

Review of Marine Fisheries in Orissa



Small-scale fisheries in Orissa (often symbolized by images of svelte women hurrying on the beach in Puri with headloads of fish) is a story of untapped resources and unrealised potential.

The BOBP-IGO recently carried out a study for UNDP on marine fisheries in Orissa. It related to the marine fishery infrastructure, the socio-economics of marine fishers, and the institutional structure governing their activities.

Primary data for a sample study was collected between December 2006 and March 2007 in six coastal districts of Orissa – Ganjam, Puri, Jagatsinghpur, Kendrapara, Bhadrak and Balasore. Data was obtained on the income, education and assets of fishers. Group discussions were held with fishers and their associations. Discussions were also held with Department of Fisheries (Dof) officers about problems faced in marine fisheries and possible solutions. The BOBP-IGO team visited major landing centres in the six coastal districts and talked to user associations about the marine infrastructure.

Some of the study's many objectives: Review marine fish production in Orissa for the period 1950-51 to 2004-05 and correlate it with harvestable potential. Assess the marine fishing fleet, the extent of motorization and mechanization and the use of sea safety measures. Evaluate shore-based infrastructure. Assess resource enhancement through fish aggregating devices, artificial reefs, mariculture and seaweed farming. Study the Orissa Marine Fishing Regulation Act (OMFRA), 1982. Review policy measures like closed seasons, closed areas and their impact on fisheries. Review the institutional support available for marine fisheries development, credit linkages, role of gender and human resource development.

Some of the study's findings and impressions are presented here in Q & A form.

Is marine fisheries production in Orissa falling? What are the basic facts regarding production and the condition of fishers?

Most fishing activity is in coastal waters; deeper waters remain untouched. Marine fish production

has recorded a fall over the past seven years – from 0.16 million tonnes in 1997-98 to 0.12 million tonnes in 2004-05. About 3 000 sq. km of water area falls under reserve forests and is not available to fishers.

But actual fish production from Orissa waters is higher than the figures show. Reason: Trawlers from Andhra Pradesh and West Bengal fish in Orissa but land their catches in their respective states. Many Orissa trawlers also land their catches in Digha, West Bengal.

During the last two decades, the fleet size has gone up substantially in relation to fisher population. The trend is continuing. Mechanized boats have gone up in number by 250 percent in 25 years (from 692 in 1981 to 1 796 in 2004-05).

Motorized boats numbered 2 467 in 2005, up from 820 (1990), an increase of 422 percent in 165 years. Non-motorized boats (catamarans, bar boats, navas, dingis, potial./botali and choat) have actually fallen in numbers – from 6 000 in 1975-76 to 4 220 in 2005.



The existing infrastructure of three fishing harbours and seven fishing jetties can accommodate only about one-fourth of the state's mechanized boats.

The maximum sustainable yield of commercially important marine species up to 200m depth is estimated at 0.161 million tonne. About 76 percent of the potential MSY is being exploited annually at present.

The average per capita income of marine fishers is low - Rs 1 000 per month. Health, education and housing are unsatisfactory. Nearly half of the fishers have health problems. Balasore is the poorest district in terms of health – 62 percent of the respondents have reported health problems.

Almost 85 percent of Orissa's fisher population belongs to the age groups 6 to 17 and 18 to 59. The fishing industry already shows signs of overcapacity; this may worsen with new entrants to the work force. Young fishers are not optimistic about the future of fisheries in the state and are migrating to fishing and other industries in Mumbai, Goa, Gujarat and Kolkata. Those who remain in Orissa find few livelihood alternatives.

More than one-third of the fishers feel that in coming years, the fisheries situation in Orissa will worsen – due to factors such as rising prices, debt burden, declining fish stocks, restrictive government policies. Artisanal fishers say fishing by mechanized boats in their fishing zone is harming their livelihoods.

For fisheries production to go up and the condition of fishers to improve, various productivity and management constraints must be tackled.

What is Orissa's present infrastructure for marine fisheries?

Sixty four landing centres along the coast of Orissa cater to the needs of fishers belonging to 647 fishing villages. Mechanized fishing boats operate from 19 fish landing centres



An IT kiosk set up in a fishing village to provide information on potential fishing zone and weather conditions.

(FLCs), a minor fishing harbour (MFH) in Dhamra and a major fishing harbour (FH) at Paradeep.

All harbours except Paradeep (which is 100 % Centrally-sponsored) and the fish landing centers have been constructed with 50 percent assistance from the Central Government. There are 18 boatyards in private and public sectors, most of them in and around Paradeep, and six-net making units.

Processing: Of the 367 freezing plants in the country, 21 units are located in Orissa with a capacity of about 342 metric tonnes per day. The total capacities of these units are as follows: ice plants 1 519 tonnes, cold storages 5 102 tonnes, chill rooms 220 tonnes, peeling sheds 125.4 tonnes and processing plants 388 tonnes.

