

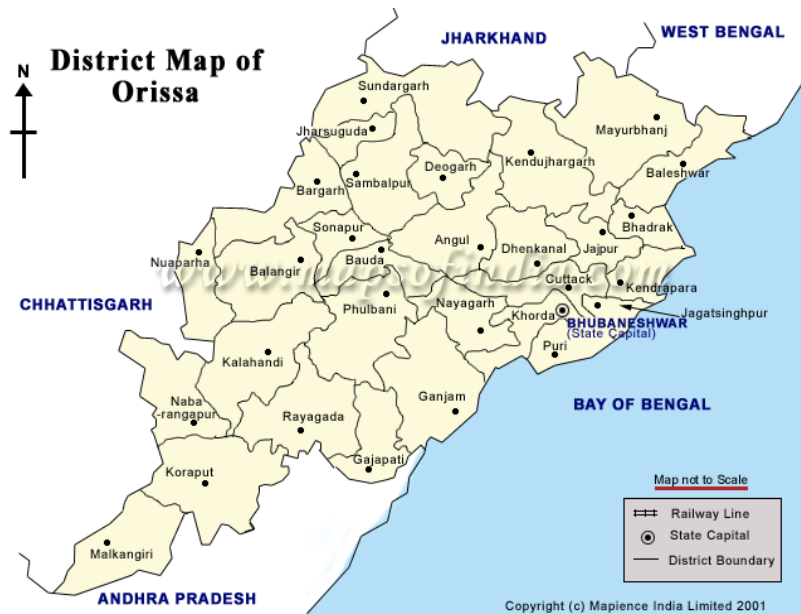
VALUE CHAIN ANALYSIS OF LANDED SHRIMP IN THE INDIAN STATE OF ORISSA



*A report prepared by Subhro Sen for WWF-India
September, 2007*

Background

India has a coastline of 7,516 km with Bay of Bengal on the eastern coast, Arabian Sea on the western coast and Indian Ocean towards the south. From time immemorial, this immense repository of natural resources has supported a productive and protective habitat as well as provided livelihood option for the entire coastal population of the country. India has an 'Exclusive Economic Zone' of 2.02 million sq. Km. which is in accordance with the provisions of the Territorial Waters, Continental Shelf, Exclusive Economic Zone and other Maritime Zones Act of 1976, of which India is a signatory.



Today's seafood market is a global business and shrimp is one of the world's most omnipresent seafood. Farmed or captured in over 100 countries, shrimp was the world's most valuable seafood commodity with a 2002 import value of \$10.9 billion. Japan and the United States both rank shrimp as the leading imported seafood item in terms of value and the most popular seafood consumed. The introduction of farming has changed world shrimp markets dramatically and transformed shrimp from a "luxury" good to a low priced commodity. In the process, shrimp demand, product form and distribution have undergone major transition. Subsequently, aquaculture production of shrimp has globally increased at a torrid pace.

India has long been a major shrimp supplier to the Japanese, U.S. and European markets. In recent years, India's shrimp production has increased because of increased production of farmed black tigers, the annual harvest of which now approaches 60,000 mt. India's combined shrimp production currently is estimated at about 400,000 mt a year, making it the world's second largest shrimp producer after China. For 2002 it is estimated that aquaculture production accounted for roughly 40 percent of the global seafood supply. Over the next several decades global demand for seafood is expected to increase significantly, potentially requiring as much as 40 million mt (approximately) of additional supply to fill this growing demand. Capture fisheries are unlikely to contribute much to this expanding global seafood market. However, at present landed shrimp is leading in terms of overall production and contributes significantly towards export. Marine fish production still accounts for almost 50 percent of total fish produced in India as well as in the State of Orissa.

Study area

Orissa is one of the States of India extends over an area of 1, 55,707 square km with a coastline of about 480 km, which is approximately 8% of the Indian coastline. It is bounded by the Bay of Bengal on the east; Madhya Pradesh on the west , Andhra Pradesh on the south and West Bengal on the north. The state has been divided into 30 administrative districts of which 7 are the coastal districts. It is located between the parallels of 17.49N and 22.34N latitudes and meridians of 81.27E and 87.29E longitudes. This region is the combination of several deltas of varied sizes and shapes formed by the major rivers of Orissa, such as the Subarnarekha, the Budhabalanga, the Baitarani, the Brahmani, the Mahanadi, and the Rushikulya. Therefore, the coastal plain of Orissa is called the "Hexadeltaic region" or the "Gift of Six Rivers". It stretches along the coast of the Bay of Bengal having the maximum width in the Middle Coastal Plain (the Mahanadi Delta), narrow in the Northern Coastal Plain (Balasore Plain) and narrowest in the Southern Coastal Plain (Ganjam Plain). The North Coastal Plain comprises the deltas of the Subarnarekha and the Budhabalanga rivers. The Middle Coastal Plain comprises the compound deltas of the Baitarani, Brahmani and Mahanadi rivers. The South Coastal Plain comprises the lacustrine plain of Chilika lake and the smaller delta of the Rushikulya River.

The continental shelf area of 24,000 km is open to marine fishing and is widest off the northern district of Balasore, narrowing toward the south. Among the districts, Puri covers more than a third of the total coastline of the state. The coastline is broadly classified into two distinct areas.

- a. The shallower northern coast extending northwards from Jagatsinghpur district to Balasore district which has a broad shelf, gradual slope and greater tidal effect.
- b. The southern coast extending southwards from Paradeep in Jagatsinghpur district to Ganjam district and which is narrower with broad sandy beaches.

The state does not have a natural harbour and the potential for artificial port is also negligible due to shallow coastline.

Districtwise coastal length (in kms)		
Sl. No.	District	Length
1	Balasore	80
2	Bhadrak	50
3	Kendrapara	68
4	Jagatsinghpur	67
5	Puri	155
6	Ganjam	60

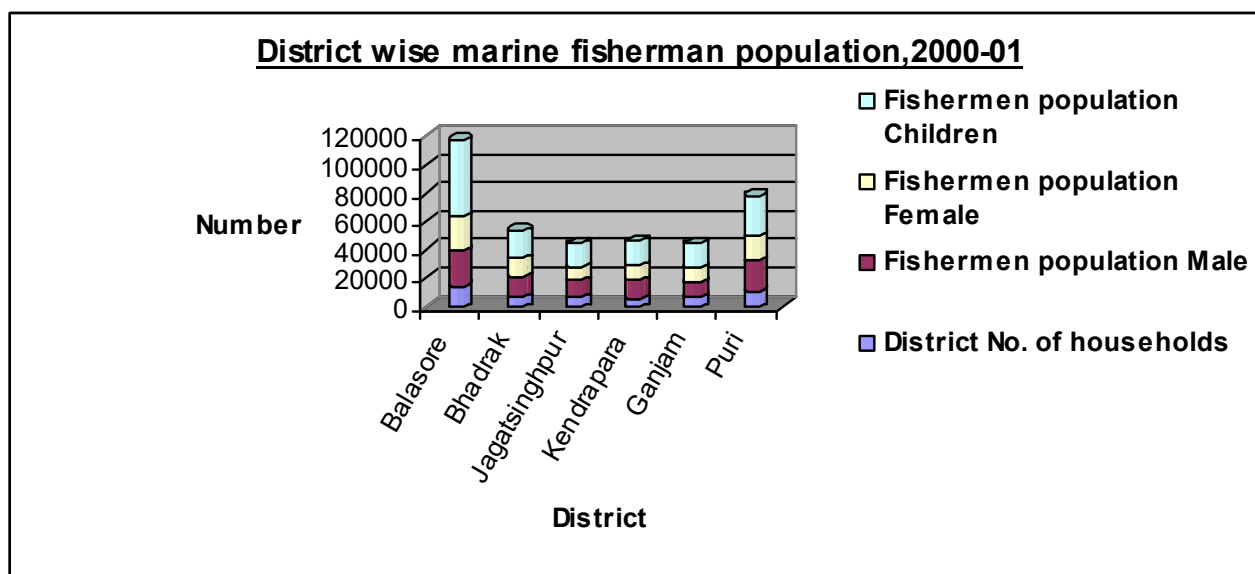
Continental shelf area in different depth zones	
Depth Zone (in Mts.)	Continental Shelf Area (in Sq. Kms)
0-20	6820
20-50	8650
50-100	4810
100-200	3550
Total	23830

Marine fishery sector in Orissa

The State of Orissa being a maritime State offers scope of livelihood in fishing, both in the sectors of inland and marine. The fishermen are not only isolated to the coastal districts but also scattered throughout the peninsular land logged districts. The fishermen population of the State is about 10.84 lakhs, of which about 7.51 lakhs are in Inland Sector and 3.33 lakhs in Marine Sector that constitutes 2.95% of the total population of the State (3.68 crores - 2001 Census). The economic status of the fishermen is generally below poverty line (BPL).

Marine fisheries sector in northern districts like Balasore, Bhadrak, Kendrapara and Jagatsinghpur are primarily dominated by Bengali fishermen (migrated as refugees from Bangladesh). While in southern districts like Ganjam, Khorda and Puri, this sector is dominated by Telugu fishermen migrated from Andhra Pradesh have settled in the districts where there were enough scope of fishery potential since they were mainly having the livelihood of fishing in their state/country.

The marine fishermen community of the state can broadly be classified into three groups, *traditional fishermen*, *mechanized gill-netters* and *mechanized trawlers*. Traditional country fishermen have been fishing for centuries along the Orissa coast with the help of rowing and sailing boats while fishing by mechanized trawlers and gill-netters is a recent development. Involving children into coastal as well as deep sea fishery practice is quite a common practice especially in motorised and country crafts. The graph given below clearly shows that large numbers of children are presently employed in this sector especially in districts like Balasore, Bhadrak and Puri. However, equal the number of male and female involvement in this sector is proportionate. Male members are engaged in coastal and deep sea fishery while women folks are responsible for marketing and sales of the produce harvested and landed on daily basis.



Marine fishing crafts and mode of operation

Mechanised marine crafts

These crafts includes trawlers, sona trawlers of different length as well as specification and gill netters. Operate at commercial scale and tiger shrimp (as well as brooders) is primary target. Trawl net is the primary gear used but do carry range of species specific gears. Long range and operate for weeks. Wooden boats but are quite sophisticated. Onboard GPS, Fish finder, Telecommunication device and freezing facility. Operated by a crew of seven people. Two categories of mechanised crafts are generally seen in the Orissa coast, like trawlers and gill netters. The mechanised fleet of Balasore district consists predominantly of gill netters using 4" to 5" mesh size drift nets for hilsa, pomfret and other species. While the mechanised boats of Jagatsinghpur district are exclusively trawlers which fish mostly for shrimps. Paradeep port in Jagatsinghpur district provides highly secured and exclusive berth for 50 deep sea trawlers.

Motorised marine crafts

These crafts have onboard detachable motor to propel and come in different shapes and sizes. Carry many gears and target many species along with shrimp. Operate mostly at regular basis. Operated by a crew of four people.

Country crafts

These are simple boats without any motor. Mostly used for subsistence fishing operation and partly for catering the need demand of small local markets. No specific species target as they mostly use single gear. Operated by a crew of one or two people.

Coastal Fishing

Coastal fishing can be defined as the fishing operation taken up within 5 Km form the coastline. Coastal fishing is taken up mainly by the catamarans and the country boat. Also now days, motorized country boats viz. Inboard machine engines (IBM's) and Outboard motor engines (OBM's) are commonly involved in coastal fishing. Coastal fishing is a daily phenomenon in both the districts with fisherman leaving the coastline early in the morning around 3 AM and coming back with the catch around 3 PM in the afternoon.

Ocean Fishing

Ocean fishing or deep-sea fishing involves fishing beyond 5 Km of the coastline. It normally involves trawlers, BLC and FRP's, which are involved in the fishing operation. Normally, oceanic fishing is highly mechanized with the use of sophisticated equipments and gadgets. This type of fishing is highly capital intensive and takes a form of industry rather than subsistence livelihood. The normal practice of this type of fishing is that once the craft goes out for fishing then the period of fishing varies from 3 – 8 days depending on the size of the craft. These craft has onboard GPS devices, Fish finder and freezing facility for the catch.

Landing Center

Landing center are the points where the fisherman anchor their craft, unload their catch and

conduct sale. Normally, landing centre should also provide infrastructural support like roads, railways, telecommunication, refueling, repair and maintenance and parking.

Specification of different types of crafts operated along Orissa coast

Sl. No.	Spcification of particular craft type	Deep sea trawler	Sona trawler	Day fishing trawlers	BLC	Gill netters	Tepa	Bhutbhuti
1	Over all length	21-25	12 to 13	9 to 10	9 to 10	12 to 13	8 to 9	6 to 7
2	Material built	Iron	Wooden(Fibre coated)	Wooden (Alumunium seathed)	Fibre boat with wooden frame	Wooden(Non-sala)	Fibre moulded	Wooden (Non-sala)
3	BHP	365-525	100-110	60-70	20	20	8 to 10	8 to 10
4	Engine make	Catter piller, water cooled	Ashok leyland, water cooled	Ashok leyland, water cooled	Kirloshkar (Double cyclinder)	Kirloshkar (Double cyclinder)	Lambard (Out board)	Kirloshkar (Single cyclinder)
5	HSD capacity	50-60 KL	2-2.5 KL	250 Ltr	100 Ltr	200 Ltr	100 Ltr	100 Ltr
6	Fish hold capacity(MT)	35 to 50	3 to 5	1 to 2	0.6 to 0.7	1.5 to 2	0.6 to 0.7	0.5 to 0.6
7	Fresh water hold capacity	25 to 35 KL	2-2.5 KL	200 Ltr	200 Ltr	200 Ltr	200 Ltr	200 Ltr
8	Endurance	20 to 30 days	8 to 10 days	1	2	4	2	1
9	Sailing speed in knots	8 to 9	7 to 8	7 to 8	8 to 9	7 to 8	7 to 8	6 to 7
10	Towing speed	3 to 5	3.5 to 4	3.5 to 4				
11	Crews strength	14 including 4 officers	8	6	7	7	6	6

12	Area of operation	Beyond 10 km upto 100 mtr depth	Beyond 5 km from shore	Beyond 5 km from shore	Beyond 5 km from shore	Beyond 5 km from shore	Beyond 5 km from shore	Within 5 km from shore
13	Gears used	Trawl net	Trawl net	Trawl net	Long line-Magar kanta, Kantia kanta Gill net: Ilishijal, Bahal jal, Kani jal	Long line-Magar Kanta, Kantia kanta Gill net: Ilishijal, Bahal jal, Kani jal	Except Kani jala and magar kanta all Gill net and long line present	Gill net: Ilishi jal, Bahal jal, Kani jal
14	Period of operation	Through out year except bad weather and a ban period of Govt	Through out year except bad weather and a ban period of Govt	Through out year except bad weather and a ban period of Govt	Through out year except bad weather	Through out year except bad weather	Through out year except bad weather	Through out year except bad weather
15	Species caught	Shrimps and other fin fishes	Shrimps,sci anids,pomfret,catfish,ribbon fish,clupeids,mackerel,seer,mulletts ,crustaceans,tuna,mollusc and other miscellaneous fishes	Shrimps,sci anids,pomfret,catfish,ribbon fish,clupeids,mackerel,seer,mulletts,crustaceans,tuna,mollusc and other miscellaneous fishes	Elasmobranch,Hilsa,Catfish,Pomfret,Seer,Tuna,Mulletts,Clupeids etc	Elasmobranch,Hilsa,Catfish,Pomfret,Seer,Tuna,Mulletts,Clupeids etc	Elasmobranch,Hilsa,Catfish,Pomfret,Seer,Tuna,Mulletts,Clupeids etc	Elasmobranch,Hilsa,Catfish,Pomfret,Seer,Tuna,Mulletts,Clupeids etc

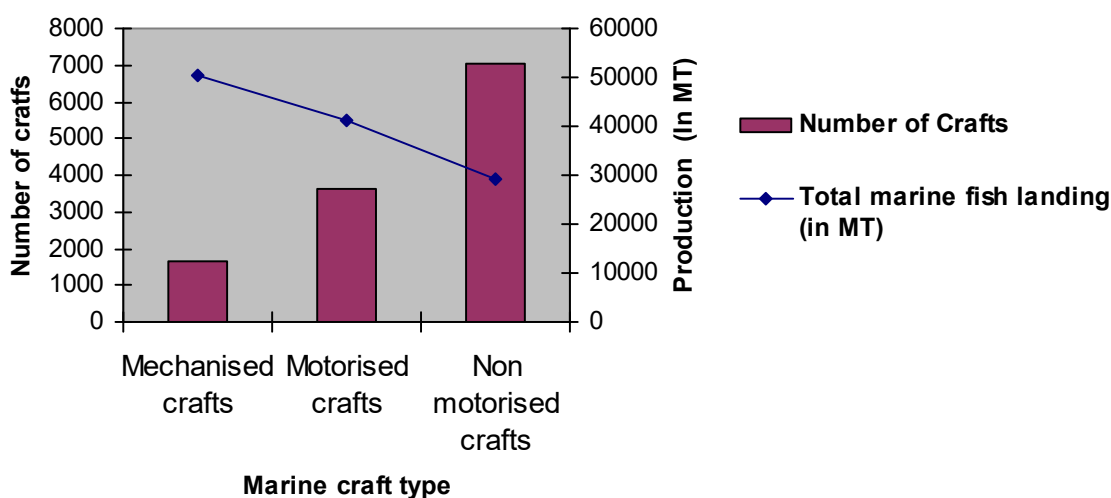
Impact of open market economy on the marine fishery sector of Orissa

Impact of globalization and open market economy is quiet prominent in this sector. Entire marine sector has got reformed at torrid pace. In last ten years, 15 fish landing platforms, 7 fishery jetties and 3 fishing harbours were constructed towards providing landing facilities to ever increasing number of mechanized as well as motorized crafts. Mechanized (Sona trawlers and Gill netters) and motorized crafts (IBM, OBM, BLC/FRP) dominate the landing centres of Balasore, Bhadrak, Kendrapara and Jagatsinghpur. These districts played a vital role

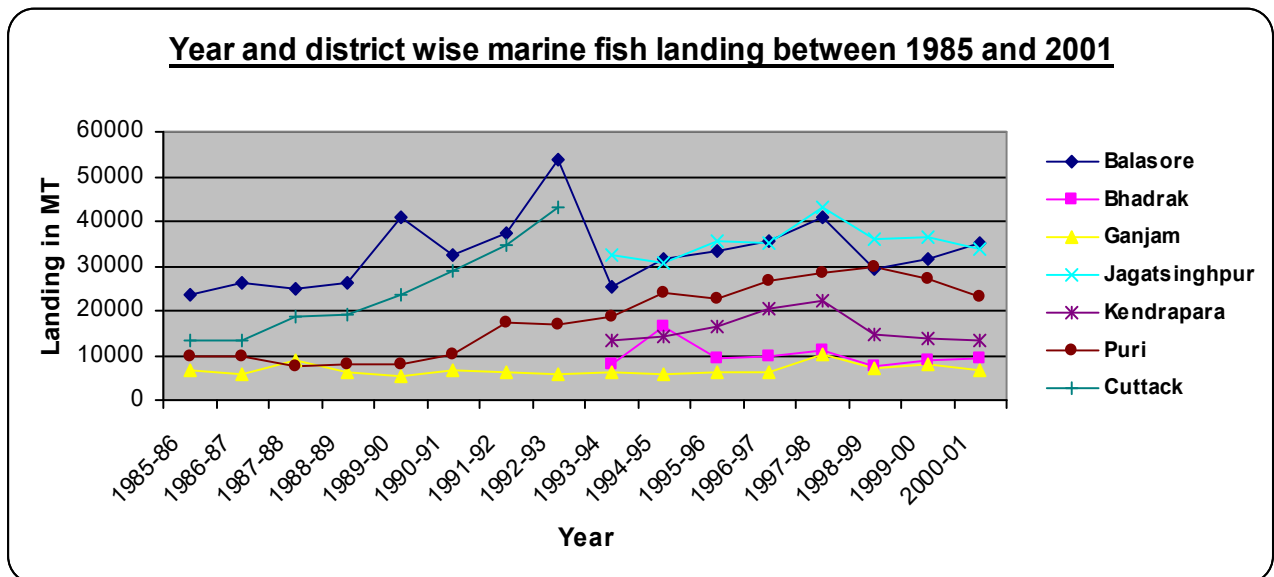
in commercialization of marine fisheries sector in post liberalisation period. While the districts of Puri and Ganjam are popular for country crafts and motorized crafts. Traditional marine fishing practice with catamarans and the country boat predominates normally in all villages of these two southern coastal districts but the new technology is on the rise in the bigger landing centers where the advent of trawlers, Beach Landing crafts (BLC) and Fiber Reinforced Plastic boat (FRP's) are commonly present. Numbers of marine crafts operating from major coastal districts of Orissa are presented in a tabular format. The number of marine crafts in each type and respective production figures are inversely proportional. Mechanized marine crafts accounts for 13 percent of total marine crafts in the state but it accounts 42 percent of total marine fish catch. Similarly, 30 percent of motorised crafts and 57 percent of country crafts accounts for 34 percent and 24 percent of total marine fish landed. This clearly indicates that the combined ecological footprint of mechanized crafts is much larger than combined ecological footprint of motorized as well as country crafts.

