contributed 2,700 crores.

Thus, within a decade commercial shrimp mono-culture has replaced the traditional brackish water shrimp culture system in India which was practiced by coastal communities for generations.

The following tables give a brief idea of the share of cultured shrimps among the total shrimps exported to foreign countries and give the value in rupees of the amount of shrimp exported by India.

Table 1.1: Contribution of Cultured Shrimps (Quantity) to the total Shrimp Exports from India

| Year | Total Quantity of shrimp exports (mt) | Quantity of cultured shrimp exports (mt) | % contribution to shrimp exports |
|---------|---------------------------------------|--|----------------------------------|
| 1987-88 | 55,736 | -- | -- |
| 1988-89 | 56,835 | 18,300 | 33.00 |
| 1989-90 | 57,819 | 19,500 | 33.72 |
| 1990-91 | 62,395 | 23,075 | 36.98 |
| 1991-92 | 76,107 | 26,000 | 34.16 |
| 1992-93 | 74,393 | 30,550 | 41.06 |
| 1993-94 | 86,541 | 40,300 | 47.14 |
| 1994-95 | 1,01,751 | 53,853 | 52.92 |
| 1995-96 | 95,724 | 47,922 | 50.96 |
| 1996-97 | 1,05,426 | 45,945 | 43.58 |
| 1997-98 | 1,10,318 | 43,712 | 42.90 |
| 1998-99 | 1,02,484 | 53,712 | 52.41 |
| 1999-00 | 1,10,275 | 54,000 | 48.96 |
| 2000-01 | 1,11,874 | 65,894 | 58.90 |
| 2001-02 | 1,27,709 | 1,02,940 | 58.80 |
| 2002-03 | 1,34,815 | 115,320 | 60.08 |

Source: Ganpathy and Viswakumar, 2001; NGK Pillai and Pradeep K. Kathia, 2004, quoted in Mohan Joseph Modayil, R. Sathiadhas & G. Gopakumar, "Marine Farming: Country analysis-India", Central Marine Fisheries Institute, Cochin, Ministry of Agriculture, Government of India, 2006, pp.6-7.

Table 1.2: Contribution of Cultured Shrimps (value) to the total Shrimp Export Earnings from India

| Year | Total Value of Shrimp exports (INR. Crores) | Value of Cultured Shrimp Exports (INR. Crores) | % Contribution to Exports Value |
|---------|---|--|---------------------------------|
| 1987-88 | 425.78 | -- | -- |
| 1988-89 | 470.33 | 229.30 | 48.78 |
| 1989-90 | 463.31 | 259.74 | 59.57 |
| 1990-91 | 663.32 | 376.40 | 56.77 |
| 1991-92 | 966.16 | 544.76 | 55.81 |
| 1992-93 | 1,180.26 | 766.25 | 64.93 |
| 1993-94 | 1,770.73 | 1,288.93 | 72.79 |
| 1994-95 | 2,510.27 | 1,866.23 | 74.35 |
| 1995-96 | 2,356.00 | 1,531.69 | 64.09 |
| 1996-97 | 2,701.78 | 1,642.56 | 60.80 |
| 1997-98 | 3,140.56 | 2,086.00 | 66.42 |
| 1998-99 | 3,344.97 | 2,511.00 | 75.07 |
| 1999-00 | 3,645.22 | 2,782.00 | 76.32 |
| 2000-01 | 4,481.51 | 3,870.00 | 86.35 |
| 2001-02 | 4,139.92 | 3845.00 | 85.63 |
| 2002-03 | 4,608.31 | 3793.86 | 82.33 |

Source: Ganpathy and Viswakumar, 2001; NGK Pillai and Pradeep K. Kathia, 2004, quoted in Mohan Joseph Modayil, R. Sathiadhas & G. Gopakumar, "Marine Farming: Country Analysis-India", Central Marine Fisheries Institute, Cochin, Ministry of Agriculture, Government of India, 2006, pp.6-7

The case of Chilika Lake thus became important and the role of the state in the context of Chilika's shrimp culture must be viewed from this perspective.