Marketing : Marine fish marketing in the State has both domestic and export components. About

71 percent of the marine fish is consumed as fresh, 22 percent goes for drying, 7 percent is frozen. About 49 percent is quality fish, 51 percent comprises small and miscellaneous varieties. About 40 percent of Orissa's marine catch is used for local consumption – of which nearly 90 percent is in the coastal districts.

Headload on foot, and bicycles, are the most common mode of transport for cheaper fish varieties in villages and small towns. Better-quality fish is collected by middlemen from landing centres and transported to wholesale markets in Cuttack, Berhampur, Bhubaneswar and Rourkela by road and rail for marketing through retailers. Kolkata is the biggest market outside the State for marine fish. Marine fish marketing in Orissa is carried out by a large number of intermediaries forming a long chain of market channels.

Fisheries infrastructure, active fishers and fish production in Orissa during 2005-06

District	Landing Centres	Infra-structure	Number	Active fishers	Production (Tonnes)
Balasore	13	FLC	6	52 190	33 788.50
Bhadrak	10	MFH+FLC	3	15 853	10 856.20
Kendrapara	8	FLC	4	10 222	7 970.89
Jagatsinghpur	5	FH+FLC	2	19 645	31 007.63
Puri	12	FLC	1	12 627	28 557.00
Ganjam	16	MFH+FLC	1	10 745	10 033.65
Total	64		17	1 21 282	1 22 213.87

Significant quantities of low value fish are dried and marketed within and outside the State. As the drying of fish is carried out in a primitive and unhygienic manner, the product commands low value.

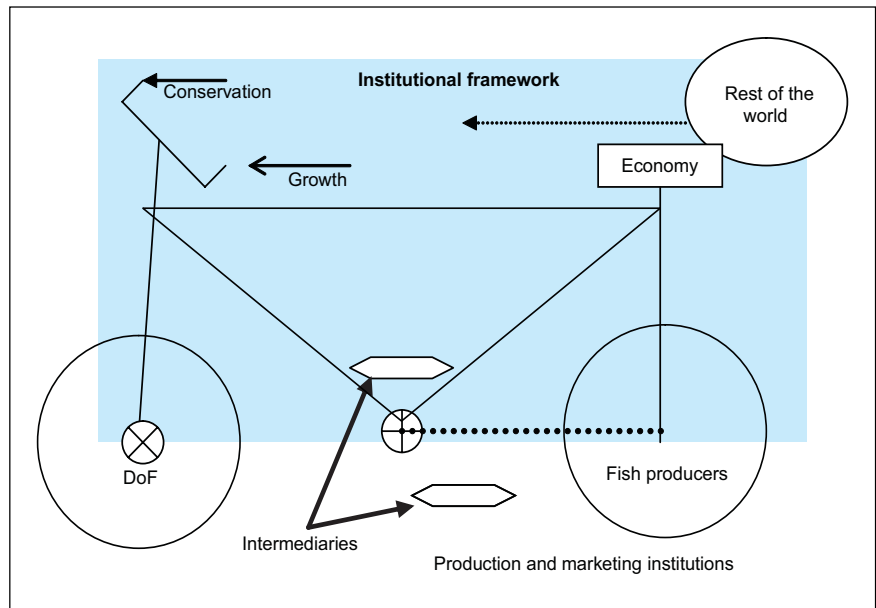
What are the productivity and management constraints to marine fisheries cited earlier?

Production and productivity constraints relate to the pre-harvest and post-harvest fisheries infrastructure; dredging and repair of harbours and fish landing centers; repair facilities for boats and engines; facilities for credit and subsidy; training for fishers and officials; R & D initiatives concerning alternative occupations for fishers; developing a deep-sea fishing fleet.

Management constraints: Total fishing effort should not exceed maximum sustainable yield. Excess fishing effort should be siphoned off. Alternative livelihood options must be developed. Sufficient revenue should be derived from marine capture fisheries through market linkages. To succeed, a marine fisheries management programme should strive to strengthen monitoring, educate fishers, improve the interaction between the DoF and fishers, manage the infrastructure, and design subsidies to build capacity.

Please describe the growth model proposed for Orissa by the study team.

Sustainable growth is like riding a bicycle. If the bicycle does not move, the rider can't keep his balance. If the rider pays no heed to the centre of gravity, the cycle will topple. Success lies in moving – and moving in synch with the centre of gravity. The ease with which the bicycle moves depends on the condition of the tyres, the free movement of the chain and the motivation of the cyclist. On the other hand, synchronization with the centre of gravity is a function of how well the frame co-ordinates with the wheels.



Bicycle model for marine fisheries management in Orissa

In terms of Orissa's marine fisheries, the front wheel represents the Government (mainly the DoF). The rear-wheel represents the fishers – they are bound by government laws. The pedals are marketing channels, conduits from the fishers to society.

The bicycle frame represents the institutional structure in fisheries. This includes rules and regulations, international treaties, financial institutions and other stakeholders (except the DoF). It also covers the traditional relationships among the fishers, boat owners and intermediaries.