Marine crafts,2000-01	
Wooden trawlers	661
Sona trawlers	288
Gillnetter	687
Mechanized crafts	1636
I.B.M	2316
O.B.M	888
B.L.C/F.R.P	439
Motorised crafts	3643
Non motorised/traditional crafts	7047
Total number of marine crafts	12326

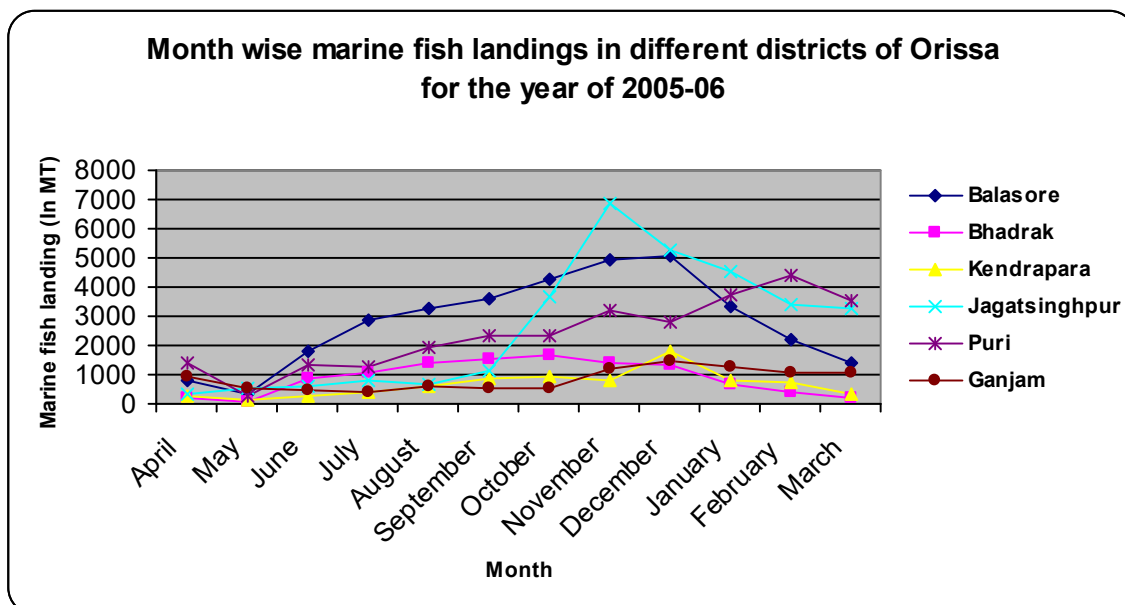
Craft wise marine fish landing, 2000-01



The peak season for fishing in almost all the districts and normally in all the coastal villages is from **October to February** of every year. The important species of catch are the Shrimps, Pomfrets, Clupeids, Catfish, Carangids, Perches, Seerfish, Mackerals, Sardines, Ribbon fish, Tuna, Hilsa, Skates, Rays, Carangids, Seer fish, Gautatus, Mulletts, Silver bellies, Anchovies and Sharks. Figure below shows the trend of fish landing.



Year wise marine fish landing trend in different districts between 1985 and 2001



Month wise fish landing in different districts for year 2005-06

It is also significant to mention that the number of commercially important species harvested has greatly varied in last two decades. Initially it was only a list of 15 species but today there are more than two dozens species which are harvested for commercial interest, either from coasts or from deep sea. Open market economy has exposed the marine fisheries sector to huge spectrum of international market demand and changing food habits. This may have resulted into transforming yesterday's bycatch into today's catch of commercial interest.

Analysis of decadal variation of marine crafts data shows that there is not much variation in number of mechanized crafts in all the major coastal districts but the number of motorised and country crafts has varied significantly in many districts. The variation in number of motorised and country crafts is quite significant as most of these crafts depend on the costal fishery resources unlike the mechanized crafts.

Variation in number of mechanized crafts depends on the nature of landing infrastructure provided at any specific location along off course along with the nature of continental shelf and depth zone specification. Moreover, the number of licensed issued for mechanized boats for any specific landing site is restricted and regulated by the State fishery department. But this is not a major constraint for the mechanized crafts as practical field observation and field discussion clearly indicates that there is a gross violation of terms and conditions by these crafts.

Mechanised crafts are entitled to carry out fishing operation in a pre specified area (within the fishing zone of that specific district) beyond 30 kms of the coast and are not supposed to access other landing sites or violate other districts fishing zones for fishery as specified by district fishery department. However, it has been observed that there are specific ports or landing sites (Balaramgarhi/Chandipur, Kasafal, Dhamra, Chudamani, Paradeep, Nuagar and Talchuan) which are mostly preferred by the mechanized crafts. There are two primary reasons behind doing so. These landing sites ports provide better infrastructural (road, railway, telecommunication and markets) support to forward their harvest quickly. Another interesting reason for concentration of more number of mechanized crafts in some landing sites like Dhamara, Paradeep, Chandipur, Kasafal and Chudamani is due to their proximity to certain areas of conservation interest which are also natural nurseries for variety of marine species (like Bhitarkanika and Rajkanika). This landing sites or ports seem to provide them quick access to these locations. So, even though the crafts have licenses issued for a specific landing site, they have a tendency to access select few landing site as mentioned above. Situation is alarming as the mechanized crafts from other States (mostly from West Bengal and some times from Andhra Pradesh too) are also reported accessing these specific region and landing sites.

The quantum jump in especially in number of motorized crafts (as well as mechanized crafts) in Paradeep port of Jagatsinghpur district can be attributed to expanding infrastructural support provided for marine crafts (access, marketing, refueling, and landing). This has been possible due to proximity of Paradeep port to this landing site. At present, Paradip is the most important centre in the State of marine fishing. Now about 300 mechanized boats each of 10 m length and 50 trawlers each of 13 m length are operating here. An *integrated Fishery Harbour* for 370 mechanized boats of

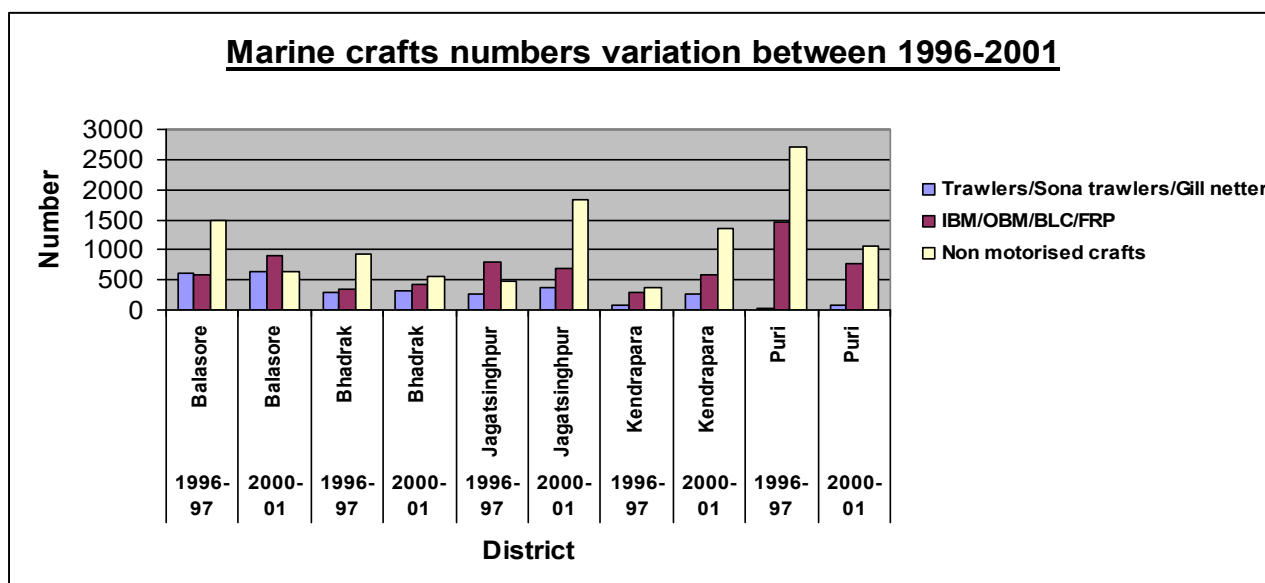
10 m length, 80 trawlers of 13 m., 15 trawlers of 15 m length and 50 deep sea trawlers of 23 m length has been developed for the purpose.

Dhamara is another potential landing site which will be a major hub for mechanized as well as motorized crafts in near future. The proposed construction of commercial port in Dhamara seems to have encouraged the State fishery department (under Central Governments Exim policy, 2002-07) to divert its resources (work is underway) towards the development and expansion of this port very soon.

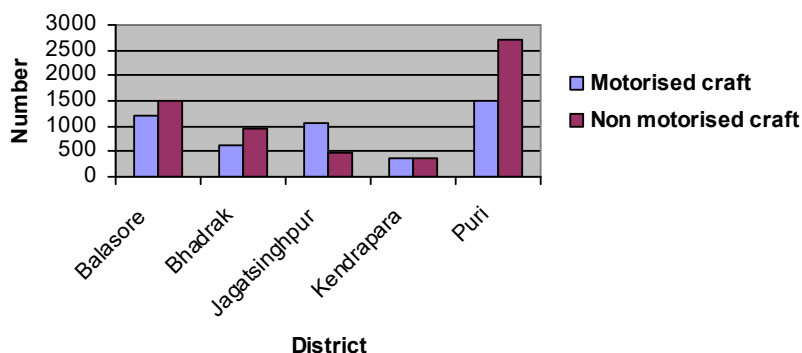
Mechanized and motorized crafts traffic (legal and illegal) to this port will increase by leaps and bounds once proposed plans are implemented. This port will soon be connected by mettle roads and railroads from Bhadrak and half the work is already done. Increased traffic of mechanized and motorized crafts at Paradeep and Dhamara is alarming from the perspective of Bhitarkanika wildlife sanctuary conservation.



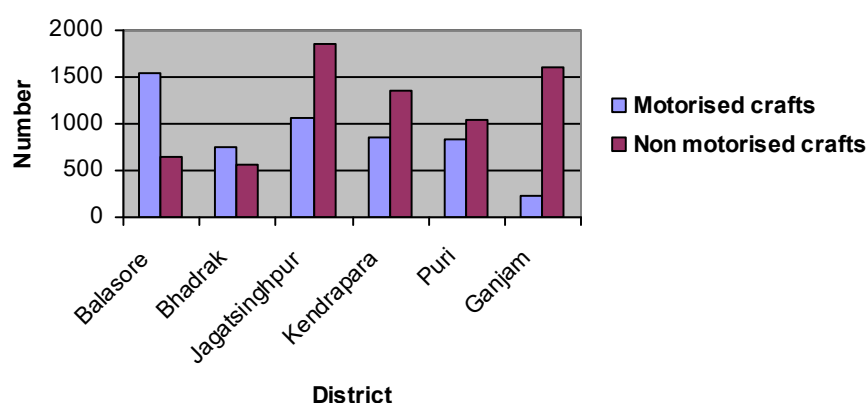
Figure below shows the decadal variation in number of marine crafts district wise.



District wise number of marine crafts, 1996-97

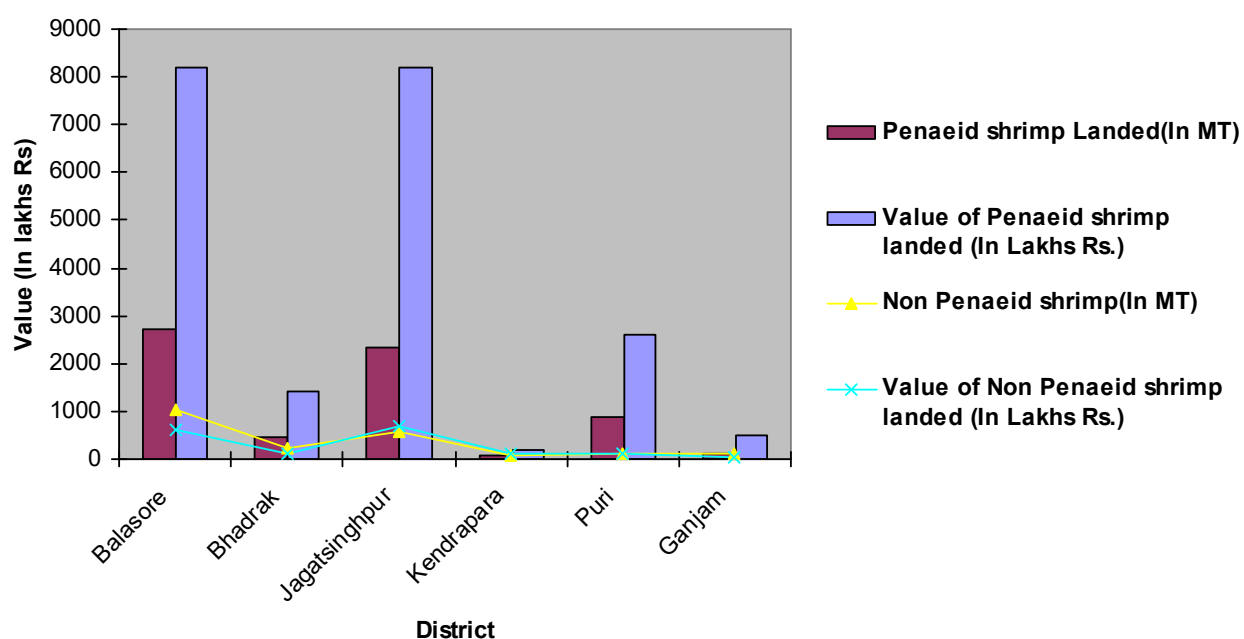


District wise number of marine crafts, 2000-01



Balasore, Bhadrak, Kendrapara, Jagatsinghpur, Puri and Ganjam are the prominent coastal districts of Orissa with having 12, 10, 6, 8, 15 and 16 official fish landing centers respectively. Marine fishery is the main source of livelihood for 53,020 households having population of 3, 32,772 stretching across 6 coastal districts. The total penaeid (includes shrimp species of economic importance like tiger shrimp) and non penaeid shrimp catch of 6 coastal districts district is 6608 MT and 2147 MT respectively. Commercial marine fishery is primarily focused on penaeid shrimp catch as this is economically valuable and can be easily sold to exporters for further processing and exports to international markets. Figure below draws a comparison between penaeid and non penaeid shrimp catch for the year 2000-01 in terms of quantity as well as value.

District wise shrimp landing,2000-01



Fishing gears

The efficiency of crafts and fishing gears in use has a direct bearing on the total fish landing. Net is one of the most important fishing gears used to catch fish. The fishing net is one of the major capital investments in the fishing operation and may range from Rs. 10,000 to Rs. 1,50,000. The price varies depending on the quality of fiber and mesh size of the net. Diverse range of gears is now available in the market. The nets used for fishing are craft and species specific. Fishermen normally keep more than 2-3 nets for making the catch. The use of net is also season specific due to the abundance of various species in a particular season. The normal life of a net is 5-7 years but again it depends on the usage, quality of fiber used, type of net etc.

Major gear details

Trawls: Trawl is a dragged gear towed through the water either at the bottom or sub surface waters. It accounts for more than 20% of world marine catch. In India trawls are operated by more than 65% of mechanised boats contributing substantially to the marine catch. Trawls are assumed greater importance in the context of increasing demand for high priced shrimps.

Gill nets: Gill nets are widely used both in marine and inland waters throughout the world. It is highly selective fishing gear and fishes are caught by gill nets. Gill net is a long wall of webbing kept suspended in water by means of floats on the head rope and sinkers on foot rope. The mesh size of the net is calculated in such a way that fish can pass its head but not the body. The following are different types of gill nets used in fishing.

1. Set gill nets: Gill nets are set in water by means of anchors.
2. Drift gill nets: Gill nets which are allowed to drift with the current or from boat to which they are attached.
3. Encircling gill nets: These nets encircle the fishes and they are driven into the gear by certain mechanisms.
4. Seines: A seine is a type of surrounding gear which surrounds a certain area and then the gear is towed over this area with both ends to a fixed point either on the shore or vessel. The gear is aimed at catching schools of fish either at the bottom or in the mid water. It is a long wall of webbing with floats along the upper margin and sinkers along the lower margin. It consists of two long wings and long hauling ropes on either side attached to the wing. Broadly classified into Beach Seine and Boat seine.
5. Surrounding nets: Surrounding nets or round haul nets are long wall webbing that surrounds a school of fish from below as well as from the sides to prevent their escape.

Lines: In line fishing fish is offered a bait for luring and once it is taken, it becomes difficult for the fish to escape. It is a passive fishing method used for widely scattered large pelagic and demersal carnivorous fishes having high individual value. Tuna long line consists of a main line, a branch line and accessories. Each such unit is called basket. The number of baskets carried on a vessel depends on the capacity of the vessel and may even carry about 500 baskets, each measuring about 200-400 mtr in length. These can even operated upto 250 mtr depth.

Trolling lines: Trolling is a method of fishing in which several lines with special lures are towed from a boat. These lines are mostly operated from the capture of predatory fast swimming fishes like seer, tuna, barracuda, carangids, mackerels etc. The lures are designed in such a way that either they fascinate the fish by their bright colour or initiate a sick fish.