Shrimp Production and Export from Orissa and from Chilika

When prawn/shrimp¹ became a prized export commodity in the international market, the conflict over fisheries became more acute. The process of development undertaken by the state of Orissa, motivated by a keen desire to earn dollars, has ignored not only the environmental dangers to the lake but also the socio-economic condition of the traditional fisher-folk living in harmony with nature. Intensive prawn aquaculture (though semi-intensive in nature),² has not only threatened the existence of the Lake but also adversely affected the large numbers of poor fishing people living sustainably there. Overexploitation of fishery sources, shrinkage of capture fishing potential, large scale conversion of leased out fishing sources into shrimp culture *gheries* (bamboo embankments), large scale encroachments are a part of this intensive shrimp culture. It has been alleged that the intensive shrimp culture *gheries* have created a lot of environment problems, for example: Blockage in the water channels and creeks inside lake Chilika; Fall in the salinity and depth of water in the lake, Increase in emergence of landmass; Degradation of the eco-system and environment of the lake, etc. are some of the major ecological problems that the Lake is facing.

Non-fisher-folk, outsiders, including businesses-men, close relations of politicians and high bureaucrats operating through local non-fisher-folk, have started forcibly occupying fishing resources for prawn culture. By the early 1980s, outsiders controlled a significant portion of Chilika's fisheries. Sometimes they made some fishery co-operatives their agents by depositing lease money with government on their behalf and advancing loans to their leaders. In this process, the fisher-folk were gradually squeezed

¹ I have used here the term 'shrimp' for the prawn of Chilika since it grows in brackish water, because in commercial jargon, prawn growing in salt/ sweet water, i.e., brackish water is called 'shrimp' and those grown in sweet water as prawn. So, the product of Chilika is termed as 'shrimp' also.

² Shrimp culture in shrimp ponds near the shore of Chilika is similar to semi-intensive culture whose characteristics are: (i) 0.25 to 1.0 hectare size of ponds; (ii) Elevated ground with supply and drainage canals; (iii) Pond preparation methods carefully followed; (iv) Regular and periodic water exchange; (v) Generally imported feed; (vi) Application of drugs and chemicals when need arises; (vii) Regular monitoring and management; (viii) Others. (Samal 2002: 1718).

out of the resources with the money and muscle power of the intruders. The money and muscle power employed by the outside interests has led them to be called the ‘Mafia’³ locally (Ram *et al.*1994: 36).

In the recent years along with other fishing areas of coastal Orissa, Chilika has seen intensive prawn aquaculture destined mainly for export. Different prawn culture farms which are established there are earning handsome foreign exchange from export of prawns. The tables below give an idea of Chilika’s contribution towards an export-oriented commodity like prawn.

This factor refers to another important aspect of the study----- the recent boom in shrimp aquaculture and exports, which is also called non-traditional agricultural exports (Stonich 1991)⁴ in the coastal areas of Orissa, in Chilika Lake area, has resulted in the associated patterns of capital accumulation, the growing rural impoverishment and the serious problems of environmental degradation in the coastal areas of lake Chilika. It illustrates how national, corporate forces have evolved and affected both people and the natural environment and how, in turn, local people are attempting to thwart such powerful systems through these environmental protests.

³ Mafias are muscle men helping the Mafia dons. Mafia dons are usually outsiders from among politicians and their relatives, top bureaucrats and shrimp merchants and their agents. These two groups operate clandestinely treat the local fisher folk as their labourers.

⁴ Stonich has referred to the production of industrial shrimp farming as one of the non-traditional agricultural exports as a means of revitalizing economic growth and increasing income among the region’s small producers.