This simple model does not capture the intricate interactions among all stakeholders, but highlights the roles and strengths of the DoF and the fishers. The cycle's movement depends on the ease with which market forces operate among fishers and society. This may be described as a **productivity constraint**.

Managing the movement (enforcing the institutional structure) depends on the strength of the frame and its co-ordination with the wheels. This may be described as a **management constraint**.

Ensuring sustainable development

The four broad goals of sustainable development of marine fisheries in Orissa are: Optimisation of the fishing fleet, including exploitation of deep sea resources; development of pre-harvest and post-harvest infrastructure and markets; enhancement of skills and capacities of stakeholders; institutional and policy support for sustainable fisheries and livelihoods.

Future development of marine fisheries in Orissa will depend on the attainment of these goals. The study team has discussed these four factors and developed a road map.

Optimisation of fishing fleet

Two steps are essential. A part of the existing mechanized fleet must be developed for deep sea fishing.

New mechanized boats should be allowed only for deep-sea fishing.

The fishing fleet is aging. Most present boats are unsuitable for deep sea fishing. Paradeep is the only harbour which can handle deep-sea fishing boats.

A new fleet with an OAL range of 15-20 meters can be considered for deep-sea fishing in the long run (five years and beyond.) Fishing harbours must be developed in Puri and Ganjam for the southern coast. Institutional finance must be arranged for mechanized boat owners to encourage them to develop deep sea vessels.

Development of pre-harvest and post-harvest infrastructure

In the short term, existing infrastructure should be repaired and managed. The long-term objective would be to develop new infrastructure facilities, such as FLCs, to cater to the needs of fishing fleet. After infrastructure is developed, the DoF should explore new markets for fishery products – such as the northeastern states for dry fish.

The north-south divide in Orissa marine fisheries should be addressed. At present, mechanization in north Orissa approaches saturation point while south Orissa is much less mechanized. Better north-south balance is essential.

Traditional landing centers at Pentakotha, Nuagarh, Chandrabhaga, Sana Arjipalli and New Golabondho should be developed into modern fish landing centers. Atharbanki in Jagatsinghpur could be considered for development into a fishing harbour.

For managing pre-harvest and post-harvest infrastructure projects, the government could consider mechanisms like build-operate-transfer, public-private partnership and Government-community partnership.

Value addition activities in post-harvest fisheries management – such

as fish drying and packing, and preparation of fish pickles – can employ women in large numbers. Such activities can be linked and funded by other development projects for marginalized women.

Enhancement of skills and capacities of the stakeholders

Fishers have identified the following areas for skill training – value addition; sea-safety measures; deep sea fishing and use of gear; alternative livelihoods like mariculture. The DoF on the other hand, considers the following as important: implementation of the Code of Conduct for Responsible Fisheries; Monitoring, Control and Surveillance programmes, including data collection procedures. If the government promotes a co-management model, it has to build leadership among fishers. Awareness should be created among fishers about government schemes meant for them, and whose benefits they are entitled to.

As for training of officials, field staff and junior officers need to be introduced to fisheries management; middle-level officers need training in advanced fisheries management (including stock assessment, environmental impact assessment, data interpretation, integrated sea use planning, etc) Senior staff need training in fisheries development and policy formulation (including integrated coastal area management, international laws and regulations, socio-economic analysis, etc).

Monitoring, Control and Surveillance

An efficient and effective MCS programme is the key to sustainable fisheries, also to success in implementing any planning strategy. Without MCS, a fisheries management scheme would be incomplete and ineffective.

MCS tools – such as a participatory management plan, data collection systems, communication systems – need to be developed.

MCS measures are as a rule costly to implement. But these costs can be

significantly reduced by encouraging community participation.

Subsidies have perhaps enabled the survival of marine fisheries in Orissa. But they should be phased out in five to 10 years. Money should be spent on more productive activities like R & D, market research, etc. As for the credit needs of small-scale fishers, localized micro-credit institutions should be encouraged to meet small-scale credit needs such as net and engine repair.

Co-management

The study makes a case for co-management – with the responsibility for resource management being shared between the government and various user groups. This limits government cost to surveillance – and community effort can be tapped for this as well.

Some fishers have pointed out that the fisher representatives in monitoring committees set up by the government seem powerless to raise fishers' concerns and protect their interest in issues relating to reserved forest areas. They say that unless *de jure* power is delegated to them, participation in co-management programmes will not protect their interests.

Going by the bicycle model, the frame should be supported by the two wheels; Government and the fishers should work together for dynamic movement. To make co-management effective, the government should engage the fishers in preparing and modifying rules and regulations. The community can then internalise the law into their day-to-day activities, rather than viewing the law as something thrust upon them.

What type of co-management best suits Orissa has to be worked out. A system where problems are identified at the local level, and solutions worked out jointly, is worth serious effort.