Application of gears

1. Non mechanised boats:

The types of fishing gears in use reflect the environmental conditions. In case of gillnets, small and medium mesh size aiming primarily at sardines, anchovies, mackerels and shrimps are in operation in south. Medium and large mesh size meant mainly for hilsa and pomfret and used in the North. Apart from gillnets, the typical gears of the north with its tidal areas are set bag nets, tidal wall nets and encircling gillnets. Typical gears of south are boat seines and lift nets besides the gillnets mentioned above. The main gears used by patias, dangas and dhingies are polyamide or polyethylene pelagic driftnets of 95 mm to 120 mm stretched mesh size 600 to 1000 meters in length. Driftnets similar to those used by patias, dangas and dhingies are mostly used by marine boats. The fishing gears used by choats are drift nets and shore-seines as well as encircling nets, the later having an average 62 mm size. The main gears used by catamarans are nylon bottom and surface driftnets of 55mm to 62mm stretched mesh size.

2. Mechanised boats:

Mainly bottom opening trawl nets and 4"-5" mesh size gillnets of about 2500 meters long are used by mechanised boats.

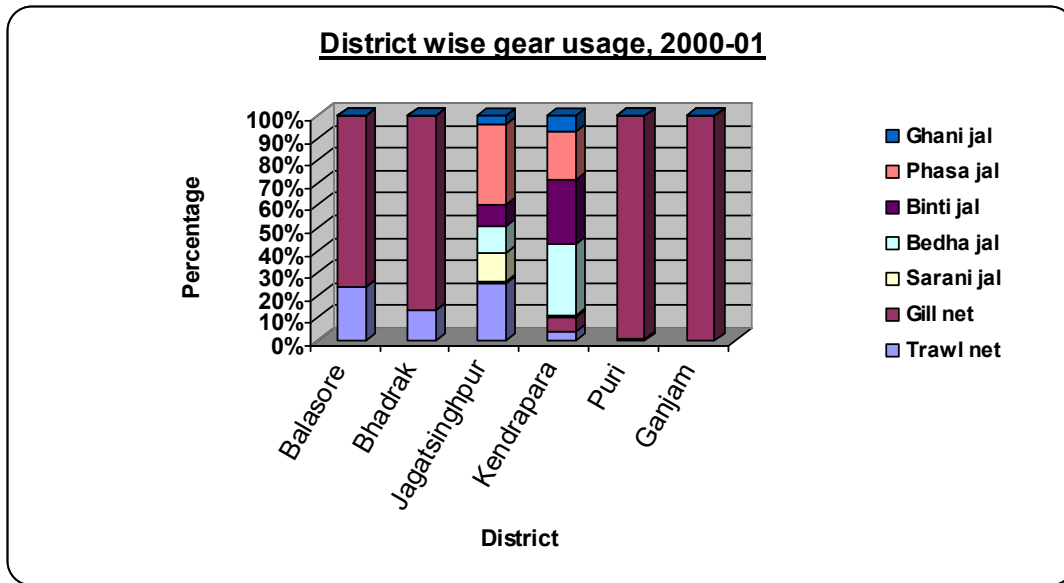
Different fishing harbours, fish landing centers and fishing jetties along the coast of Orissa are under different types of gears in operation. It has been presented in a tabular format below.

Different fishing harbours, fish landing centers and fishing jetties along the coast of Orissa with different types of gears in operation		
Name of the district	Name of the FLC/Jetty/Harbours with location	Types of gears in operation
Balasore	Chandipur FLC	Trawl net, Gill net
	Kasafal FLC	
	Panchubisa FLC	
	Talasari FLC	
	Kirtania FLC	
	Bhabalpur FLC	
Bhadrak	Churamani FLC	Trawl net, Gill net
	Kansabansa FLC	
	Dhamara Fishing Harbour	
Kendrapara	Kharanasi FLC	Trawl net, Gill net, Cast net, Hook and line, Shore seine and others
	Jamboos FLC	
	Khandiapatna FLC	
	Tantiapal FLC	
	Talchua FLC	
Jagatsinghpur	Paradeep New Fishing Harbour	Trawl net, Gill net, Cast net, Hook and line, Long line, Beach seine and others
	Bandara FLC	
Puri	Astarang Fishing Harbour (at Nuagarh)	Trawl net, Gill net, Cast net, Shore seine, Drag net, Trammel net, Long line and others
Ganjam	Gopalpur Fishing Harbour at Arzipalli	Gill net, Cast net, Hook and line, Beach seine and others
	Gopalpur on sea FLC	
	Rusukulya FLC	
	Palur FLC	
	Sana Arzipalli FLC	
	Sonapur FLC	

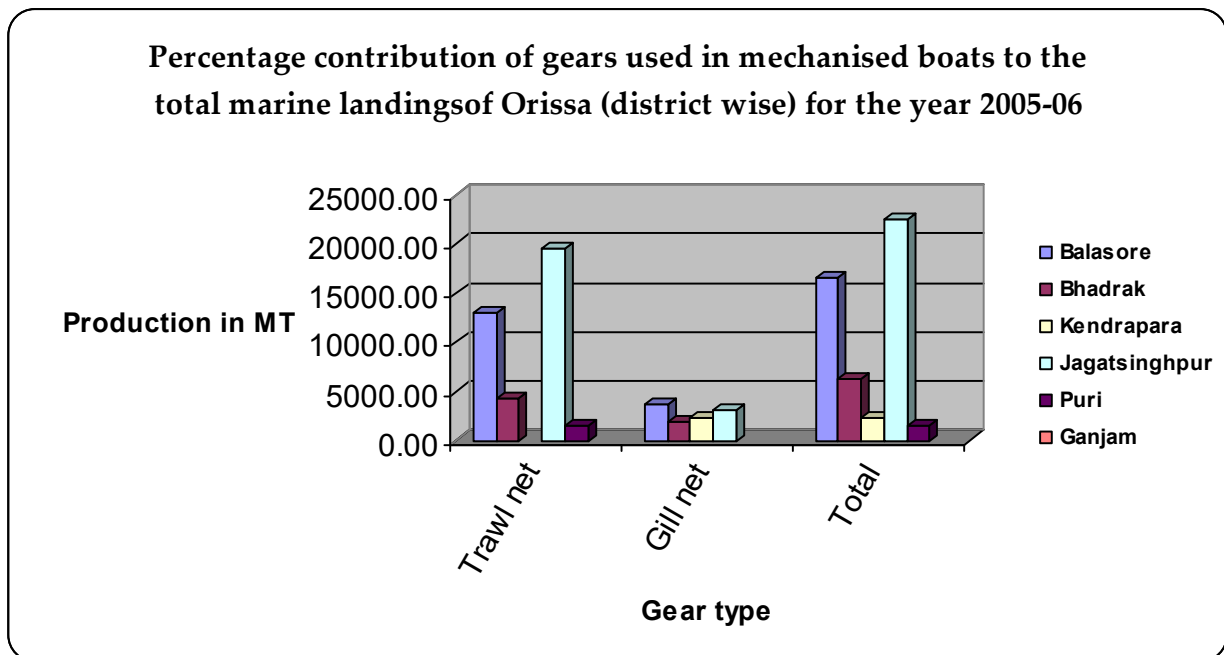
Some of these gears have colloquial names like Trawl net, Gill net, Sarani jal, Bedha jal, Binti jal, Phasa jal, Ghani jal, Jago Jaal, Koni Jaal, Kockle Jaal, Pomfret Jaal, White Pomfret Jaal, Disco Jaal Chingri, Benjru Jaal, Lines.

Range of trawl net and gill net variants are most popular fishing gears among the fishermen population towards commercial marine fishery operation. Paradeep, Balasore and Bhadrak are having maximum number of trawl nets under usage. While the districts of Puri, Ganjam, Balasore have maximum number of gill nets under usage. District of Balasore is the only district which has large number of both trawl nets as well as gill nets used. Jagatsinghpur and Kendrapara district has a spectrum of gears under usage.

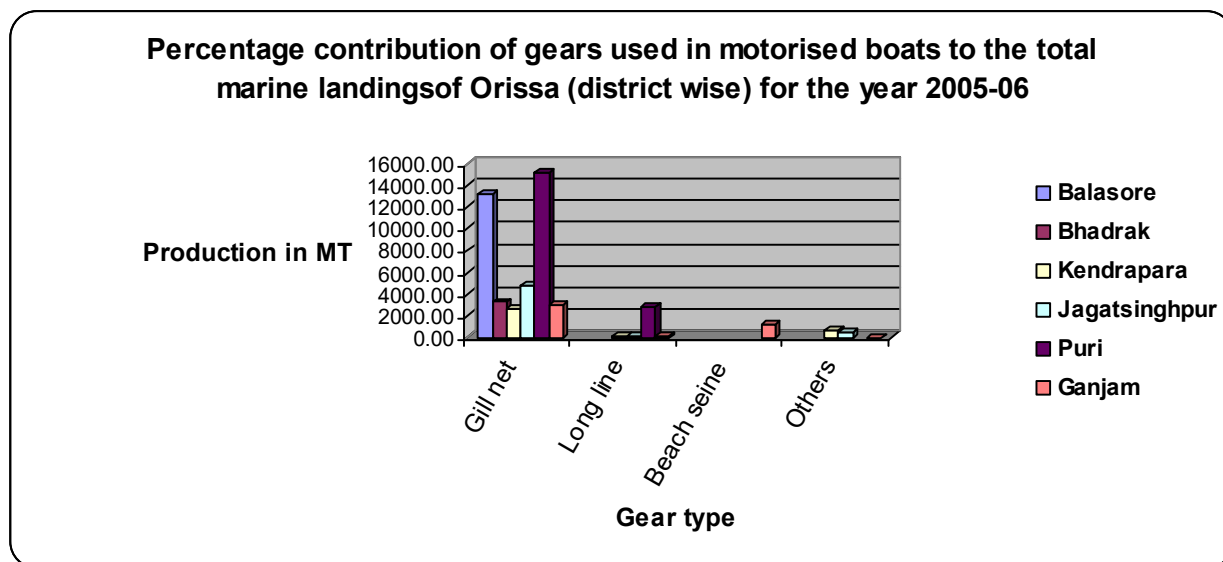
The figure below graphically shows district wise gear usage pattern.



Percentage contribution of gears used in mechanised boats to the total marine landings of Orissa (district wise) for the year 2005-06



Percentage contribution of gears used in motorised boats to the total marine landings of Orissa (district wise) for the year 2005-06



Although there are ranges of gears with different specifications, it's evident that trawl nets and gill nets for shrimps prioritized by mechanised and motorised boats operating in the marine fishery sector. This is because shrimp is considered as a prize catch by marine fishery sector. Marine fishery focused on shrimp catch is basically monopolized by mechanised crafts (trawlers and gill netters) and to some extent by motorised crafts. Country boats don't have the privilege of catching shrimps anymore due to various reasons. Country boats basically fish near the coast where shrimps are hard to be found. Moreover, the crafts used under this category is neither suitable for trawl nets nor gill nets. Their capital investment for craft, gears and day to day operation is also very low.

Different types of gears and their specifications are given below, which shows that range of trawl nets with different specifications and bottom set gill nets are primarily used by trawlers, sona boats and gill netters for catching shrimps.

Different types of gears with their specifications

TRAWL NET					
Sl.No.	Type of net	Length in feet	Mesh size used	Mouth opening	Species caught
1	LOBT(Day fishing trawler)	90	45-wing 40-belly 25-throat 15-cod end	55-upper end 65-lower end	Shrimps, Small shrimps, Scianids, Pomfret, Catfish, Ribbon fish, Clupeids, Mackerel, Seer, Mulletts, Crustaceans, Tuna, Mollusc and Other miscellaneous fishes
2	HOBT(Day fishing trawler)	100	160-wing 120,80,60,40-belly 30-throat 15-cod end	62-upper end 75-lower end	
3	LOBT(Sona trawler)	110	45-wing 40-belly 25-throat 15-cod end	66-upper end 78-lower end	
4	HOBT(Sona trawler)	120	160-wing 120,80,60,40-belly 30-throat 15-cod end	78-upper end 90-lower end	
5	LOBT(Deep sea trawler)	200	45-wing 40-belly 25-throat 15-cod end	100-upper end 110-lower end	
6	HOBT(Deep sea trawler)	220	160-wing 120,80,60,40-belly 30-throat 15-cod end	100-upper end 120-lower end	

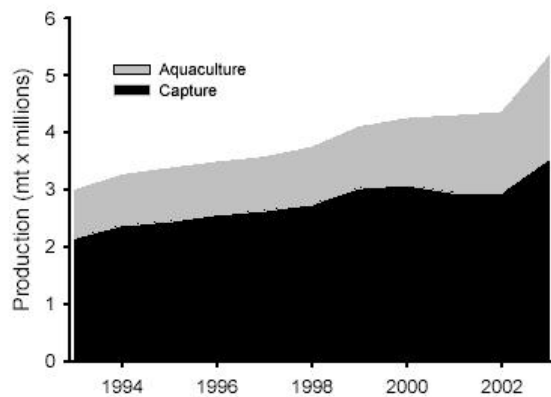
Gill net					
<i>Sl.No.</i>	<i>Type of net</i>	<i>Mesh size in mm</i>	<i>Length in mtr</i>	<i>Depth (mtr)</i>	<i>Species caught</i>
1	Drift gill net or surface gill net	12 15 20 30 50	30-40 50 100	2.5 5 6.5	Hilsha, Cat fish, Pomfret, Mackerels, Mulletts, Lesser sardines, Clupeids, Bhetki etc
2	Bottom set gill net for fish	65 72	60	14	Pomfret, Seer, Croakers, Polynemids, Crabs, Clupeids etc
3	Bottom set gill net for shrimp	50 30	80-50	5-6.5	P.indicus, P.monodon, Metapenacus, Crabs etc

HOOK AND LINE							
<i>Sl.No.</i>	<i>Type of gear</i>	<i>Material</i>	<i>Diameter of twine (m)</i>	<i>Length (m)</i>	<i>Number of hooks</i>	<i>Material</i>	<i>Species caught</i>
1	Long line	Polyamide	1	200-300	200-300	Iron, Steel	Tuna, Seer fish, Elasmobranchs
2	Hand line	Polyamide	0.5	100-150	1	Iron, Steel	Cat fish, Tuna, Mackerels, Seer fish

BEACH SEINE							
<i>Sl.No.</i>	<i>Type of gear</i>	<i>Parts of the net</i>	<i>Material</i>	<i>Preservative</i>	<i>Length (m)</i>	<i>Mesh size in mm</i>	<i>Species caught</i>
1		Tow line Wing Cod-end	Coir Coir Cotton	Nil Nil Nutch solution	N.A N.A	95 20	Sardines, Anchovies, Mulletts, Perches etc.

Marine shrimp landing, processing and exports

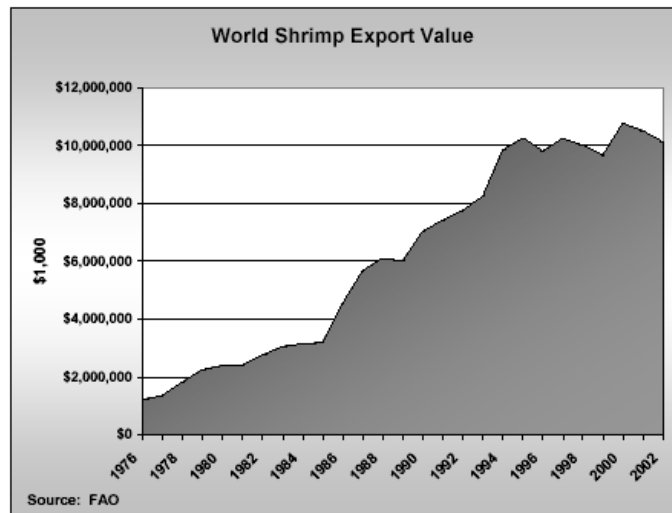
Overall marine resource harvesting and fish landing (and shrimp) is increasing for last two decades and especially after economic liberalization of country. It is happening in concurrence with huge international market demand for seafood. Wild shrimp demand is still leading the overall demand for shrimp. Today, more two dozen species are targeted as well as valued by the entire marine sector of the State of Orissa.



Comparison of capture and cultured shrimp production. Production quantities are in metric tons (mt). Source: FAO 2005.

This provides a wide range of value products ranging from low value to high value, depending on the species, quality, size, season etc. These value products can be further classified into export value products, high value products, average value products and even low value products. Furthermore, they have local, regional as well as export markets.

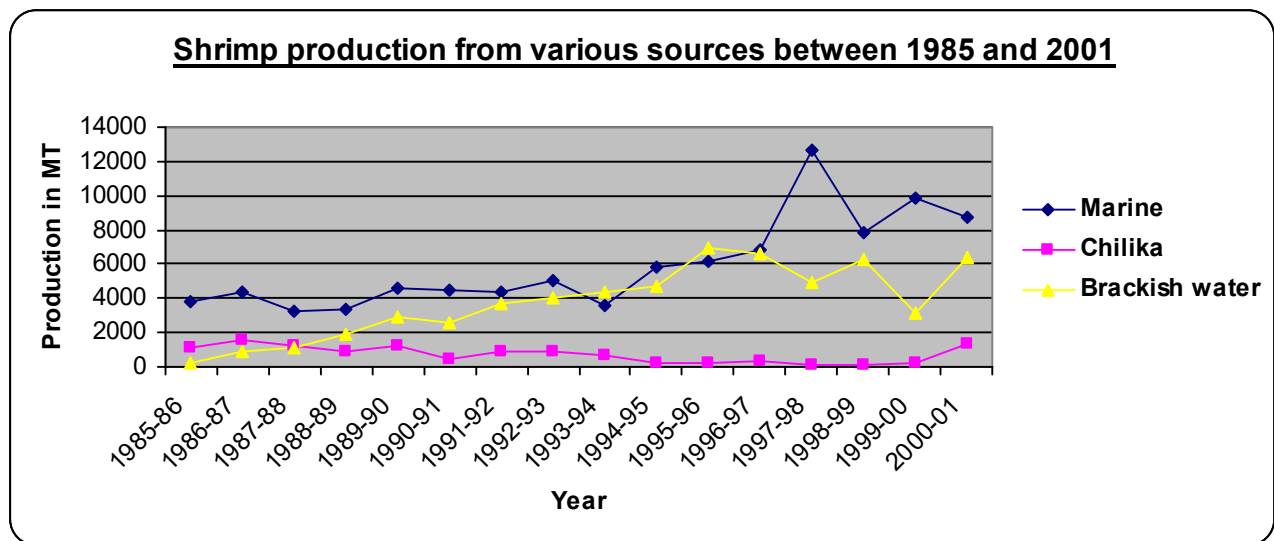
Black tiger, white, brown shrimps are export value products and comes under the high value segment. This product rarely enters the local market. However, due to higher transaction volume, larger geographic coverage area as well as larger number of buyers as compared with local markets, regional markets do demand for high valued products like shrimps but then again this demand is limited in nature.