Table 1.3: Export of shrimps outside the State of Orissa and Abroad (in metrics tones; Indian Rs. lakhs)

| Year | Total Shrimp Production in Orissa | Foreign Export | Export outside the State (mt) | Value of Shrimp | |
|---------|-----------------------------------|----------------|-------------------------------|-----------------|--------------------------|
| | | | | Foreign Export | Export outside the State |
| 1985-86 | 6,253 | 4737 | 516 | 2,112.30 | 154.80 |
| 1986-87 | 6,956 | 4988 | 968 | 2,554.95 | 290.40 |
| 1987-88 | 5,567 | 4168 | 730 | 2,226.23 | 219.00 |
| 1988-89 | 6,178 | 4552 | 662 | 3,156.11 | 198.60 |
| 1989-90 | 8,634 | 4494 | 864 | 3,644.54 | 259.17 |
| 1990-91 | 7,713 | 6750 | 541 | 5,352.80 | 189.35 |
| 1991-92 | 8,905 | 7354 | 971 | 6,747.81 | 339.85 |
| 1992-93 | 10,177 | 9,644 | 967 | 8,949.45 | 386.80 |
| 1993-94 | 9,945 | 7,082 | 505 | 11,131.99 | 202.00 |
| 1994-95 | 12,790 | 10,867 | 841 | 15,865.21 | 420.50 |
| 1995-96 | 14,740 | 10008 | 1,344 | 17,120.77 | 506.40 |
| 1996-97 | 14,892 | 11,249 | 1,420 | 22,360.26 | 1,065.00 |

Source: Government of Orissa, 1996-97, *Directorate of Fisheries, Handbook on Fisheries Statistics*, Orissa, Cuttack. p-14, *Handbook on Fisheries Statistics 2000*, pp.-98-99, and *Marine Products Export Development Authority (MPEDA), Annexure-V, Government of India, Bhubaneswar*, pp.-98-99.

Note: Production includes only capture sources. Since the production also comes from culture (which is not known or data is not available officially because of varied reasons), the export exceeds the production sometimes.

Table 1.4: Foreign Export of Shrimps from Chilika Lake Area (in Metric Tonnes; Million Indian Rs.)

| Year | Capture sources | Culture sources | Total Quantity | Percentage to total export from the State (%) | Total Value |
|-------------|------------------------|------------------------|-----------------------|--|--------------------|
| 1986-87 | 1021.4 | 528 | 1549.4 | 25.87 | 66.10 |
| 1987-88 | 816.3 | 724.4 | 1540.7 | 29.81 | 66.30 |
| 1988-89 | 610.0 | 953.4 | 1563.4 | 23.86 | 75.32 |
| 1989-90 | 870.7 | 1595.9 | 2421.6 | 25.98 | 94.74 |
| 1990-91 | 356.9 | 1498.6 | 1855.6 | 20.21 | 120.00 |
| 1991-92 | 586.4 | 1190.5 | 1776.9 | 19.39 | 140.00 |
| 1992-93 | 615.6 | 1679.7 | 2295.3 | 19.22 | 174.04 |
| 1993-94 | 597.3 | 1871.1 | 2468.4 | 22.00 | 248.40 |
| 1994-95 | 181.5 | 2037.7 | 2219.2 | 14.50 | 233.26 |
| 1995-96 | 228.0 | 2105.4 | 2333.4 | 13.00 | 229.39 |
| 1996-97 | 170.0 | 533.1 | 703.1 | 12.88 | 81.16 |
| 1997-98 | - | - | N.A | - | - |
| 1998-99 | - | - | N.A | - | - |
| 1999-2000 | - | - | N.A | - | - |
| 2000-2001 | 575.0 | - | N.A | - | - |
| 2001-2002 | 1177.0 | - | N.A | - | - |
| 2002-2003 | 1240.0 | - | N.A | - | - |
| 2003-2004 | 1589.0 | - | N.A | - | - |

Source: Government of Orissa, 1996-97 Directorate of Fisheries, Handbook on Fisheries Statistics, Orissa, Cuttack. p. 55.

Note: Data from 2001-2004 is not published by Government of Orissa, but only calculated informally which are based upon some random figures also.

N.A.: Not Available.