Source: FAO

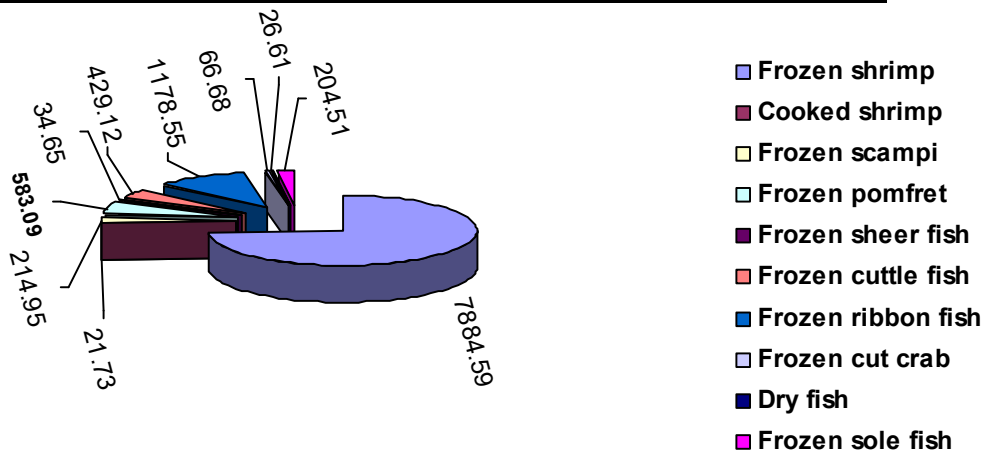
Black tiger shrimps including white and brown shrimps are exclusive to export market to cater the demand of international market. This market has different set of norms and practices as compared to the regional and local market. The quality concern is the highest in this market and hence it fetches good price the benefit of which percolates down the entire value chain in varied proportion. The competition in this market is very high and the demand is of very specific nature limited to few species only. Geographically these markets are the farthest and hence the cost of operation to meet the demand of this market is very high. The number of sellers in this market is limited but the number of buyers is high.

Similar scenario is observed in the State of Orissa. There are 20 processed (mostly frozen) shrimp exporters in the State of which only 5 processing units are European Union approved. It is important to mention here that the European Union has the most stringent product quality standards. This increases the cost of operation and hence only few processing units are approaching for approval. Today, marine sector (coastal and oceanic), Chilika lake and Brackish water culture are presently three major sources of acquiring raw materials (shrimps) for the exporters.



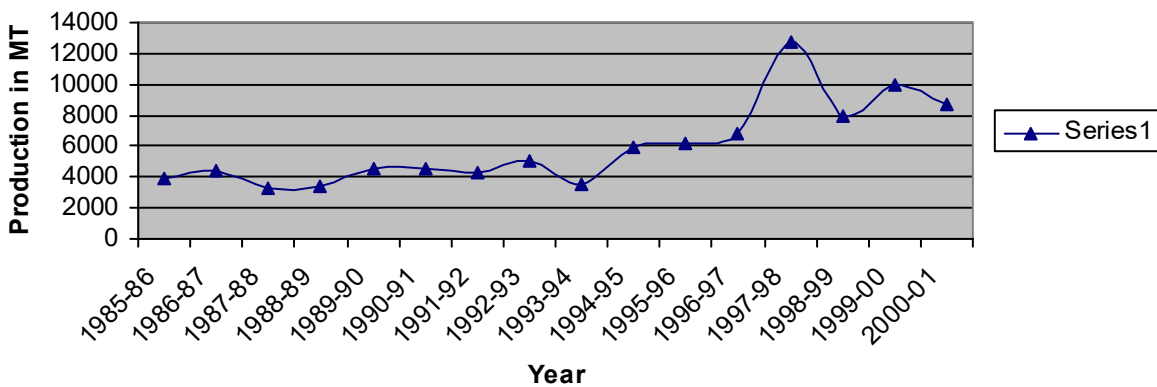
Export of frozen shrimps clearly dominates the entire marine sector both in terms of quantity produced as well as value. Almost 75 percent of marine products exported from the State are in the form of frozen shrimp which is almost 94 percent in terms of value of the entire marine products exported.

Export of marine products from Orissa between 2000 and 2001 (In Rs)

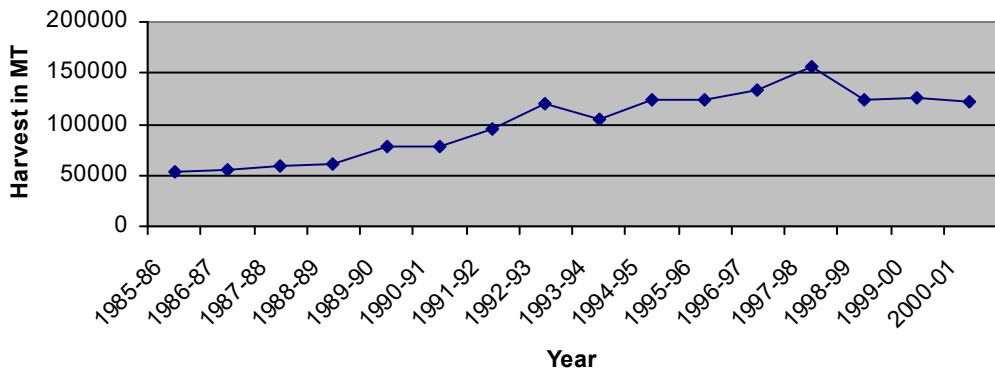


Marine sector plays an important role for the export market of frozen shrimp as it produces almost 50 percent of the shrimp processed and exported from the state. The production from marine sector has been increasing for last one decade which can be attributed primarily to increasing number of mechanized and motorized crafts as well as usage of specialized gears with fine mesh size. Figure below shows the production pattern of shrimp by marine sector between 1985 and 2001. Sudden increase in production (of shell as well as fin fish) after the year 1997 seems to be due to introduction of more number of mechanised and motorized crafts and more investment in landing site infrastructure development in all coastal districts (especially in northern districts like Balasore, Bhadrak, Jagatsinghpur, Kendrapara). District of Balasore and Jagatsinghpur leads in terms of quantity and value of shrimp landed form marine sector. Almost 77% of penaeid shrimp harvested by the marine sector comes from these two districts.

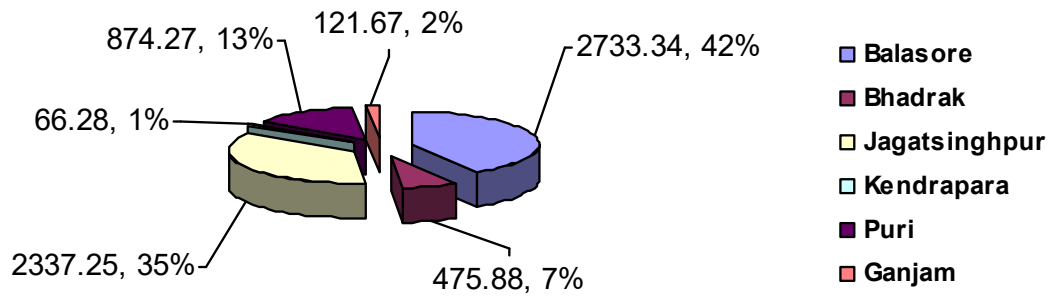
Production of shrimp from marine sector between 1985 and 2001



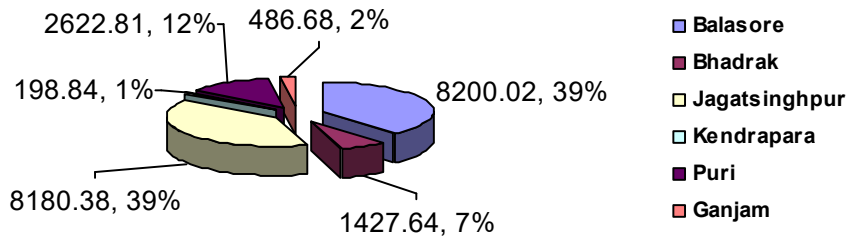
Orissa marine fish landing between 1985 and 2001



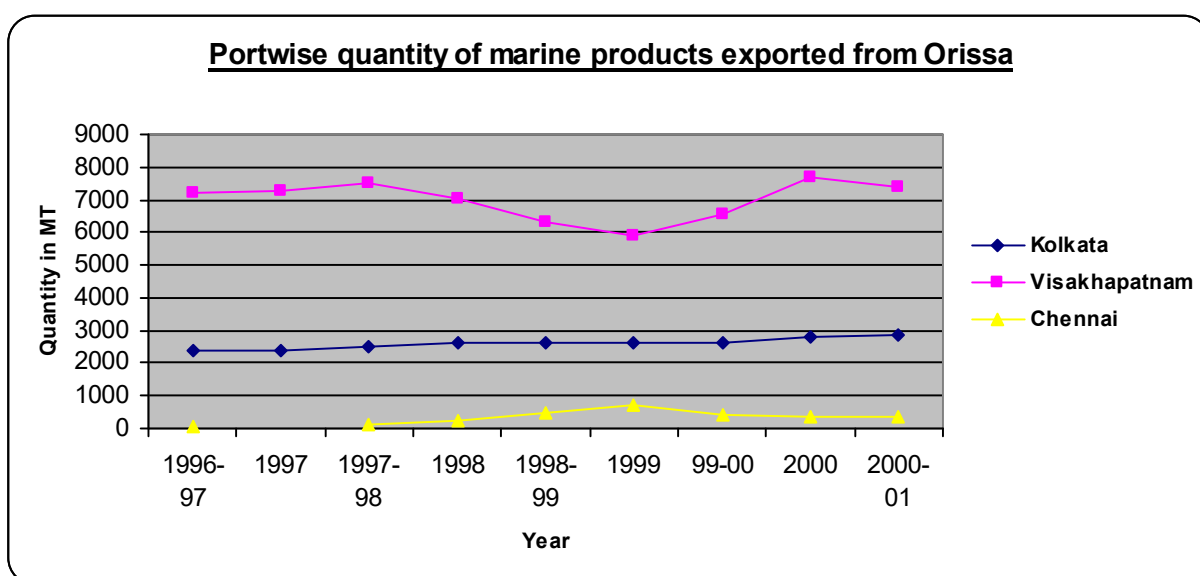
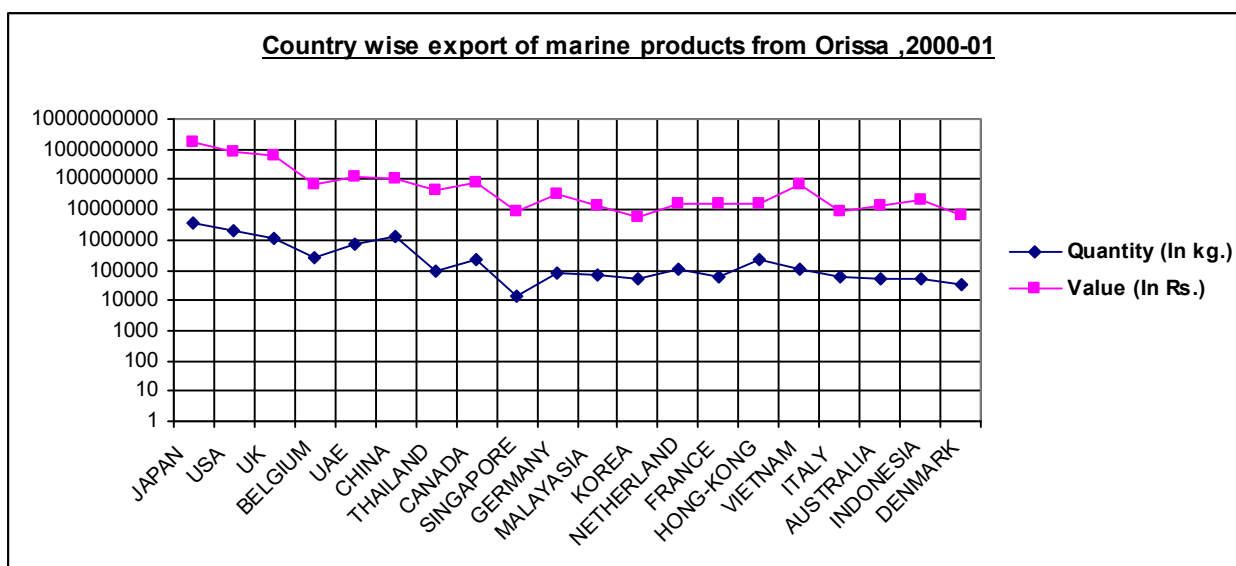
District wise penaeid shrimp Landed(In MT)

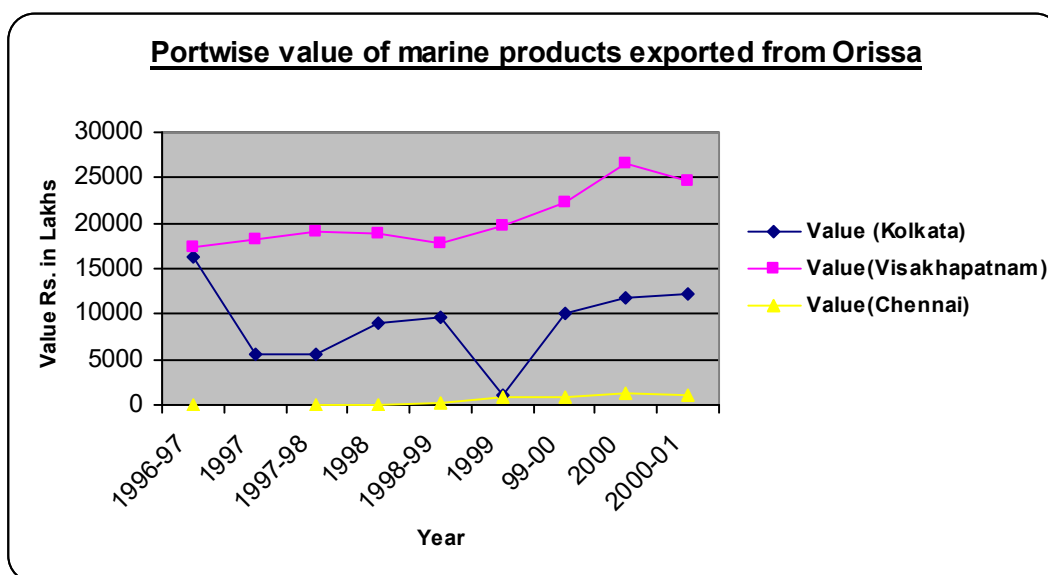


Value of Penaeid shrimp landed (In Lakhs Rs.)



Processed shrimp is mostly exported to European Union (UK and Belgium), USA, Japan, and UAE from the State of Orissa. Figure below shows the overall export of marine products from the state which also includes shrimps. However, it was found that the marine products processors and exporters in Orissa mostly depend on farmed shrimps acquired from farms (northern districts of Balasore, Bhadrak and Kendrapara). Farmed shrimp accounts for almost 70 percent of shrimps processed and exported by Orissa and marine sector accounts for only 20-30 percent of the shrimp processed and exported from the State. It has been reported that most of the landed shrimps are acquired by neighboring States like Andhra Pradesh and West Bengal. Similarly, processed shrimps are also exported from ports outside the State of Orissa. Export of processed shrimps is mostly carried out from Visakhapatnam, Kolkata and Chennai ports. Paradeep, the only port of Orissa, doesn't have facilities for export of marine products. It focuses on export and import of metallurgical products like Iron ore, Thermal Coal, Chrome Ore, Manganese Ore, Charge Chrome, Ferro Chrome, Ferro Manganese, Steel Coils and for unloading of Coking Coal, Hard Coke, Limestone, Food-grains, Fertiliser, D.B.M., Steel Billets, Scraps, etc.





Accurate data of shrimp coming from marine sector of the State of Orissa, which is processed and then exported from different ports outside the State, is very difficult to account. The record of shrimp exported is only maintained by the respective ports customs department (like Vizag, Chennai and Kolkata). This data needs to be collected and collated to get exact amount of processed shrimp exported from the State of Orissa. However, if we take into account the overall marine fish landing across different landing centre, its export value and seasonal factor into consideration, the contribution of shrimp is quite visible. Export of processed shrimps) is a decisive factor for the entire marine products exported and drives the trend of overall exports. Graphical presentation of data pertaining to value, quantity and country specific exports shows the similar trend. For instance, export of processed shrimps is a deciding factor regarding five major export destinations (Japan, USA, UK, Belgium and UAE) for entire range of marine products.

Value chain of landed shrimps

Depending on the pattern of marine fishing operation, major players in the landed marine products (applicable for shrimps too) value chains as a producer are:

1. Traditional fishermen using country crafts for coastal fishery.
2. Boat owners using motorised marine crafts.
3. Trawlers and gill netters.

However, only trawlers and gill netters (only bottom set gill net for shrimp) significantly contribute towards harvesting of shrimps. Most of the landed shrimp trading takes place from the landing sites of two major shrimp producer districts i.e., Balasore and Jagatsinghpur.

From the perspective of producer's role in the supply chain, let's further elaborate the role played by the major players and how the supply chain works.

Traditional fishermen using country crafts for coastal fishery

These crafts operate at short range from the coast (within 5 kms from the coast) and having altogether different supply chain. Their supply chain is defined by the nature of catch (species caught, quantity of catch and size of the catch and seasonality), kind of gears used and ultimately their bargaining power with the middlemen. Country crafts normally cater to low and average value segment and sell their produce to the local markets. Shrimp comes under the high value segment and hence these crafts have a very limited role in production and marketing of shrimps. These crafts suffer heavily due to recent stringent rules and regulations declared by the government which are focused on conservation of marine resources (like closed period for fishing and turtle conservation and protection). However, these crafts found to be in such practice and using such gears (like monofilament nets) which pose minimal threat to the non target species as well as turtles. These crafts can never be held responsible for irresponsible or intentional bycatch activities.

Fishermen using motorised crafts

These fishermen are different from the country crafts as they operate at a range of 30-50 kms from the coast and deal with average and high value products. There is diversity in species caught and these fishermen fetch good price for the catch. These fishermen even compete at deep waters with the trawlers and gill-netters for catching shrimps and other high value products. This sometimes results into conflict among motorised and mechanised boats but still they manage to coexist.

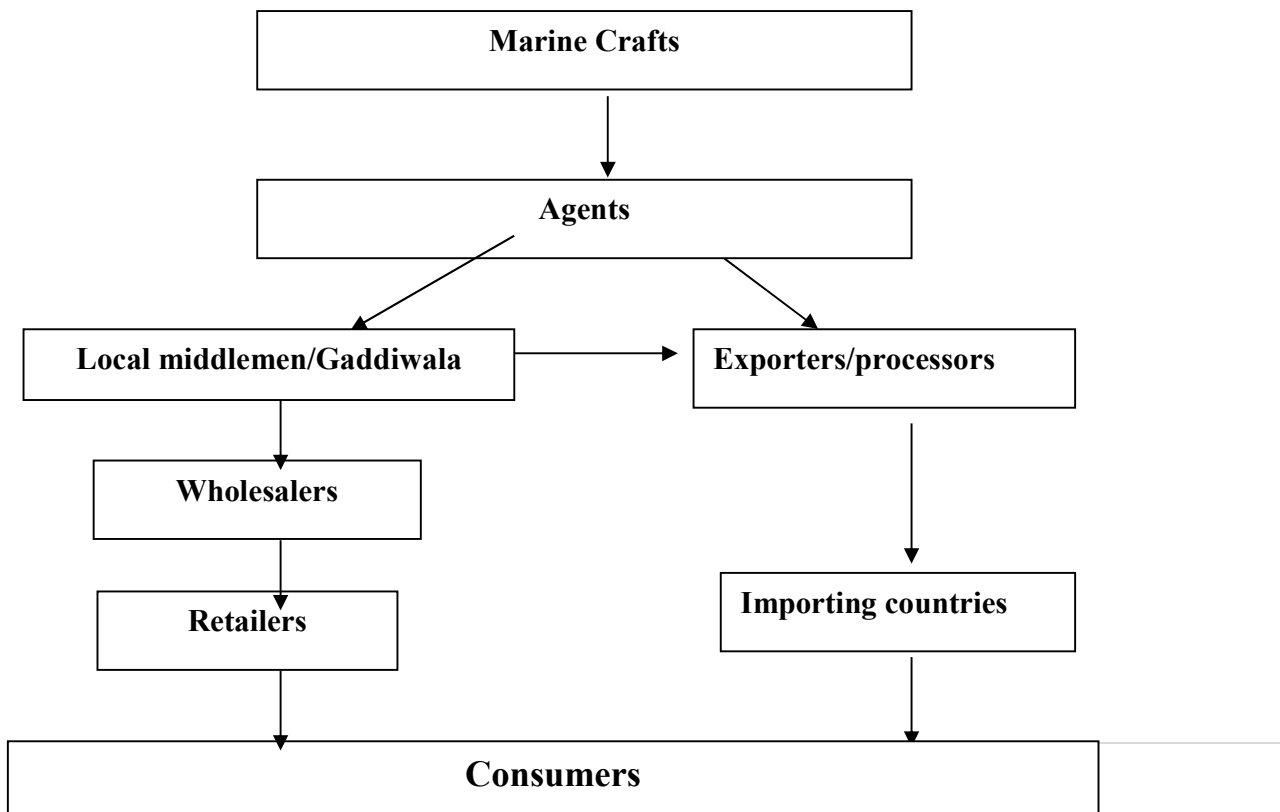
This clearly indicates that falling catch of valued products near the coast (over fishing) is driving the motorised boats towards deep sea and which results into overlapping the territory of trawlers and gill netters. Country crafts don't have the capability to do this (specialized gears and investment for fuel) and hence are the sufferers.