The explosive growth of commercial shrimp trade has generated mounting criticisms over its social, economic and environmental consequences. While prawn aquaculture acquires immense importance for its economic nature it is equally notorious for its destruction of the ecology of the Chilika lake. It is noticed that prawn aquaculture has a very adverse impact on the livelihood of the local people, especially the weaker sections apart from causing problems to the ecology and the environment. Therefore, prawn culture at Chilika lake does not merely spell social problems for the people dependent on the lake but also eventual ecological disaster. Not surprisingly, the social consequences of shrimp aquaculture have become increasingly contentious, and encompass issues of social equity, loss of goods from coastal ecosystems, property and land rights etc. posing a threat to poor fisher people near the lake.

The prawn industries of Orissa coastal zone and in Chilika use feed and fertilizers for the production of shrimps which get collected and accumulated at the bottom of the pond as waste known as sludge. More sludge is created with more intensive farming methods with a high level of fish meal containing a high amount of phosphorous and nitrogen which are polluting and detrimental to the environment. Moreover, the higher export prices of shrimps are temporary and uncertain, but the losses in terms of the damage to environment and livelihood are of much more permanent in nature.

Due to shrimp culture, clandestinely during 1980s and extensively after legalization by the 1991 lease policy, in some villages of Krushnaprasad block the expenditure of the non-fishermen on wine, opera, consumer durables and construction of *pucca* houses has increased. The village people of Krushnaprasa block challenge assertively that “no one on the earth can stop us from ‘shrimp culture’ as it has transformed our economic condition dramatically”. But this is not the story of all non-fishermen of the locality. The inequality among the non-fishermen is comparatively more than that among the fishermen. Those who have converted their agricultural land into shrimp ponds have seen many ups and downs. Though some fishermen also have earned a lot from shrimp culture, there was yet not any dramatic or sizeable transformation in their socio-economic condition. There were stories of riches to rags and rags to riches due to shrimp culture in the area during my field survey (through field survey).

Several factors have contributed to the degradation of the lake ecology, ecosystem and environment of Chilika lake. The different lease policies followed by the Government of Orissa have divided the lake into different fishing areas for fisher-folk and non-fisher-folk in a way that has strengthened the exploitative power of the mafias. The lease policy pursued by the Government of Orissa for shrimp culture in Chilika since 1991 has greatly changed the socio-economic profile and condition of the inhabitants of the villages in and around Chilika with a profound impact upon ecosystem and environment. The transformation of non-fishermen to fishermen and the rising fishermen population in and around Chilika, introduction of modern fishing techniques with nylon nets and motorized boats, intensive shrimp aquaculture due to its lucrative export market (particularly for its brackish water nature) for shrimp in advanced countries have directly and indirectly contributed to the environmental degradation of Chilika. In other words, the pursuit of economic class interests has degenerated the lake environment and society. Since, prawn acquired a higher monetary value in the international market, both prawn and the business community needed to be controlled by the state which did not take place. Rather, the state became an active supporter of such a process. This not only affected the traditional fishing communities of Chilika but also endangered the lake ecology. The precipitate pursuit of private profit by different business groups legitimized by clothing it in the rhetoric of ‘fisheries development’, ‘foreign exchange’ further aggravated the situation. Other ill effects or social conflicts are:

- The most critical social problems identified by local peoples as part of expansion of commercial shrimp trade is the loss of these common pool resources – including mangrove areas and fishing grounds- that the local people depend on for both subsistence and other economic activities,
- The disruption of community-based common property resource management regimes has significantly altered the economic options available to local fishing communities and in turn to their livelihood or survival strategies,
- Commercial shrimp farming has displaced local communities, exacerbated conflicts and provoked violence involving property and tennorial rights,

decreased the quality and quantity of drinking water, increased local food insecurity and threatened human health.

- The displacement of coastal peoples in connection with the expansion of the shrimp industry is not insignificant (Occupational Displacement)

Thus, it is clear that the expansion of industrial shrimp farming has posed a significant threat to the natural, social and human assets at the local level.

Common Property Resource (CPR) and conflict over Property Rights

Common property resource subsumes a set of social conventions, norms, legally enforceable rules and procedures for regulating its use (see Singh 1994). It has been argued that where nation states have stepped in to control natural resources, inefficiency and short-term profit--seeking by the state have caused rapid deterioration. Privatization of common property resources has caused a similar environmental and social disruption.