In recent times motorised boats are found to be going deeper into ocean for catch of valued products but this inflates the cost of fuel and risk of life. Greater distance coverage means more investment for ice, fuel, water and food due to extended fishing period. Falling catch and increasing fuel price minimize the profits. This drives them into debt trap. And they were compelled to sell their produce at much lower prices to the middlemen who lend them money for investment towards extended period of fishing. This is a vicious cycle and is a major factor in defining the kind of supply chain in which the motorised crafts operate.

Trawler and gill netter crafts

These crafts operate in deep sea for extended period of time (15-30 days) depending on the crafts specification. They cater to both low value as well as high value products segment of market. These crafts are primarily responsible for catch of shrimps and supply it to both regional as well as international market (through exporters and processors). The low value catch is dried on board (on artificial bamboo roof and ropes) and sold to local markets. Mechanised trawlers are very organized and capital intensive sector. They have associations and which are instrumental in communication, sales & marketing, negotiation with markets/agents/government departments. Most of the major landing centers found to be having an association which fixes the price on monthly or weekly basis of shrimp (as well as other marine products) and the buying and selling is done on the basis of these fixed prices. They have licenses issued against a particular landing site and the area of their fishing is pre defined by the fishery department of the State. However, there is a clear violation of terms and conditions and these crafts along with motorised crafts are mainly responsible for bycatch of several non target species which could have been easily avoided if the marine fishery practice is done in a responsible manner.

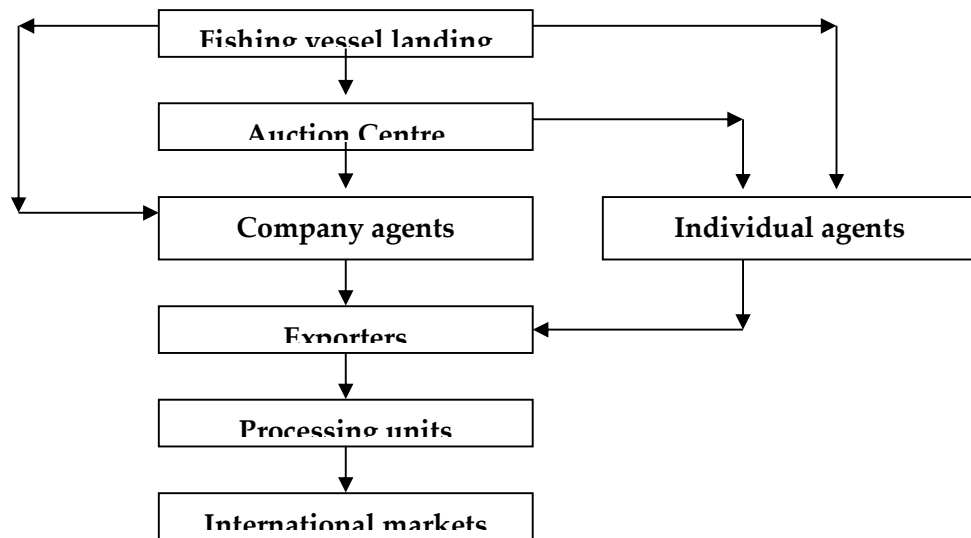
The supply chain for shrimps through these major producers is more or less same and shown below.



Other significant players in the supply chain are:

1. Fishermen who do not have boats
2. Fishermen who have boats and gears
3. Owner who lease out the boats/gears and other equipments
4. Auction agents
5. Commission/collection agents
6. Transporters
7. Ice providers
8. Godown owners or Gaddiwala's
9. Wholesalers
10. Exporters
11. Daily labourers for unloading from boats, initial cleaning processing, packaging and loading on trucks.
12. Local sellers (men and women)
13. Others

Overall marketing chain for landed shrimps can be diagrammatically described as below:



Roles of different players in the value chain	
Fishermen who do not have boats	Goes with boats for fishing and have a share in the catch along with daily wage.
Fishermen who have boats and gears	Arranges for fishing crew members and goes for fishing in group. Gets his share for his boat and net and also gets. Sometimes acts as commission agents too.
Owner who lease out the boats/gears and other equipments*	Arranges for fishing crew members and other materials required for fishing and allied activities like gears, food, drinking water, fuel. Also provides credits to workers.
Auction agents	Agents are from the local fishermen community. They act as a liaison between Godown owners and local fishermen. He advances money to local fishermen and makes sure that the produce reaches to specific Godown owner.
Commission/collection agents	Participate in auction and also linked to Godown owners.
Transporters	Transport produce to local as well as regional markets.
Ice providers*	Provides ice to middlemen, retailers and boat owners sometimes on certain terms and conditions to control the flow of produce. Timely availability of ice is vital for this entire sector. Players at local level try to control this factor in order to exert maximum influence and command local market.
Godown owners or Gaddiwala's*	Participate in auction through agents and directly linked to the exporters and processors. He also provides credits to many players in this chain. Also arranges for transport of produce from the local market. He runs the storage house as well as boats.
Wholesalers	Makes arrangement for sales and marketing of products and auction of the same.
Exporters*	Owens processing plants and sells directly or through agents to international market.
Daily labourers for unloading from boats, initial cleaning processing, packaging and loading on trucks.	These people include both men and women. They help in loading and unloading of boats, cleaning the produce, packing and washing as well as selling in local markets.
Local sellers (men and women)	Lots of men women involved in selling low valued products to the local markets from the landing sites. This id done on daily basis.

*Vital players in the entire value chain are highlighted in the table.

Central and State marine fisheries acts, rules, regulations and policies

Comprehensive Marine Fishing Policy (Central Government)

The policy categorically defines “that marine fishery within the territorial waters is the subject of maritime states whereas fisheries beyond this limit within the EEZ fall in the jurisdiction of Central Government”. But at the same time it states that the central government will play an advisory role to the coastal states on the state subject and also will provide financial support in development of the resource.

The policy takes full appreciation of the international conventions in force for conservation, management and sustainable utilization of our invaluable marine wealth, without losing its relevance to the food and livelihood security. It extends beyond the livelihood security of the large coastal population and talks about foreign exchange generation, potential of the sector for employment generation through ancillary activities and stresses specifically on the empowerment of coastal womenfolk.

The main objectives of the policy are:

1. To augment marine fish production of the country up to sustainable level in a responsible manner so as to boost sea food export from the country and also increase per capita fish protein intake of the masses.
2. To ensure socio-economic security of the artisanal fishermen whose livelihood solely depends on this vocation.
3. To ensure sustainable development of marine fisheries with due concern for ecological integrity and bio-diversity

The present policy the Government seeks to bring the traditional and coastal fishermen in focus together with the other stakeholders in the deep-sea sector so as to achieve harmonized development of marine fishery both in the territorial and extra territorial waters of our country. The policy also talks about promotion of the deep sea fishing, infrastructure development, export promotion, implementation of international quality regimes for ensuring food safety in fish and fishery products, principle of Code of Conduct for Responsible Fishing Operations, etc. The policy has been framed to incorporate all the essential components i.e. resource management and utilization, trade development, promotion of the poor fisherman community, infrastructure development but since the coastal fishing is a state subject, it does not ensure the framing of necessary laws, acts and regulations by the coastal state to maintain the nuances of the policy. Hence various lapses are visible in terms of implementation of the policy by different states.

Exim Policy 2002-2007 (Central Government)

The Exim policy for fishery has been an encouraging policy for the overall fishery sector. It categorically states 'Central assistance to States' for development of critical infrastructure for export such as roads, inland container depots, container freight stations, Export Promotion Industrial Parks and for equity participation of private stakeholders in infrastructure projects.

The policy stresses upon the quality aspect of the product and defines schemes to promote the Concept of "Total Quality Management". It also talks about better market access for the exporters and also encourages enhanced marketing efforts by exporters through the concept of "brand promotion".

The policy advocates and defines clearly that there will be '*no quantitative restriction on exports*' and clearly lays out that no license will be required for the import of 125 species/groups of fish, crustaceans, molluscus and other aquatic invertebrates. It restricts the import of Whale and Sharks as per the international convention and allows restricted import of live fishes as specified under EXIM Code 0301.

Orissa Marine Fishery Regulation Act (State Government)

The Orissa Marine Fishing Regulation Act came into force in 1984 (DOF, 1997). The act defines the natural coastal resource as the state property with all the management and usages right defined by the state. It negates the common ownership of the resource by the community and the management rights thereof. The act was formulated mainly to protect the interests of the traditional fishermen, by restricting the fishing operations of the mechanised trawlers to within 5 km from the shore and also prohibits fishing activities of the trawlers from neighbouring states entering into the marine zone of the state.

The act makes mandatory the registration of all the craft operating in the state against the prescribed registration and license fee for different types of vessels. The act gives discretionary power to the government to regulate the fishing operation along the coastline of the state. The state holds the power to regulate the number and type of vessel, area for fishing, period of fishing, species of fishes and the types of fishing gear permissible for fishing. The act clearly defines the role and responsibility of the government officials and also empowers them to taken action against the violators of the act. The penalties levied upon the offender have been defined but at the same time the act has space for appeal against the charges levied by the officials in the office of the appropriate appealing authority. The act has a special mention of offences by the companies and other corporate bodies to check the exploitation of the resources by them.

The act is void of a concrete enforcement plan. For instance, it does not define the human resources required to effectively monitor and control the fishing activity, the sources of fund that would be required to meet the operations, the coordination between various government bodies, so on and so forth.

Results and discussion

Today the total fish production of Orissa is 3, 15,585 metric tones with inland fishery contributing about 1, 93,657 metric tones and marine fishery contributing about 1, 21, 928 metric tones. The total number of marine crafts in Orissa is 12,326 of which the number of mechanized craft is 1636, Motorized craft is 3643 and that of the non motorized/traditional craft being 7047. Total number of fishing gears used is 2, 41,495 of which the number of marine gears is 39,153 and Inland gears used in Orissa is 2, 02,342.

Total area developed for shrimp culture is 12,709 ha (6038 ha is under brackish water shrimp culture) with a production of 7964 MT shrimp during 2001-02. While, shrimp harvested by the marine sector during the same period is 8756 MT.

However, intensive commercial marine fisheries activities and subsequent increase in number of mechanized and motorized crafts has an impact on the overall marine resources of the state. The production of the marine fishes (Commercial species) has been falling down and reason is the over exploitation of the 'capture resources', increased pressure on the limited coastal marine resources, under utilization of the oceanic marine resources, conservation policy of the state and central government, and the illegal fishing by the neighboring states of West Bengal and Andhra Pradesh.

Marine fishery sector has impressively expanded especially under the open market regime but it is unfortunate that the State fishery department is still unable to properly and efficiently utilize its manpower especially at field level due to absolute lack of basic infrastructural facilities and support. Lack of proper planning and monitoring mechanism and many a times constraints in implementation of the same has resulted into gross violation of terms and conditions especially by the trawlers and gill netters. Number of marine craft and quantity harvested is increasing every year but at the same time the overall mesh size is reducing along with reduction in the size of harvest, which means more bycatch and overall degradation of marine ecosystem.

Revolutionary developments took place after 1950's which shaped today's modern fishing sector in India. Some of which are:

- a. Introduction of mechanised fishing vessels and modern gear materials during I & II five year plan periods (1951-60)
- b. Increase in the use of synthetic gear materials during the III five year plan period (1961-65)
- c. Introduction of purse seining during the V five year plan period (1974-78)
- d. Motorisation of artisanal fishing craft in 1979
- e. Substantial growth in the motorised artisanal fleet during 1985-96
- f. Chartering of vessels and joint ventures which began in 1984
- g. Aquaculture development in the V, VI and VII five-year plan periods

This resulted into evolution of fisheries from a subsistence-based livelihood activity of largely poor and rural artisans into an urban-based, capital-intensive commercial industry earning foreign exchange for the country. Then came shift in varieties of fish harvested (from a wide range of finfish to a few high value species like shrimp), the preservation methods employed (more usage of

ice), the location of markets (local to regional and finally to international markets) and the terms of trade. It brought about changes in the relations between all the existing as well as new players in this sector and many a times resulted into conflicts among them for common resource usage rights.

The economic benefits from shrimp trade to the fishing communities have been considerable. Entire mechanised sector developed due to growing international demand for shrimp and still primarily focuses on catching shrimp rather than diversifying the overall catch. As shrimp catch increased, there has been a corresponding prosperity in the fishing villages, which led to a transformation of the fishing activities and operations bringing them in line with the export emphasis. The interactions of the fishing communities with the external world improved and this has certainly raised their social consciousness. However, instances like EU and USA sanctions on Indian seafood imports (due to presence of antibiotics, muddy smell as well as for the issue of turtle excluder device) and frequent price fluctuations in international markets cause great uncertainty for the entire value chain.

Today, there are many other constraints facing the entire value chain which needs to be addressed in order to achieve socio-economic as well as ecological sustainability in the marine fishery sector. These constraints vary in scale for different coastal districts of Orissa. These constraints can be broadly stated as follows:

1. Exploitation by the supply chain
2. Lack of information
3. Poor infrastructure
4. Backdated technology
5. Low pricing
6. Social and gender based issues (like the issue of child labour)
7. Government policies, rules and regulations and lack of monitoring and implementation of the same.

The Central and State government policies should have taken these changes into consideration while framing policies for marine sector. It is all the more important to implement the same properly.

Recommendation

1. OMFRA act not amended for last many years keeping in view the transition in the state deep sea fisheries sector. For instance license fees modification, human resource development for monitoring and appropriate infrastructure development needs immediate attention.
2. Trawling tracks (as most of the boats have fish finder, GPS and transmitters onboard) need to be submitted to the authority for proper monitoring and compliance.
3. Better communication network needs to be established for direct communication between the fisheries department and the fishing vessels (at least the trawlers).
4. Licenses should be issued on the basis of multiple criteria rather than issued only on the basis of sea worthiness at present. This may include number and specifications of gears used, number of days for fishing operation, data sheet submission after every fishing trip.
5. Benefits from heavy subsidies should accrue to the traditional and small boats rather than trawlers. These subsidies and revenue generated should be focused towards the landing site and access network like roads, telecommunication and other infrastructure development.
6. The declaration of Exclusive Economic Zone (EEZ) in 1976 facilitated exploration, exploitation and utilization of marine living resources in the 200 nautical miles Indian EEZ, thereby giving the nation immense opportunities and challenges to harvest the resources and to manage them on a sound scientific basis. However, most of the deep sea fishery resource is beyond the conventional fishing limit. Even after declaration of **Comprehensive Marine Fishing Policy**, the kind of infrastructure and sophisticated crafts required for harnessing these resources is still missing. This has resulted into conflict among country, motorised and mechanised crafts as well as immense damage to the coastal ecology of the State. Increasing instances of bycatch as well as killing of Olive Ridley turtles can also be attributed to this policy failure.
7. More number of ice plants, technologically advanced crafts and support towards purchasing them in the form of soft loans, strict enforcement of gear usage and fishing territory demarcation and strict monitoring of the same is required. This will help avoiding the cases of motorised and mechanised crafts trawling into shallow waters near the coast, which damages the ecology as well as livelihood of traditional fishermen.
8. Paradeep port should facilitate the exports of processed marine products from the State of Orissa, which will help exporters to reduce transportation cost incurred towards exporting the same from ports of neighboring States as well as reduce the revenue loss of State Government.

9. Successful implementation of trawling ban during 15 April to 31 May has been achieved by the State of Orissa for first time during the year 2007. Implementation of fishing ban period has is a welcome decision and needs to be implemented properly.

CASE STUDY

PENTAKOTA: A FISHERMEN COMMUNITY IN ASIA

PURI, ORISSA

Pentakota fishermen community is a 40 year old coastal settlement. It is also one of the largest fishermen communities in Asia. Total population is 30,000 and total number of household is approximately 3500. It comes under the jurisdiction of Puri municipal authority. People from the neighboring State of Andhra Pradesh settled here to earn their livelihood through fisheries. Many of them also own cultivatable land in Andhra Pradesh and they do cultivate it depending on the season and profits accrued from the fisheries activities. There are almost 1000-1500 IBM, OBM and non motorized boats operating from this settlement. It's predominantly a traditional fishermen community and most of the fishing boats operated was non-motorized even a decade back. However, today most of the boats operated are motorized boats. There is complete absence of trawlers or sona boats at least in this community. Motorised boats operate for 3-4 days at a stretch and mostly operate between 20-60 kms. They use 7-10 varieties of fishing gears to harvest specific species of economic importance. Motorised boats focus mostly on harvesting export value as well as high valued fish from deep sea. Shrimp, tuna, bream, pomfret, crab, lobster and shark are high valued target species. There are different gears for catching different species. For instance gill net (bottom set) and disco nets (multiple netting layers) are used to catch shrimps. Disco net is attached to two boats and dragged for 7 kms (1hrs) before harvesting the catch. Both these nets sometimes result into bycatch of turtles but due to short period of operation they successfully release the live turtles back into sea. So, the mortality is minimal in this case. Their area of operation many a times overlaps with the trawlers and sona boats. Operating motorized boats at such a distance is of considerable risk and causes loss of life sometimes. However, the debt trap and urge to earn more money are the primary factors behind their fishing operation in deep sea. OBM attached (it can be detached when the craft lands unlike the IBM) to these boats costs Rs 40,000 and consume 5 ltrs. Of diesel in 2 hrs. These boats ply for total 20 kms and consume 500 ltrs of diesel and 3 ltrs of mobil during each trip. Burnt mobil is changed once they reach the coast which is not the case for trawlers and sona boats. It is reported that trawlers cover roughly 500 kms during each fishing trip of approximately 15-20 days and need to change burnt mobil after every 30-40 kms. In all possibility these burnt mobil are dumped into the sea which causes pollution and affect the marine ecosystem. It is also reported that the motorized boats many a times loose nets due to trawlers which result into huge losses in terms of costly nets as well as fish caught. They can't even claim compensation from them as they are quite hostile towards them. Gear used to catch tuna costs around Rs 100,000 and losing such net amounts to enormous loss for the boat owner. Furthermore, it was reported that the number of sona boats are more than the trawlers and these boats are the one which cause most of the problem in terms overlapping fishing zones specified for traditional, motorized as well as trawlers. Sona boats use variety of fishing gears including trawl nets even near the coasts (within 5 kms). This results into bycatch as well as mortality of turtles. There is also a huge demand for shrimp brooders mostly caught by boats fishing between 10-60 kms. Hatcheries operating in the neighboring state of Andhra Pradesh mostly purchase brooders in order to meet the demand of hatchery seeds generated by thousands of hectares of aqua farms scattered along the east coast of India. This is causing enormous damage to the marine biodiversity and also responsible for the reduction of shrimp catch.

The price of these brooders depends upon its grade.

1. Gravid (with eggs) Rs 20,000
2. Grade IV Rs 15,000 to 18,000
3. Grade III Rs 7000 to 10,000
4. Grade II Rs 3000 to 4000

Quantum of landed shrimp has reduced in last 10-15 years. The indiscriminate catch of brooders for hatcheries seems to be the primary reason behind this. The reduction in catch has been mostly reported by motorized as well as traditional boats after 1999. One month fishing ban period declared by the state government has been gladly accepted by these fishermen but they blame the trawlers and sona boats for unsustainable fishing operation. Motorized boats have to travel further deep inside the sea at least in order to achieve break even and recover the operating cost if not the profits. This includes the higher cost towards fuel and ice which ultimately land them into losses and debt trap.

ANNEXURE

List of NGOs involved in Social Training under Fisheries Sector

Sl.	Name of the NGOs	Address	Regd. No	Area of operation	Activity
1	Costal people's Development Association (CPDA)	At/ Po-Konark Dt-Puri-752111	2435-107/90-91.	Konark, Chandrabhaga area of Puri District	Involved in training of fisherwomen in social sectors like - Family health, Hygiene, Mother & child care, Sanitation, Nutrition etc.
2	People's Empowerment and Need based Community Development (PENCODE)	At/Po- Puri Water Works Road, In front of Block Office, Dist-Puri-752002. Orissa.	5293-45/01.06.2000	Penthakota area of Puri District	
3	Benevolent Institution For Kids, Aged & Social Humanity (BIKASH)	At- Chirol, Po- Guagadia, Via- Ertal, Dist- Bhadrak-756124	BLS-3799-1749	Bhadrak District	
4	Alternative For Rural Movement (ARMS)	At/ Po-Badhupal P/S-Baliapal, Dist- Balasore-756026.	BLS-2723-681/89-90.	Baliapal area of Balasore District	
5	United Artists' Association (UAA)	At/Po/Dist-Ganjam Orissa-761026.	4287/95-96	Ganjam District	

LIST OF PROCESSING PLANT, COLD STORAGES, CHILL STORE, ICE PLANT & PEELING SHED

OPERATING IN ORISSA AS ON 31.03.2001

SL.	Name and Address	E.I.A. Code No.	Capacity of Processing Plant (MT)	Capacity of Cold Storage (MT)	Capacity of Chill Room	Capacity of Peeling Shed(MT)	Capacity of Ice Plant (MT)
1	2	3	4	5	6	7	8
1	M/S BIJAYA MARINE PRODUCTS. AT: ATHARNALA PATNA, PO: GOPINATHPUR, DIST. PURI-752002	343	09.5	50.0	----	6.5	----
2	M/S SRIJAGANNATH EXPORTS & IMPORTS. AT: ATHARNALA PATNA, PO: GOPINATHPUR, DIST. PURI-752002	387	04.0	40.0	----	3.0	----
3	M/S S CHANCHALA COMBINES, AT: ATHARNALA PATNA, PO : GOPINATHPUR, DIST. PURI-752002	358	14.0	130.0	----	----	15.0
4	M/S PATRA EXPORTS PVT LTD., AT: GOKHARA, PO. BRAHMAGIRI, DIST. PURI	344	10.0	100.0	----	1.5	----
5	M/S VEEJAY IMPEX, CHAKRATIRTHA ROAD, DIST. PURI-752002	346	12.0	80.0	----	----	----

6	M/S SURYO UDYOG LTD. INDUSTRIAL ESTATE, PAADIP GARH, PARADIP, DIST. JAGATSINGHPUR	335	31.5	320.0	----	6.0	20.0
7	M/S FALCON MARINE EXPORTS LTD. 1067, OSIC INDUSTRIAL ESTATE, PARADIP GARH, PARADIP, DIST. JAGATSINGHPUR.	336	17.0	230.0	----	1.0	----
8	M/S ADITYA UDYOG, AT: TELENGAPENTHA, DIST. CUTTACK	370	23.0	300.0	40.0	1.5	10.0
9	M/S UTKAL XPORTS (A) M/S S.B. AGRO (INDIA) LTD. (LEASEE) INDUSTRIAL ESTATE, MANCHSWAR, BBSR-751010	333	08.5	50.0	----	0.5	----
		374	03.5	90.0		-	
10	M/S FALCON MARINE EXPORTS LTD. 138, ZONE-B, MANCHESWAR INDUSTRIAL ESTATE, BBSR-751010	332	10.0	130.0	----	1.5	----
11	M/S CAPITAL FREEZING COMPLEX (A) M/S SK EXPORTS PVT LTD (LESSEE) (B) M/S NOBLE AQUA PVT LTD (LESSEE) 139, SECTOR-A, MANCHESWAR INDUSTRIAL ESTATE, BHUBANESWAR-751010	379	08.0	50.0	----	----	
		368	03.0	40.0			

12	M/S SUNSHINE PACKAGING INDUSTRIES (A) M/S ALSA MARINE & HARVEST LTD (LESSEE) 138, SECTOR-A, ZONE-B, MANCHESWAR INDUSTRIAL ESTATE, BHUBANESDWAR-751010	331	11.0	80.0	----	1.5	-----
13	M/S THE CAPITAL FREEZING COMPLEX, CHAMPAJHAR, DIST. KHURDA	384	14.0	100.0	----	5.0	-----
14	M/S SURYO FOODS AND INDUSTRIES LTD. AT/PO: KURUDA, DIST. BALASORE	380	06.0	250.0	15.0	2.0	----
15	M/S KALINGA MARINES AND TRANSPORT PVT.LTD. (A) M/S NAVAYUGA EXPORTS LTD. (LESSEE) AT: SHAMPUR, PO: GHATIKIA, BHUBANESWAR	355	28.0	400.0	----	7.0	10.0
16	M/S SEALAND FISHERIES PVT. LTD. BIRUAN, N.H.5, DIST. BALASORE	342	08.0	110.0	----	2.0	10.0
17	M/S SL TEXTILES PVT. LTD. S-3/81 &82, MANCHESWAR INDUSTRIAL ESTATE, BHUBANESWAR-751010	----	04.0	40.0	----	----	----

Source: MPEDA, Bhubaneswar

Boat Building Yards in Orissa				
Sl.	Name of the boat building yard	Location	Type of boat	Annual Production
1	2	3	4	5
Balasore				
1	Water Inland Transport	Dhamara	Trawler	3
Khurda				
2	M/S Mechem (Pvt.) Ltd.	Bhubaneswar	FRP Trawler	50
Kendrapara				
3	M/S Jay Maa Kali Engineering works	Aul	Trawler/Gillnetter	20
Jagatsinghpur				
4	(i) Maitra Marine Engineering works	Choumuhani	Trawler/Gillnetter	20
5	(ii) Mahanadi boat building yard.	Atharbanki	Trawler/Gillnetter	30
6	(iii) Karim Boat building Yard.	Atharbanki	Trawler/Gillnetter	20
7	(iv) Bhagyalaxmi Boat Builder.	Sandhakud	FRP/BLC	30
Ganjam				
8	(i) Sagarika Enterprises	Sana-Nolia-Nuagaon	FRP	10
9	(ii) Mr. Rammurty	Gopalpur on Sea	FRP	20
10	(iii) Mr. Krishna Rao	Gopalpur on Sea	FRP	10
11	(iv) Mr. Raja Rao	Garampeta	FRP	10
Puri				
12	(i) Orissa Marines	Penthakata	FRP Catamarans	96
			BLC(Ind-200)	36
13	(ii) Sarada Marines	Penthakata	FRP Boats	24
14	(iii) Baba Marines	Chandrabhaga	FRP Catamarans BLC(Ind-200)	50
15	(iv) Ajaya Marines Builders	Nuagarh, Astaranaga	FRP Catamarans BLC(Ind-200)	48
16	(v) Aaisaesswar Builders	Alasahi, Astaranga	FRP Catamarans BLC(Ind-200)	36
17	(vi) Trahi Achyuata Fibreglass	Alasahi,	FRP Catamarans	24

	Boat Work	Astaranga	BLC(Ind-200)	
18	(vii) M/S Behera Industry	Balidiha, Astaranga	FRP Catamarans BLC(Ind-200)	24

**DISTRICT WISE PRIMARY FISHERMEN CO-OP. SOCIETIES (ACTIVE) AS
ON 31.3.2001**

Sl.	District	No. of Primery Fishermen Co-op Society			Total Membership of the Societies		
		Inland	Marine	Total	Inland	Marine	Total
1	2	3	4	5	6	7	8
1	Cuttack	85	-	85	7153	-	7153
2	Jajpur	31	-	31	2409	-	2409
3	Kendrapara	25	7	32	4186	1114	5300
4	Jagatsinghpur	26	5	31	11965	896	12861
5	Puri	32	16	48	2926	3600	6526
6	Khurda	8	-	8	226	-	226
7	Nayagarh	13	-	13	674	-	674
8	Balasore	8	19	27	1304	4584	5888
9	Bhadrak	19	15	34	2275	3858	6133
10	Mayurbhanj	22	-	22	1562	-	1562
11	Ganjam	30	16	46	4453	5599	10052
12	Gajapati	4	-	4	721	-	721
13	Kandhamal	1	-	1	54	-	54
14	Boudh	6	-	6	256	-	256
15	Kalahandi	19	-	19	672	-	672
16	Nuapada	4	-	4	478	-	478
17	Koraput	6	-	6	752	-	752
18	Nawarangpur	5	-	5	454	-	454
19	Malkangiri	4	-	4	776	-	776
20	Rayagada	3	-	3	335	-	335
21	Sambalpur	7	-	7	2948	-	2948
22	Jharsuguda	5	-	5	1386	-	1386
23	Deogarh	8	-	8	2004	-	2004
24	Baragarh	8	-	8	1120	-	1120
25	Sundargarh	15	-	15	850	-	850
26	Bolangir	9	-	9	409	-	409

27	Sonepur	7	-	7	1088	-	1088
28	Keonjhar	26	-	26	1974	-	1974
29	Dhenkanal	30	-	30	1655	-	1655
30	Angul	8	-	8	608	-	608
	TOTAL	474	78	552	57673	19651	77324
31	Chilika	86	-	86	21970	-	21970
	GRAND TOTAL	560	78	638	79643	19651	99294

District wise and landing centre wise crafts operating under marine sector,2000-01										
Sl. No.	District/Landing centre	MECHANISED BOATS				MOTORISED BOATS				Non-motorised boats
		Wooden trawler	Sona trawler	Gill netter	Total	IBM	OBM	BLC/FRP	Total	
	BALASORE									
1	Chandipur	210	80	30	320	61			61	1
2	Kasafal	80	5	210	295	75			75	60
3	Khandia				0	130			130	20
4	Mahisali				0	210			210	15
5	Talasari	2		14	16	89			89	85
6	Kirtania				0	84			84	90
7	Hanskura				0	45			45	135
8	Kankadapal				0	18			18	35
9	Choumukha				0	28			28	95
10	Panchubisa				0	70			70	40
11	Jamuca				0	80			80	35
12	Gadeisagar				0	25			25	27
	Sub total I	292	85	254	631	915	0	0	915	638
	BHADRAK									
1	Dhamara	85	5	72	162	150			150	65
2	Chandinipal			55	55	50			50	130
3	Karanpalli				0	8			8	28
4	Kaithkola				0	12			12	17
5	Karanjamal				0	5			5	28
6	Baincha				0	1			1	18
7	Chudamani	35		66	101	84			84	190
8	Kasia				0	101			101	0
9	Bideipur				0	5			5	28
10	Kansabansa				0	6			6	52
	Sub total II	120	5	193	318	422	0	0	422	556
	JAGATSINGHPUR									
1	Sandhakud				0		354		354	56
2	Ghanagolia			22	22	238			238	108
3	Chowmuhani				0				0	486
4	Noliasahi				0	6			6	796
5	Bandar				0	27			27	398
6	Paradeep	196	146		342	78			78	0
	Sub total III	196	146	22	364	349	354	0	703	1844
	KENDRAPARA									

1	Kajalpatia			20	20	90			90	145
2	Kharinasi			50	50	130			130	210
3	Jamboo			20	20	90			90	85
4	Kandarpattia			20	20	25			25	100
5	Tantiapal			10	10	25			25	67
6	Talchuan	30	6	88	124	180			180	486
7	Barune			10	10	39			39	232
8	Gopalpur				0	18			18	23
	Sub total IV	30	6	218	254	597	0	0	597	1348
	PURI									
1	Kaliakana				0		8		8	38
2	Nuagar	23	46		69		28		28	20
3	Sahan				0		6		6	28
4	Toila				0		1		1	5
5	Gundalaba				0		2		2	7
6	Anakana				0		2		2	9
7	Chandrabhanga				0		90		90	83
8	Ramchandi				0				0	2
9	Pentakota				0		545	85	630	430
10	Digabareni				0				0	
11	Sapakothi				0				0	190
12	Harachandi				0				0	18
13	Arakhakuda				0				0	164
14	Khirisahi				0				0	23
15	S. Ramlanka				0				0	33
	Sub total V	23	46	0	69	0	682	85	767	1050
	GANJAM									
1	Prayagi				0		20		20	72
2	Kamtoagada				0		30		30	108
3	Gokharkuda				0				0	55
4	Rushikulya				0				0	150
5	Nolia Nuagaon				0		20		20	215
6	Sana Aryapalli				0	3	59		62	150
7	Bada Aryapalli				0	3	20		23	65
8	Raikaturu				0	4	3		7	72
9	Gopalpur				0	20	20		40	74
10	New Boxipalli				0	3	4		7	110
11	N.Golabandha				0		10		10	140
12	Garampetta				0		1		1	65
13	Markandi				0		2		2	100
14	Ramayapatna				0		8		8	88
15	Sonapur				0		0		0	47
16	Patisonapur				0		9		9	100
	Sub total VI	0	0	0	0	33	206	0	239	1611
	Grand Total	661	288	687	1636	2316	1242	85	3643	7047

LIST OF SEAFOOD EXPORTERS FROM ORISSA

Sl.	Name of the Exporter	Address of the Exporter
1	M/s Suryo Udyog Limited	A-54/1 & A-55/1, Nayapalli, Baramunda, Bhubaneswar - 751 003
2	M/s Aditya Udyog	A-54/1 & A-55/1, Nayapalli, Baramunda, Bhubaneswar - 751 003
3	M/s Suryo Foods & Industries Ltd.	A-54/1 & A-55/1, Nayapalli, Baramunda, Bhubaneswar - 751 003
4	M/s Falcon Marine Exports Ltd.	A-22, Falcon House, 1st Floor, Cuttack Road, Bhubaneswar - 751 006
5	M/s Noble Aqua Pvt. Ltd.	A-228, Sahid Nagar, Bhubaneswar - 751 007
6	M/s Sealand Fisheries Pvt. Ltd.	HIG - 87, Kanan Vihar, Chandrasekharpur, Bhubaneswar - 751 007
7	M/s Konark Aquatics Exporters Pvt. Ltd.	Plot No. - 1, Sahid Nagar, Bhubaneswar - 751 007
8	M/s Bijaya Marine Products	At - Atharnalla Patna, P.O.: Gopinathpur, Dist: Puri - 752 002
9	M/s TEEKAY MARINE Pvt. Ltd.	560 - Sahid Nagar, Bhubaneswar - 751 007
10	M/s Rayson's Aquatic Pvt. Ltd.	39 - A, BJB Nagar, Bhubaneswar - 751 014
11	M/s Magnum Seafoods Pvt. Ltd.	132-A, Sector - A, Zone - A, Mancheswar Industrial Estate, Bhubaneswar - 751 010
12	M/s Seagold Overseas Pvt. Ltd.	1-F/2, Park Tower, Unit - 6, Ganganagar, Bhubaneswar - 751 009
13	M/s Dhamarai Marine Exports Pvt. Ltd.	College Chhak, Post/Via: Basudevpur, Dist: Bhadrak - 756 125
14	M/s Chanchala Combines	At - Atharnalla Patna, P.O.: Gopinathpur, Dist: Puri - 752 002
15	M/s Sri Jaganath Export & Import	At - Atharnalla Patna, P.O.: Gopinathpur, Dist: Puri - 752 002
16	M/s Odissa Exim. House Pvt. Ltd.	B-166, BDA Duplex Colony, Baramunda, Bhubaneswar - 751 005
17	M/s Mahabir Exports	Gol - 12, VSS Nagar, Bhubaneswar - 751 010
18	M/s Padmasa International	A-47, Pallaspalli, Bhubaneswar - 751 020
19	M/s Sun Impex	HIG - 190, Kanan Vihar Phase-I, Chandrasekharpur, Bhubaneswar - 751 031
20	M/s Fabri Food Products	HIG - 137, Kanan Vihar Phase-I, Chandrasekharpur, Bhubaneswar - 751 031
21	M/s Noble Aqua Pvt. Ltd., Shyam Sundar Marine Export Pvt. Ltd.	College Squire, Jagannathpur, Bhadrak
22	M/s Laxmi Enterprises	At/PO: Bhoi Sahi, Balasore
23	M/s Ram Assorted Cold Storage Ltd.	A-54/1 & A-55/1, Nayapalli, Baramunda, Bhubaneswar - 751 003

Districtwise and landing centre wise gears under marine sector,2000-01									
Sl. No.	District/Landing centre	Type of gears							Total
		Trawl net	Gill net	Sarani jal	Bedha jal	Binti jal	Phasa jal	Ghani jal	
	BALASORE								
1	Chandipur	870	184						1054
2	Kasafal	255	690						945
3	Khandia		300						300
4	Mahisali		450						450
5	Talasari		348						348
6	Kirtania		358						358
7	Hanskura		360						360
8	Kankadapal		106						106
9	Choumukha		246						246
10	Panchubisa		220						220
11	Jamuca		230						230
12	Gadeisagar		104						104
	Sub total I	1125	3596	0	0	0	0	0	4721
	BHADRAK								0
1	Dhamara	270	570						840
2	Chandinipal		470						470
3	Karanpalli		72						72
4	Kaithkola		60						60
5	Karanjamal		70						70
6	Baincha		40						40
7	Chudamani	105	680						785
8	Kasia		220						220
9	Bideipur		70						70
10	Kansabansa		120						120
	Sub total II	375	2372	0	0	0	0	0	2747
	JAGATSINGHPUR								0
1	Sandhakud			65			425		490
2	Ghanagolia		30	105	201	65	315	55	771
3	Chowmuhani			215	210	60	300	30	815
4	Noliasahi		10	105	45	350	351	35	896
5	Bandar		20		115		300	70	505
6	Paradeep	1200							1200
	Sub total III	1200	60	590	571	475	1691	190	4777