It is to be noted that a Common Property Resource (CPR) is subject to individual use but not to individual possession. Thus, in the case of common property, exclusive rights are assigned to a group of individuals. That is, the rights to exploit a resource area held by people in conjunction with each other. These rights may take several forms:

- i. They may allow unlimited exploitation for those within a specified group (e.g., commercial fisheries).
- ii. They may stipulate limits for each other (Wade 1987, also quoted in Samal and Meher Report 1999).

The extent of CPR as a proportion of total assets in a community varies greatly across ecological zones. Income inequalities are less where CPR is more prominent. The income from CPR has two important features:

- i. CPR is complementary to the sources of income from private property resources.⁵
- ii. It also provides the rural poor with partial protection in times of unusual economic stress. For landless people, they may be the only non-human asset at their disposal (Dasgupta and Maler 1990).

⁵ A detailed account of CPR and its categories has been described in the Samal and Meher Report, 1999.

However, there is a degradation of CPRs due to destructive competition among the users, i.e. when a group of users is unable to control the use of its CPR under changing circumstances. For instance, when the co-owners of a CPR usually fail to co-operate in using the CPR optimally, the problem of non-co-operation arises. This eventually is generally characterized as the ‘tragedy of the Commons’ (Singh 1994).

Moreover, Sinha and Herring write that common property in natural resources may be understood in terms of the category of ‘Property as lived experience’ by Rita Brara in her paper ‘Grazing Lands: Negotiating Custom and Law’ (quoted in Sinha and Herring 1993:1426) to investigate the ‘commonness’ of grazing resources and the rules that govern inclusion and exclusion in the Lachhmangarh tehsil of Rajasthan. Brara differentiates between property as lived experience and property as legally constituted, and she draws the conclusion that the ideology of rights in the commons is a response to the imperative of ecologically-sound animal and crop husbandry (Sinha and Herring 1993: 1426).

In this context, the traditional poor fishing communities of Chilika lake have treated the lake’s natural resources as a common property. Today, they have lost the fishing practices and traditional systems of management being collectively evolved and practiced by them across generations. At present the question arises, is Chilika a common property resource? What type of property is Chilika? It is argued that though Chilika was vested with the government subsequent to the abolition of zamindari system, the community right over this property remains with the people particularly the fishermen (Das 1996 a: 15). The government can regulate the community right for maintaining the character of the property but not for destroying its character. It is again argued that Chilika is a communal property, not government/State property. In the land records of every village surrounding Chilika, the status of Chilika is mentioned as *Rakhita Anabadi* and a classification of the lake as lake (mentioned in Samal and Meher Report 1999). The Orissa Government Land Settlement Act 1962 with latest amendments prescribes the procedures for settling government land with individuals and institutions. In its definition of government land in Section 2, *Rakhita Anabadi* is not included. So, the government has no power to lease out or settle the Chilika lake with anybody whether Chilika Aquatic

Farm or OMCAD (Orissa Maritime Chilika Area Development Corporation Ltd.) or local non-fishermen because it will change its character.

There are different views for the management of a CPR like Chilika by different thinkers and policy advisers. While one view argues that full private property rights over the CPR are necessary conditions for avoiding its over-exploitation, the other advocates full authority to an external agency----- usually the state-----to regulate the CPR (Dasgupta and Maler 1991, Lopez 1998). A third view by Wade (1987) emphasizes the ability of villages to sustain local rules of restrained access to CPR (quoted in Samal 2002:1717). It is argued that, privatization or state regulation is not always necessary. Therefore, local collective action may be considered since those who have the historical and traditional rights of use of the CPR tend to be very protective of these resources. Li often argues that successful resource managing communities, often show that there should be stronger legal right and government recognition for community-based systems and a shift of resource control away from the state and private capital towards the rural people whose livelihoods depends most directly upon these resources (Li 1996: 503-504).