Districtwise and landing centre wise gears under marine sector,2000-01									
Sl. No.	District/Landing centre	Type of gears							Total
		Trawl net	Gill net	Sarani jal	Bedha jal	Binti jal	Phasa jal	Ghani jal	
	KENDRAPARA								0
1	Kajalpatia		30		109	205	105	25	474
2	Kharinasi		55		135	225	205	45	665
3	Jamboo		20		90	101	55	25	291
4	Kandarpatia		20		100	155	25	15	315
5	Tantiapal		10		25	15	35	15	100
6	Talchuan	105	45	15	180	25	105	45	520
7	Barune		10	5	220	55	35	15	340
8	Gopalpur				15	15	25	15	70
	Sub total IV	105	190	20	874	796	590	200	2775
	PURI								0
1	Kaliakana		18						18
2	Nuagar	117							117
3	Sahan		14						14
4	Toila		6						6
5	Gundalaba		9						9
6	Anakana		11						11
7	Chandrabhanga		431						431
8	Ramchandi		4						4
9	Pentakota		12600						12600
10	Digabareni								0
11	Sapakothi		1900						1900
12	Harachandi		180						180
13	Arakhakuda		640						640
14	Khirisahi		230						230
15	S. Ramlanka		140						140
	Sub total V	117	16183	0	0	0	0	0	16300
	GANJAM								0
1	Prayagi		165						165
2	Kamtoagada		550						550
3	Gokharkuda		365						365
4	Rushikulya		300						300
5	Nolia Nuagaon		940						940
6	Sana Aryapalli		1050						1050
7	Bada Aryapalli		350						350
8	Raikaturu		165						165
9	Gopalpur		268						268
10	New Boxipalli		242						242
11	N.Golabandha		300						300
12	Garampetta		133						133
13	Markandi		720						720
14	Ramayapatna		620						620
15	Sonepur		925						925
16	Patisonapur		740						740
	Sub total VI	0	7833	0	0	0	0	0	7833

	Grand Total	2922	30234	610	1445	1271	2281	390	39153
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Fishermen population under marine sector, 2000-01					
<i>District</i>	<i>No. of households</i>	Fishermen population			
		<i>Male</i>	<i>Female</i>	<i>Children</i>	<i>Total</i>
Balasore	14489	24923	23938	53961	102822
Bhadrak	6980	14362	12503	19916	46781
Jagatsinghpur	6915	11377	10239	16309	37925
Kendrapara	6216	12299	11353	16721	40373
Ganjam	7088	10641	10020	17049	37710
Puri	11332	20889	18087	28185	67161
TOTAL	53020	94491	86140	152141	332772

Countrywise export of marine products from Orissa,2000-01			
<i>Sl. No.</i>	<i>Country</i>	<i>Quantity (In kg.)</i>	<i>Value (In Rs.)</i>
1	JAPAN	3827845	1746656320
2	USA	2002173	794013225
3	UK	1207664	602322724
4	BELGIUM	278732	64365048
5	UAE	704865	127963066
6	CHINA	1391464	107263004
7	THAILAND	93269	44990235
8	CANADA	210353	78779902
9	SINGAPORE	14853	8455309
10	GERMANY	81988	33699815
11	MALAYASIA	66740	14164705
12	KOREA	51256	5395639
13	NETHERLAND	113500	16757874
14	FRANCE	55982	15013309
15	HONG-KONG	234870	15826151
16	VIETNAM	114750	65523748
17	ITALY	60540	8689406
18	AUSTRALIA	50032	12955440
19	INDONESIA	49390	21356261
20	DENMARK	34225	6799389
	TOTAL	10644491	3790990570

Itemwise export of marine products from Orissa during 2000-01			
<i>Sl. No.</i>	<i>Item</i>	<i>Quantity (In kg.)</i>	<i>Value in lakhs (In Rs.)</i>
1	Frozen shrimp	7884594	3522099782
2	Cooked shrimp	21732	3585365
3	Frozen scampi	214953	121441793
4	Frozen pomfret	583090	76662744
5	Frozen sheer fish	34650	3295188
6	Frozen cuttle fish	429120	25195534
7	Frozen ribbon fish	1178550	18530566
8	Frozen cut crab	66682	7593948
9	Dry fish	26610	3884466
10	Frozen sole fish	204510	8701184
	TOTAL	10644491	3790990570

Districtwise and landing centre wise crafts operating under marine sector,1996-97						
<i>Sl. No.</i>	<i>District/Landing centre</i>	<i>MECHANISED BOATS</i>		<i>MOTORISED BOATS</i>	<i>Total number of mechanised and motorised boats operated</i>	<i>Total number of non mechanised boats operated</i>
		<i>Wooden trawler</i>	<i>Gill netter</i>			
	BALASORE					
1	Chandipur	221	58	50	329	693
2	Kasafal	72	160	15	247	142
3	Khandia			134	134	51
4	Mahisali		22	10	32	18
5	Talasari		18	24	42	240
6	Kirtania		20	30	50	301
7	Hanskura		5	135	140	10
8	Kankadapal		27	7	34	8
9	Choumukha			167	167	7
10	Panchubisa		5	8	13	11
11	Jamuca		4	7	11	9
12	Gadeisagar		3	5	8	10
	Sub total I	293	322	592	1207	1500
	BHADRAK					
1	Dhamara	49	105	117	271	158
2	Chandinipal			67	67	125
3	Karanpalli			28	28	90
4	Kaithkola			11	11	15
5	Karanjamal			11	11	12
6	Baincha			6	6	37
7	Chudamani	10	75	38	123	305
8	Kasia		5	4	9	12
9	Bideipur		5	18	23	115
10	Kansabansa		30	35	65	71
	Sub total II	59	220	335	614	940

Districtwise and landing centre wise crafts operating under marine sector,1996-97						
Sl. No.	District/Landing centre	MECHANISED BOATS		MOTORISED BOATS	Total number of mechanised and motorised boats operated	Total number of non mechanised boats operated
		Wooden trawler	Gill netter			
	JAGATSINGHPUR					
1	Sandhakud			410	410	129
2	Ghanagolia			234	234	111
3	Chowmuhani			28	28	50
4	Noliasahi			52	52	75
5	Bandar			71	71	124
6	Paradeep	267			267	
	Sub total III	267	0	795	1062	489
	KENDRAPARA					
1	Kajalpatia	2		16	18	20
2	Kharinasi			100	100	15
3	Jambo			39	39	24
4	Kandarpatia			20	20	10
5	Tantiapal			22	22	15
6	Talchuan	28	40	60	128	120
7	Barune		8	20	28	130
8	Gopalpur			10	10	40
	Sub total IV	30	48	287	365	374
	PURI					
1	Kaliakana			12	12	40
2	Nuagar	39		55	94	70
3	Sahan			25	25	25
4	Toila				5	15
5	Gundalaba			6	6	10
6	Anakana			5	5	10
7	Chandrabhanga			99	99	131
8	Ramchandi			5		12
9	Pentakota			1172	1172	1612
10	Digabareni				0	147
11	Sapakothi				0	66
12	Harachandi			5	5	68
13	Arakhakuda			80	80	427
14	Khirisahi				0	72
15	S. Ramlanka				0	
	Sub total V	39		1464	1503	2705
	Grand Total	688	590	2009	4751	6008

Year and district wise marine fish landing (In MT), 1985-2001							
YEAR	DISTRICT						
	Balasore	Bhadrak	Ganjam	Jagatsinghpur	Kendrapara	Puri	Cuttack
1985-86	23699		6570			9966	13346
1986-87	26139		5965			9803	13417
1987-88	24916		8799			7537	18708
1988-89	26349		6424			8111	19236
1989-90	40799		5456			8005	23635
1990-91	32502		6617			10339	28734
1991-92	37220		6036			17194	34576
1992-93	53793		5658			16979	42946
1993-94	25320	7856	6108	32309	13479	18853	
1994-95	31736	16244	5937	30877	14172	23926	
1995-96	33153	9202	6381	35372	16518	22573	
1996-97	35491	9903	6009	35085	20405	26569	
1997-98	40965	11056	10229	43172	22287	28372	
1998-99	29511	7665	6973	35799	14709	29672	
1999-00	31515	8942	8116	36659	13758	26945	
2000-01	34915	9350	6777	33899	13206	22939	

SHRIMP/PRAWN PRODUCTION IN ORISSA (IN MT)								
YEAR	MARINE			BRACKISH WATER			Brackish water Cultured (Penaeid)	Total II
	Penaeid	Non Penaeid	Total	CHILIKA				
				Penaeid	Non Penaeid	Sub Total		
1	2	3	4	5	6	7	8	
1985-86	2734	1116	3850	612	531	1143	205	5198
1986-87	3141	1221	4362	816	773	1589	904	6855
1987-88	2374	877	3251	527	714	1241	1075	5567
1988-89	2551	850	3401	420	497	917	1860	6178
1989-90	3145	1412	4557	709	468	1177	2900	8634
1990-91	3120	1359	4479	233	248	481	2564	7524
1991-92	2962	1352	4314	448	428	876	3715	8905
1992-93	3517	1508	5025	538	413	951	3992	9968
1993-94	2442	1138	3580	381	305	686	4344	8610
1994-95	3030	2848	5878	92	84	176	4668	10722
1995-96	3320	2891	6211	79	134	213	6957	13381
1996-97	3566	3292	6858	71	210	281	6627	13766
1997-98	4330	8354	12684	150	0	150	4873	17707
1998-99	3630	4262	7892	137	0	137	6256	14285
1999-00	6556	3353	9909	180	0	180	3081	13170
2000-01	6609	2147	8756	1071	225	1296	6430	16482

Sona boat specifications

Particulars	Large	Medium	Small
Length, Breadth and Height	52,14-16, 14-12	48,14,12	36,12,12
Engine (smaller boats have 1 cylinder engines of 5-15 BHP)	106 BHP , 6 cylinder	90 BHP, 6 cylinder	70 BHP , 6 cylinder
Optimum cruise depth	150 ft	100-120 ft	80-100 ft
Fuel consumption rate	10 ltrs per hour	8 ltrs per hour	6-7 ltrs per hour
Ice loaded per trip	6-7 tons	4-5 tons	3-4 tons
Drinking water loaded per trip	2000 ltrs	1500 ltrs	1000 ltrs
Fuel (diesel) filled up per trip	2000 ltrs	1200 ltrs	600-800 ltrs
Number of fishing days per trip	10-15 days	6-8 days	4-5 days
Considered good fishing period during any given year	July to October		
Communication facilities	All boats have VHF radio transmitter cum receiver on board. Many have GPS and fish finder (eco sounder) onboard too.		
Number of trawlers operating from Balaramgari landing facility.	400 trawlers operate from this landing site. However, only 250 licenses are issued for this landing site. This indicates that many boats landing here may be registered (license) with other landing sites and many other doesn't even are licensed with the authority. Almost 10% of fishing vessels dock at this landing site at any given day.		
Gear drag period each time	4 hrs (Speed 0.5 km per hour)	4 hrs (Speed 0.5 km per hour)	4 hrs (Speed 0.5 km per hour)
Trawl net mesh size (Mouth end, mid end, cod end)	60,40,10	60,40,10	60,40,10

Deep sea trawler vs Sona Trawler specifications

Sl. No.	Particulars	Deep Sea Trawlers	Sona Boats
	Price	3-4 Crores	20-23 lakhs
	Fishing duration (in days)	45 days	8-10 days
	Operating range	300-400 kms	150-200 kms
	Minimum range of operation	30 kms and beyond	Even within 5 kms from coastline
	Government regulation for fishing range	Beyond 30 kms from coastline	Beyond 30 kms from coastline
	Number of gears used	10-15	8-6
	Limit of gears used at a given point of time.	4	2
	Gear drag period each time	4 hrs	4 hrs
	Standard calculation		For 1 ltr. of diesel, there is an additional investment of Rs 5 towards ice, food and share of fishermen employed on boat.
	Breakeven point for operating the boat.		5-6 lakhs
	Expenditure during each trip		
	Monthly expenditure	20,00,000	1,70,000
	Average profit	10,00,000	50,000 to 60,000
	Average loss	4,00,000 to 5,00,000	30,000 to 40,000
	Fuel requirement	36,000 ltrs. of diesel	2000 ltrs.
	Mobil requirement during each trip	50 ltrs.	5 ltrs.
	Subsidy on fuel (diesel)		Harbor is having the facility of refueling and the subsidy is calculated on the annual consumption of fuel by a boat. It is reported that the boats get 50 paisa subsidy on every liter of fuel purchased. This is only applicable in case of boats having licensed with the proper authority.

	Make	Iron/steel/plastic	Wood
	Number of boats operating	30 approx.	700 approx.
	Tracking device (GPS) and transmitter attachment	All	Mostly having transmitter (for getting information on potential fishing zone) but almost all have tracking device like GPS so that the boat owner can track the boats.
	Closed period for fishing	April to May	April to May
	Limited ban on fishing for turtle conservation	November to March	November to March
	Conducive period for fishing	Winter (November-December)	Winter (November-December)
	Open fishing period	April to October	April to October
	Source of gears	Mumbai	Mumbai
	Rate of fuel consumption	20-25 ltrs. Per hour	10 ltrs. Per hour
	Capacity of the landing site	Total 500 licenses issued for this landing site. However, the total number of boats (more than 700) exceeds the capacity of the landing site and may be either don't have valid licenses or having license from other landing site.	
	Licensing authority	Fisheries dept. and MPEDA	Fisheries dept. and MPEDA
	Need for license renewal	Every year	Every year
	Variety of shrimp caught	7	7
	Most valued species	Tiger shrimp	Tiger shrimp
	Fluctuation in landed shrimp prices reported	Mostly during the month of July every year. This may be due to increase in landing of shrimps caught by boats.	
	Good period of shrimp catch reported	June to August	June to August
	Reduction in landing	February to June	February to June
	Reasons reported for overall reduction in landing	5 to 6 petrochemical, fertilizer and other industrial units are operating along the coast and seems to be discharging waste (may be toxic and untreated/semi treated) either directly in the sea or discharging in the river Mahanadi which meets the sea here. Moreover, it is also quite nearby place from Rajkanika (Bitarkanika).	
	Drastic reduction have been	Year 2000. Throughout the period of 80's and 90's	

	observed after the year	trawlers and sona boats were very popular and were used to have good catch till the year 2000.	
	Example of price fluctuation during the month of July every year	Initially 100 kg fetches Rs 25,000 but finally it is negotiated at Rs 15,000 to 16,000. This is either due to more catch/landing or reduction in international prices.	
	Harbor allotted for boats	Inside Port area.	Outside Port area (Nehru Bangla).
	Harbor usage charge	Heavy charges for using Paradip port facility (access through gate number 5 and are provided heavy security)	Nominal charges towards usage of Nehru Bangla harbor facility.

Marine crafts number variation between 1996 and 2001

	96-97	00-01	96-97	00-01	96-97	00-01	96-97	00-01	96-97	00-01
	Balasore	Balasore	Bhadrak	Bhadrak	Jagatsinghpur	Jagatsinghpur	Kendrapara	Kendrapara	Puri	Puri
Trawlers/Sonotrawlers/Gillnetter	615	631	297	318	267	364	78	254	39	69
IBM/OBM/BLC/FRP	592	915	335	422	795	703	287	597	1464	767
Non motorised crafts	1500	638	940	556	489	1844	374	1348	2705	1050

Month wise marine fish landings in different districts of Orissa for the year of 2005-06

<i>District</i>	<i>April</i>	<i>May</i>	<i>June</i>	<i>July</i>	<i>August</i>	<i>September</i>	<i>October</i>	<i>November</i>	<i>December</i>	<i>January</i>	<i>February</i>	<i>March</i>	<i>Total</i>
Balasore	819.1	305.6	1768	2857	3255.5	3619.7	4253.5	4935.6	5040	3361.4	2199.6	1373.2	33789
Bhadrak	185.3	72	891.8	1068	1419.3	1544.1	1658.4	1396.3	1319.4	670.8	430.7	200.4	10856
Kendrapara	236.1	165.9	256.6	381	591.55	881.2	958.3	809.3	1831.15	790.5	716.2	352.95	7970.5
Jagatsinghpur	349.2	519.9	580.7	772	670.88	1162.35	3675.31	6875.14	5244.15	4528.8	3388.32	3241.3	31008
Puri	1391	279.5	1363	1243	1935.5	2364.93	2324.15	3206.79	2826.8	3707.35	4366.7	3548.3	28557
Ganjam	916.8	542.7	498.1	428	619.4	510.87	502.27	1188.3	1450.2	1254	1039.86	1083.5	10034
Total	3897	1886	5358	6748	8492.1	10083.15	13371.9	18411.43	17711.7	14312.9	12141.38	9799.6	122214

District wise shrimp landing, 2000-01				
District	Penaeid shrimp Landed(In MT)	Value of Penaeid shrimp landed (In Lakhs Rs.)	Non Penaeid shrimp(In MT)	Value of Non Penaeid shrimp landed (In Lakhs Rs.)
Balasore	2733.34	8200.02	1037.99	622.79
Bhadrak	475.88	1427.64	222.14	133.28
Jagatsinghpur	2337.25	8180.38	568.73	682.48
Kendrapara	66.28	198.84	83.25	99.9
Puri	874.27	2622.81	110.2	132.24
Ganjam	121.67	486.68	124.92	49.97
Orissa	6608.69	21116.37	2147.23	1720.66

Craftwise marine fish production		
Marine craft type	Number of Crafts	Total marine fish landing (in MT)
Mechanised crafts	1636	50551
Motorised crafts	3643	41341
Non motorised crafts	7047	29192

Percentage contribution of gears used in mechanised boats to the total marine landings of Orissa (district wise) for the year 2005-06					
Sl.No.	District	Mechanised			
		Trawl net	Gill net	Total	%
1	Balasore	12906.00	3681.10	16587.10	49.09
2	Bhadrak	4258.20	1949.50	6207.70	57.18
3	Kendrapara		2224.78	2224.78	27.91
4	Jagatsinghpur	19496.75	3034.89	22531.64	72.66
5	Puri	1482.00		1482.00	5.18
6	Ganjam				
	Total	38142.95	10890.27	49033.22	40.12

Percentage contribution of gears used in motorised boats to the total marine landings of Orissa (district wise) for the year 2005-06							
Sl.No.	District	Motorised					
		Gill net	Long line	Beach seine	Others	Total	%
1	Balasore	13154.70				13154.70	38.93
2	Bhadrak	3245.70				3245.70	29.89
3	Kendrapara	2686.70	84.42		606.20	3377.32	42.37
4	Jagatsinghpur	4827.02	103.40		427.31	5357.73	17.27
5	Puri	15092.00	2838.20			17930.20	62.78
6	Ganjam	2919.98	159.21	1116.50	1.00	4196.69	41.82
	Total	41926.10	3185.23	1116.50	1034.51	47262.34	38.67

Port wise and yearwise export of marine products from Orissa (Qty. in MT/Value Rs. In Lakhs)						
Year	Kolkata		Visakhapatnam		Chennai	
	Kolkata	Value (Kolkata)	Visakhapatnam	Value(Visakhapatnam)	Chennai	Value(Chennai)
1996-97	2380	16216.06	7212	17360.06	32	37.74
1997	2391	5464.56	7272	18153		
1997-98	2512	5652.18	7524	19128.98	121	47.21
1998	2650	8916.54	7022	18853.43	260	89.17
1998-99	2619	9675.3	6298	17715.08	495	142.7
1999	2633	1163.18	5900	19730	707	754.83
99-00	2611	10019.88	6547	22341.39	409	934.12
2000	2799	11855.08	7702	26573.9	370	1326.93
2000-01	2878	12173.52	7402	24575.66	364	1160.72

THE ORISSA MARINE FISHING REGULATION ACT, 1981

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REGISTERED No. 0-14

The Orissa Gazette

EXTRAORDINARY

PUBLISHED BY AUTHORITY

No. 934 CUTTACK, TUESDAY, JUNE, 22, 1982/ASADHA 1, 1904

LAW DEPARTMENT

NOTIFICATION

The 19th June 1982

No. 9824-Legis. – The following Act of the Orissa Legislative Assembly having been assented to by the Governor on the 15th June 1982, is hereby published for general information.