Threats to Local Assets: Local Collective Action against the Shrimp farming

Conflicts in Chilika are the result of various factors such as modernization, economic competition between socially differentiated segments of society, social inequality and other allied causes. The protest/resistance movement of Chilika has been a culmination of all such causes. The cause of the coastal ecology has transformed it to an environmental movement. The fishermen have been agitating consequently against the lease policy as well as the consequent environmental deterioration and degradation.

There was a strong people's agitation in early 1990s when the proposed Integrated Shrimp Farm Project of Chilika Aquatic Farm (a joint project by OMCAD of the Government of Orissa and Tata) was being implemented at the cost of about Rs. 15 crore at *Panaspada* covering 400 to 600 hectares of land, because it was feared that the effluent from the proposed project would pollute the lake water (Samal 2002: 1716). So the fishermen organized themselves for a movement under the banner of 'Chilika Bachao Andolan' (CBA) or ' Save Chilika Movement' in which ' Meet The Students', a student

forum of Utkal University played an important role in mobilizing the masses. In the course of the movement, some intellectuals and environmentalists extended their solidarity to the movement and gave a new twist to it by adding the environmental fallout of the project by raising the issue of Ramsar Convention (for more detail, see Pattanaik 2003:60, Pattanaik, unpublished dissertation).

Thus, the movement was transformed from a resistance movement to an environmental protection movement compelling the farm to withdraw from the proposed project. But unfortunately, after the Tatas left in 1994, things did not change. The smaller merchants, bureaucrats (with the support of the state) entered Chilika and have operated in the area since 1995. These people used most of the coastal lands previously used in Chilika for food crops and traditional fishing, as converting them into shrimp farms and intensive culture purposes. Therefore, there have always been clashes between prawn culturing mafias and the local traditional fishing community. The rivalry between the prawn culturists, mafias and traditional fishermen reached a flash point with the village '*Sorana*' police firing of 29th May, 1999, which left four fishermen and women dead and their entire community more determined to fight out the menace of prawn culture which is primarily responsible for the shallowing of waters and the growing siltation of the lake. For the Chilika Fishermen Association, it was a do-or-die movement from 137 villages. Today, the fishing community faces a dual threat: the threat from illegal prawn culturists as also from the state that has adopted a development model through the policy of globalization/liberalization. Hence, the movement has grown to a huge proportion. Also, recently, on 9th August 2005 about three thousand traditional fishermen staged demonstrations in Bhubaneswar, during the monsoon session of the Orissa Legislative Assembly as they feared that their rights will now be snatched if the controversial Chilika Bill 2001 is passed without amendments. The local people, today, are caught between two grinding stones: the lake's deterioration on the one hand; the arrival of entrepreneurs and commercial interests on the other (Bogaert 1992: 1).

The local fisher-folk's claim of traditional property rights over the resources of the Lake is more important than the legal claim of the state of Orissa. The issue of

'capture' and 'culture' fishing in Chilika and the conflict between fishermen and non-fishermen has been judged very carefully by the President of National Fish Workers Forum (NFWF), Mr Harekrishna Debnath. During his visit to Chilika just after the 'Sorana' incident of police firing in 1999, he expressed his views at Jagulipada village of Khurda district and brought out a distinction between 'water' and 'water bodies' like Chilika. He said that "all have the right over 'water' but fishermen alone have the right over 'water bodies'. Fishing for the fishermen of Chilika is a way-of life, a culture for them. In this context, it is argued that collective action over natural resources not only raises questions about ownership and control, but often also claims to respect a different way of relating to nature, one that repudiates the cultural values enshrined in the ideology of capitalist development (Baviskar 1995:42). Therefore, any displacement of these communities from their occupation will destroy their livelihood. Moreover, Debnath again argued that 'fishing for livelihood' is different from 'fishing for food'. He said, 'fishing for food (i.e., for personal consumption) by anybody living by the side of water bodies is acceptable. But, professional harvesting of natural fishing resources by the non-fishermen will be opposed'. From his arguments, it is implied that the fishermen only has the right to fishing in Chilika for their livelihood. The non-fishermen cannot fish in the Lake as a profession but can fish for self-consumption only. Thus, the traditional fishing communities do not establish private ownership over land and water. Instead, they have the historical and traditional rights to fishing in Chilika. It is said that, the land or water bodies (the lake) are not something to be possessed and exploited, but something to live in and to live with. Therefore, a question of the traditional communities destroying the water resources does not arise here.

The use of the fishery resources of the lake by the local traditional fishing community is sustainable as compared to the overuse (intensive culture) by the state-sponsored/promoted and outside interest groups/agencies. Strangely enough, such a group of people or community not only faces an economic danger but also some social problems. The state is likewise facing an ecological problem. A state that justifies its actions and policies in the name of the 'national interest' shows itself as preying upon both the poorest citizens of the nation and the valuable natural resources that belong to them and their future generations since they have proved to be the best protectors among

all. Thus, the very project of development through shrimp trade safeguarding 'national interest' is compromised and undermined by the nexus between the state and the few private capitalists.

Conclusion

Hence, the present study highlights the justification of promotion of shrimp/prawn farming especially the more intensive forms of prawn farming, regardless of adverse social and environmental impact shows the class bias of the state promoting this strategy. We have to look behind the apparently impressive looking figures of foreign exchange earnings to recognize the reality, which actually looks quite tragic if we also keep in mind the adverse impact on livelihood and environment. But, the study has highlighted that state development initiatives have only benefited a tiny elite at the cost of the large poor mass. Large state-sponsored subsidies and other developmental schemes meant for the development of the poor have rather created an 'iron triangle' (in Guha's ideological terms, Guha and Gadgil 1995) in Indian society. The members of such an iron triangle benefit from/and influence the state apparatus. Constituents of this iron triangle are forcing the country into a pattern of exhaustive resource use at the expense of the environment and society. The iron triangle is an alliance of a group of people who are favoured by the state such as the industrialists, politicians and bureaucrats. Hence, the non-fishing community of elite has been encouraged to do the shrimp culture. It has been found from the data of the survey that the benefits from 'culture source' of shrimp farming are higher among the non-fishermen community of the locality than the fishermen (through field survey).

The environment of Chilika is unique and its environmental impact tends to be felt far beyond the immediate circle. While for the local people it is primarily a question of livelihood, at the national and international level it has become an issue of ecosystem of unparalleled importance. Thus its local, national and international importance should be realized. Due to its uniqueness the lake should be given special importance. However, the process of national development by India has undermined the ecological importance of Chilika lake. Moreover, it has followed a policy of benefiting one section by suppressing another. The increased need for food, energy, water, timber and other products for urban

population as well as for export purposes infringes upon the local autonomy and upon traditional rights. As rightly suggested by Kalland and Persoon, there is a problem if supra-local interests are being integrated into modes of exploitation of local natural resources (Kalland and Persoon 1998: 11). Chilika's environmental movement, in this context, gives a different picture of globalization and the practice of commercial trade as adopted by India and through this shrimp trade in Chilika. As the local traditional fisher-folk have acted economically, socially and politically against the model of development of the state initiated shrimp aquaculture, the message is clear. The large fishing communities, who are poor, are not happy and rather marginalized. This movement is not merely reactive but also creative in nature. It provides other alternatives based on the policy of traditional sustenance of living with nature, against the dominant and destructive model of development through commercial trade by the state.

The last, but not the least, for a peaceful co-existence of different communities and distribution of income in and around Chilika which is a Common Property Resource (CPR), it is desirable that the poor, the landless laborers and other marginalized sections of the non-fishermen community of the surrounding areas should have the right to 'capture' fish in the Lake for their livelihood. However, there is a need for some restrictions on 'capture' fishing keeping the re-generation rate of stock of fish, shrimp and crab with relation to their exploitation rate in mind. Chilika is a CPR and as such it should be managed by local collective action through an autonomous body in which the fishermen community must have the majority. In other words, it should be the federation of independent, autonomous, co-operatives societies of fishermen operating in the Chilika region. And, of course, the local system may be helped by the government by providing a legal framework and technical assistance.

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