ORISSA ACT 10 OF 1982

THE ORISSA MARINE FISHING REGULATION ACT, 1981

AN ACT TO PROVIDE FOR THE REGULATION OF FISHING

BY FISHING VESSELS IN THE SEA ALONG THE

COAST LINE OF THE STATE

Be it enacted by the Legislature of the State of Orissa in the Thirty-third Year of the Republic of India, as follows:-

CHAPTER I

Short title, extent and commencement.

Preliminary

1. 1.

(1) This Act may be called the Orissa Marine Fishing Regulation Act, 1982.

(2) It extends to the whole of the State of Orissa.

(3) It shall come into force on such date as the State Government may, by notification, appoint in that behalf.

Definitions

2. In this Act, unless the context otherwise requires-

(a) "adjudicating officer" mean any officer of the Fisheries Department, not below the rank of an Assistant Director of Fisheries, authorised by the Government by notification, to exercise the powers conferred on, and discharge the duties imposed upon, an adjudicating officer by this Act for such area as may be specified in the notification;

(b) "Appellate Board" means an Appellate Board Constituted under section 18;

(c) "authorised officer" means such officer as the Government may, by notification, authorize in respect of the matter to which reference is made in the provision of this Act in which the expression occurs: Provided that no officer shall be authorised to exercise the power conferred by sections 14 and 15 unless he is an officer of the Fisheries Department not below the rank of an Assistant Director of Fisheries;

(d) "Fishing vessel" means a ship or boat, whether or not fitted with mechanical means of propulsion, which is engaged in sea-fishing for profit and includes-

- (i) a catamaran,
- (ii) a country craft, and
- (iii) a canoe, engaged in sea-fishing;

(e) "Government" means the State Government of Orissa;

(f) "port" means the space within such limits as may, from time to time, be defined by the Government, by notification, for the purposes of this Act;

(g) "registered fishing vessel" means-

(i) a fishing vessel registered under section 11 of the Marine Products Export Development Authority Act, 1972; 13 of 1972 or

(ii) a fishing vessel registered under section 9 ;

(h) "sea" includes lakes which are connected to the sea;

(i) "specified area" means such area in the sea along the entire coast line of the State but not beyond territorial waters, as may be specified by the Government, by notification;

(j) Authorisation of officer for the purposes of any provision of this Act.

"State" means the State of Orissa and includes the territorial waters along the entire coast line of that State.

3. The Government may, by notification, authorise-

(a) any gazetted officer of the Government ; or

(b) any officer of the Central Government, not being an officer below the rank of a gazetted officer or a commissioned officer in the armed forces of the Union, with the consent of that Government,

to exercise the powers conferred on, and discharge the duties imposed upon, an authorised officer under this Act in such area as may be specified in the notification.

CHAPTER II

Regulation of Fishing

Power to regulate, restrict or prohibit certain matters within specified areas.

4. (1) The Government may, having regard to the matters referred to in sub-section. (2) by order notified in the official Gazette, regulate,
restrict or prohibit-

(a) Fishing in any specified area by such class or classes of fishing vessels as may be prescribed; or

(b) The number of fishing vessels which may be used for fishing in any specified area; or

- (c)** Catching in any specified area of such species of fish and for such period as may be specified in the notification; or
- (d)** The use of such fishing gear in any specified area as may be prescribed:

Provided that any notified order issued under this sub-section prohibiting fishing by fishing vehicles run by mechanized power shall be so made as to cover at least an area of one kilometer in the sea adjoining the mouth of any river relating to such notified order.

(2) In making an order under sub-section (1), the Government shall have regard to the following matters, namely:-

- (a)** the need to protect the interests of different sections of persons engaged in fishing, particularly those engaged in fishing using traditional fishing craft such as catamaran, country craft or canoe;
- (b)** the need to conserve fish and to regulate fishing on a scientific basis;
- (c)** the need to maintain law and order in the sea;
- (d)** any other matter that may be prescribed.

Prohibition of use of fishing vessel in contravention of any order made under section 4.

5. No owner or master of a fishing vessel shall use, or cause or allow to be used, such fishing vessel for fishing in any manner which contravenes an order made under section 4:

Provided that nothing in such order shall be construed as preventing the passage of any fishing vessel from; or to, the shore through any specified area to, or from, any area other than a specified area for the purpose of fishing in such other area or for any other purpose:

Provided further that the passing of such fishing vessel through any specified area shall not in any manner cause any damage to any fishing nets or tackles belonging to any person who engages in fishing in the specified area by using any traditional fishing craft such as catamaran, country craft or canoe.

Licensing of fishing vessels

6. (1) The owner of a fishing vessel may make an application to the authorised officer for the grant of a licence for using such fishing vessel for fishing in any specified area.

(2) Every application under sub-section (1) shall be in such form, contain such particulars, and be accompanied by such fees, as may be prescribed.

(3) The authorised officer may, after making such enquiry as he deems fit and having regard to the matters referred to in sub-section

(4) either grant to the owner of the fishing vessel, a licence for using such fishing vessel for fishing in the specified areas or specified areas mentioned in such licence or refuse to grant the licence:

Provided that licence shall be granted in respect of any vessel, which is not a registered fishing vessel.

(4) In granting or refusing licence under sub-section (2), the authorised officer shall have regard to the following, namely:-

- (a) the condition of the fishing vessel including the accessories and fishing gear with which it is fitted;
- (b) any order made under section 4;
- (c) any other matter that may be prescribed.

(5) A licence granted under this section shall be in such form and subject to such conditions, including conditions as to payment of such fees and furnishing such security for the due performance of the conditions, as may be prescribed

Provided that different fees, and different amounts by way of security, may be prescribed in respect of licences for different classes of fishing vessels.

(6) A licence granted under this section shall be valid for the period specified therein or for such extended period as the authorised officer may think fit to allow in any case.

Prohibition of fishing using fishing vessels which are not licenced

7. No person shall, after the commencement of this Act, carry on fishing in any specified area using a fishing vessel which is not licensed under section 6:

Provided that nothing in this section shall apply to any fishing vessel, which was being used for fishing immediately before the commencement of this Act, for such period as may be notified by the Government.

Cancellation, Suspension and amendment of licences.

8. (1) If the authorised officer is satisfied either on a reference made to him in this behalf or otherwise, that-

- (a) a licence granted under section 6 has been obtained by misrepresentation as to an essential fact; or
- (b) the holder of a licence has, without reasonable cause, failed to comply with the conditions subject to which the licence has been granted or has contravened any of the provisions of this Act or any order or rule made there under,

Then without prejudice to any other penalty to which the holder of the licence may be liable under this Act, the authorised officer may, after giving the holder of the licence a reasonable opportunity of showing cause, cancel or suspend the Licence or forfeit the whole or any part of security, if any, furnished for the due performance of the conditions subject to which the licence has been granted.

(2) Subject to any rules that may be made in this behalf, the authorised officer may also vary or amend a licence granted under section 6.

Registration of vessels.

9. (1) The owner of every vessel used or intended to be used for purposes of fishing and kept in the State, not being a fishing vessel registered under section 11 of the Marine Products Export Development Authority Act, 1972 shall register such vessel under this Act.

(2) Every application for registration of such vessel shall be made by the owner thereof to the authorised officer in such form, and shall be accompanied by such fees, as may be prescribed-

- (a) before the expiration of one month from the date on which he first became the owner of such vessel; or
- (b) before the expiration of three months from the commencement of this Act,

Whichever is later:

Provided that the authorised officer may, for sufficient reason to be recorded in writing extend the time limit for registration by such period as he thinks fit

(3) The authorised officer shall issue to the owner of the vessel registered by him a certificate of registration in the prescribed form and shall enter in a register to be kept by him, in such form as may be prescribed, the particulars of such certificate.

(4) Registration once made shall continue to be in force until it is cancelled by the authorised officer.

(5) Every vessel registered under this section shall carry a registration mark, assigned to it by the authorised officer, displayed in the prescribed manner.

Information to be given to authorised officer about movement of fishing vessels.

10. Where a registered fishing vessel moves from the area of one port to the area of another port, the owner of such fishing vessel shall give information to that effect, in the prescribed manner to the authorised officer by whom such fishing vessel was registered and also to the Port Officer having jurisdiction over the area where to such fishing vessel has been moved.

Returns to be furnished by owners of registered fishing vessels.

11. (1) Every owner of registered fishing vessel shall furnish to the authorised officer at the prescribed time and in the prescribed manner such returns as may be prescribed.

(2) The authorised officer may inspect any registered fishing vessel at any time to verify the accuracy of any return furnished under this section.

Finality of orders under section 6,8 and 9

12. Every decision of the authorised officer under section 6, section 8 or section 9, granting or refusing to grant licence for a fishing vessel or canceling, suspending, varying or amending such licence or registering, or canceling the registration of a vessel shall, subject to any right of appeal under section 13, be final.

Appeals against orders refusing grant of licence, etc.

13. (1) Any person aggrieved by an order of the authorised officer refusing to grant licence for a fishing vessel or canceling, suspending or varying or amending such licence or refusing to register a vessel or canceling the registration of such vessel may, within thirty days from the date on which the order is communicated to him, prefer an appeal to such authority as may be prescribed (hereafter in this section referred to as the appellate authority):

Provided that the appellate authority may entertain the appeal after the expiry of the said period of thirty days if it is satisfied that the appellant was prevented by sufficient cause from filing the appeal in time.

(2) On receipt of an appeal under sub-section (1), the appellate authority shall, after giving the appellants a reasonable opportunity of being heard pass such orders thereon as it deems fit as expeditiously as possible.

(3) Every order passed by the appellate authority under this section shall be final.

CHAPTER III

Penalties

Power to enter and search fishing vessel.

14. The authorised officer may, if he has reason to believe that any fishing vessel is being, or has been, used in contravention of any of the provisions of this Act, or of any order or rule made there under or any of the conditions of the licence, enter and search such vessel and impound such vessel and seize any fish found in it.

15. (1) The authorised officer shall keep the fishing vessel, impounded under section 14, in such place and in such manner as may be prescribed.

(2) In the absence of suitable facilities for the storage of the fish seized, the authorised officer may, if he is of the opinion that the disposal of such fish is necessary, dispose of such fish and deposit the proceeds thereof in the prescribed manner in the office of the adjudicating officer.

Adjudication

16.(1) Where any authorised officer, referred to in section 14, has reason to believe that any fishing vessel is being, or has been, used in contravention of any of the provisions of this Act, or any order or rule made there under or any of the conditions of the licence, he shall make a report thereof to the adjudicating officer.

(2) The adjudicating officer shall hold an enquiry, in to the matters mentioned in the report, in the prescribed manner, after giving all the parties concerned a reasonable opportunity of being heard.

Penalty

17. (1) The adjudicating officer shall, after the enquiry under section 16, decide whether any person has, used, or caused or allowed to be used, any fishing vessel, in contravention of any of the provisions of this Act, or of any order or rule made there under or any of the conditions of the licence and any such person, on being found guilty by the adjudicating officer, shall be liable to such penalty not exceeding-

- (a) five thousand rupees, if the value of the fish involved is one thousand rupees or less;
- (b) five times the value of the fish, if the value of the fish involved is more than one thousand rupees; or
- (c) five thousand rupees, in any other case, being a case not involving any fish,

as may be adjudged by the adjudicating officer.

(2) In addition to any penalty that may be imposed under sub-section (1), the adjudicating officer may direct that-

(a) the registration certificate of the fishing vessel which has been used, or caused or allowed to be used, in the manner referred to in sub-section (1) or the licence, any condition of which has been contravened, shall be-

- (i) cancelled or revoked, as the case may be; or
- (ii) suspended for such period as the adjudicating officer deems fit; or

(b) Disposal of seized fish.

the fishing vessel or fish that may have been impounded or seized, as the case may be under section 14 shall be forfeited to the Government:

Provided that no fishing vessel shall be forfeited under clause (b), if the adjudicating officer after hearing the owner of such vessel or any person claiming any right there to is satisfied that the owner or such person had exercised due care for the prevention of the commission of such offence.

Constitution of Appellate Board and appeal to Appellate Board

18. (1) The Government may, by notification, constitute one or more Appellate Board or Appellate Boards.

(2) The Appellate Board shall consist of three members to be appointed by the Government of whom one shall be a person who is or has been a member of the superior Judicial Service (Senior Branch) or the State, and he shall be appointed as the Chairman of the Appellate Board.

(3) Where only one Appellate Board is constituted that Appellate Board shall have Jurisdiction throughout the State, and where more than one Appellate Board is constituted the Government may, by notification, define the jurisdiction of each Appellate Board.

(4) Any person aggrieved by an order of the adjudicating officer may, within thirty days from the date on which the order is made, prefer an appeal to the Appellate Board, having jurisdiction to hear such appeal:

Provided that the Appellate Board may entertain any appeal after the expiry of the said period of thirty days, but not after the expiry of sixty days from the date aforesaid, if it is satisfied that the appellant was prevented by sufficient cause from filing the appeal in time:

(5) No appeal under this section shall be entertained by the Appellate Board unless the appellant has, at the time of filing the appeal, deposited the amount of penalty payable under the order appealed against:

Provided that, on an application made by the appellant in this behalf, the Appellate Board may, if it is of the opinion that the deposit to be made under this sub-section will cause, undue hardship to the appellant, by order in writing, dispense with such deposit either unconditionally or subject to such conditions as it may deem fit to impose.

(6) On receipt of an appeal under sub-section (4), the Appellate Board may, after holding such enquiry as it deems fit, and after giving the parties concerned a reasonable opportunity of being heard, confirm, modify or set aside the order appealed against and the decision of the Appellate Board shall be final; and-

- (a) if the sum deposited by way of penalty under sub-section (5) exceeds the penalty directed to be paid by the Appellate Board, the excess amount, or
- (b) if the Appellate Board sets aside the order imposing penalty the whole of the sum deposited by way of penalty, shall be refunded to the appellant

Revision by Appellate Board.

.19. The Appellate Board may call for and examine the records of any order passed by an adjudicating officer under section 17 against which no appeal has been preferred under section 18, for the purpose of satisfying itself as to the legality or propriety of such order or as to the regularity of the procedure and pass such order with respect there to as it may think fit:

Provided that no such order shall be made except after giving the person affected a reasonable opportunity of being heard in the matter.

Powers of adjudicating officer and the Appellate Board in relation to holding enquiry under this Act.

20. (1) The adjudicating officer and the Appellate Board shall, while holding an enquiry, have all the powers of a Civil Court under the Code of Civil Procedure, 1908 while trying a suit, in respect of the following matters, namely:-

- (a) summoning and enforcing the attendance of witnesses;
- (b) requiring the discovery and production of any document;
- (c) requisitioning any public record or copy thereof from any court or office;
- (d) receiving evidence on affidavits; and
- (e) issuing commissions for the examination of witnesses or documents.

(2) The adjudicating officer and the Appellate Board shall, while exercising any power under this Act, be deemed to be a Civil Court for the purposes of sections 345 and 346 of the Code of Criminal Procedure, 1973.

Offences by Companies

21.(1) Where an offence under this Act, has been committed by a company, every person who, at the time the offence was committed, was in charge of, and was responsible to the company for the conduct, of the business of the company as well as the company, shall be deemed to be guilty of the offence and shall be liable to be proceeded against and punished accordingly:

Provided that nothing contained in this sub-section shall render any such person liable to any punishment, if he proves that the offence was committed without his knowledge or that he had exercised all due diligence to prevent the commission of such offence.

(2) Notwithstanding anything contained in sub-section (1), where any offence under this Act has been committed with the consent or connivance of, or is attributable to any neglect on the part of any director, manager, secretary or other officer, such director, manager, secretary or other officer shall be deemed to be guilty of that offence and shall be liable to be proceeded against and punished accordingly.

Explanation – For the purposes of this section, -

- (a) "company" means anybody corporate and includes a firm or other association of individuals; and
(b) "director" in relation to a firm, means a partner in the firm.

CHAPTER IV

Miscellaneous

Exemptions

22. (1) Nothing contained in this Act, shall apply to survey vessels belonging to the Central Government or any State Government or any public undertaking.

(2) If the Government is of the opinion that having regard to the purposes of this Act. It would not be in the public interest to apply all or any of the provisions of this Act to any class or classes of fishing vessels used for fishing in any specified area or specified areas, it may by notification, exempt, subject to such conditions as it may think fit to impose, such class or classes of fishing vessels used for fishing in such specified area or specified areas, as it may specify in the notification from the operation of all or any of the provisions of this Act.

Protection of action taken in good faith

23.(1) No suit, prosecution or other legal proceeding shall lie against the Government or any officer or authority for anything which is in good faith done or intended to be done in pursuance of this Act or any order or rule made there under.

Power to make rules.

(2) No suit or other legal proceeding shall lie against the Government or any officer or authority for any damage caused or likely to be caused by anything which is in good faith done or intended to be done in pursuance of this Act or any order or rule made thereunder.

24. (1) The Government may, by notification, make rules for carrying out the provisions of this Act.

(2) In particular, and without prejudice to the generality of the foregoing power, such rules may provide for all or any of the following matters, namely:-

(a) the matters to which regard shall be had in making an order under sub- section (1) of section 4;

(b) The form of the application for licence under sub-section (1) of section 6, the particulars which it shall contain and the fees which shall accompany it;

(c) The matters to which regard shall be had in granting or refusing a licence, under clause (c) of sub-section (4) of section 6, the fees payable for the licence and the security for the due performance of the conditions of the licence;

(d) The procedure to be followed in granting or refusing a licence under section 6 or canceling, suspending, varying or amending such licence or in registering a vessel under section 9 or canceling such registration;

(e) The form of the application for registration of a vessel under section 9, the particulars which such application shall contain, and the fees which shall accompany the application, the form of the certificate of registration and the form of the register referred to in sub-section (3) of that section, the manner in which the registration mark referred to in sub-section (4) of that section shall be displayed;

- (f)** The manner in which the information referred to in section 10 shall be given;
- (g)** The time and manner in which the returns referred to in sub-section (1) of section 11 shall be furnished;
- (h)** The authority to whom appeals shall be preferred under sub-section (1) of section 13;

- (i)** The place and the manner in which an impounded fishing vessel shall be kept under sub-section (1) of section 15 and the manner in which the proceeds of the disposal of the seized fish shall be deposited with the adjudicating officer under sub-section (2) of that section;

- (j)** The procedure of the enquiry by the adjudicating officer under sub-section (2) of section 16;

- (k)** The qualification of the members of the Appellate Board other than the Chairman, the fees and allowances payable to the Chairman and other members of the Appellate Board, the procedure of the Appellate Board;

- (l)** The fees payable for the supply of copies of documents or orders or for any other purpose or matter involving the rendering of any service by any officer or authority under this Act;

- (m)** Any other matter which is to be, or may be, provided for by rules made under this Act.

By order of the Governor

D. HOTA

Additional Secretary to Government