GLOBALISATION AND SEAFOOD TRADE LEGISLATION: THE EFFECT ON POVERTY IN INDIA

Final Report for Orissa

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Cirrus Management Services Pvt. Ltd, Bangalore, India


LOCATION OF ORISSA
IN INDIA
N
JAMMU & KASHMIR
CHINA
PAKISTAN
UTTARANCHAL
DELHI
NEPAL
BHUTAN
Patna
JHARKHAND
CHHATTISGARH
Calcutta
ORISSA
Bhubaneshwar
Mumbai
(Bombay)
ARABIAN SEA
BAY OF BENGAL
Map not to Scale

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[1] Cirrus Management Services Pvt. Ltd. and Catalyst Management Services Pvt. Ltd. are sister companies, part of a single consortium. The present assignment was executed by the consortium.

Abbreviations

BOBP : Bay of Bengal Programme
CIFE : Central Institute for Fisheries Engineering
CIFT : Central Institute of Fisheries Technology
CMFRI : Central Marine Fisheries Research Institute
DFID : Department for International Development – Government of UK
DOF : Department of Fisheries
EIA : Export Inspection Agency
EU : European Union
FGD : Focus Group Discussion
GDI : Gender Development Index
Godown: A commonly used term meaning Storage place
GOI : Government of India
GoO : Government of Orissa
HACCP : Hazard Analysis Critical Control Point
HDI : Human Development Index
hh : Household
IBM : In Board Motor
ICM : Integrated Coastal Management
Km : Kilometre
MPEDA : Marine Products Export Development Authority
NRI : Natural Resources Institute
OBM : Out Board Motor
OMFRA : Orissa Marine Fisheries Regulation Act
PHFP : Post Harvest Fisheries Research Project
PPA : Participative Poverty Assessment
Rs. : Indian Rupees
SIFFS : South Indian Federation of Fishermen Societies.
SC : Supreme Court of India
TED : Turtle Exclusive Devices
USA : United States of America
USFDA : United States Food and Drugs Administration

Contents

Executive Summary

The study identified as poor certain groups in the export supply chain: traditional fishermen and their crew, crew in the mechanised sector, head loaders and other labourers in the chain, and unskilled workers in processing plants.

Although the contribution of the traditional fishing sector to overall volumes of exports appears small, contribution of export species to individual household incomes of fishermen is far from insignificant. The most important export species for traditional fishermen are pomfrets, seer fish, and small shrimps followed by prawn. Overall, there is low involvement in export supply chain by the traditional sector. The mechanised sector on the other hand depends almost exclusively on the export market of a single species – prawn. Other species are treated as by-catch by them. Similarly, brackish water aquaculture depends on a mono culture of black tiger prawn, almost exclusively for the export market.

Labourers do play a role in the processing of seafood for exports and hence are affected by changes in the industry, mainly in terms of wage rates and working conditions.

International quality regulations have forced the industry to undertake process improvements. This has definitely improved standards in processing plants, but not necessarily beyond. The quality assurance mechanism beyond the plants remains weak, especially at the landing centres and procurement points. This limits competitiveness of the industry as a whole in international markets, with possible effects on poor downstream, although the last is not clearly established. The response of the government has been reactive rather than proactive in the case of regulating the seafood export industry.

Improvement of facilities for on-board handling and at the landing centres is clearly important. Information (on demand, supply and prevailing prices) flow to the stakeholders, especially those at the bottom end of the supply chain would increase their bargaining power vis-à-vis the traders and dealers. Lack of availability and accessibility to formal sources of credit is another impediment resulting in increased dependence of poor fishermen with middlemen and traders.

Present levels of enforcement of regulations do not seem to have had any visible or discernible adverse impact on livelihoods of the poor involved in the export supply chain. This study seems to indicate that livelihoods of poor people in the chain are at this moment only marginally affected by international legislations, mostly in a negative way. These effects are however likely to be accentuated if EU type legislations become more stringent or are enforced more stringently. In particular, stricter regulations and enforcement, especially with regard to traceability, could have significant impact on the poor.

1. Introduction

1.1 Back ground

Natural Resources Institute, UK (NRI) is conducting a study on 'Globalisation and Seafood trade legislation: The effect on Poverty in India' under the post harvest fisheries research project. This study is supported by the Department for International Development, Government of UK (DFID). The study covers three maritime states of India, namely Orissa, Andhra Pradesh and Kerala.

Cirrus Management Services conducted a part of the study (covering Orissa) for NRI.

A preliminary description of the export chain was developed in 2001 (report submitted). This is the report of the second round, which builds on and expands the first.

1.2 Scope of study

To assess the impact of globalisation and export market legislations on the poor in the post-harvest sector in Orissa.

Sub-objectives;

- To map the export supply chain for the main export species from Orissa (covered in the first round, 2001).
- Identify the poor in the post harvest sector dealing with export markets.
- Provide an improved understanding of the link between international trade legislation, post-harvest fisheries and livelihoods of poor communities in India
- Policy recommendations related to poor people's livelihoods, poverty eradication in India and access to global seafood markets developed and disseminated.

2. Methodology

The broad research questions to be addressed in this study were –

- ✓ What has been the impact of present food safety regulation on the poor participants in the Indian fisheries sector?
- ✓ To what extent do the present regulations pose challenges to existing and would be producers, processors and exporters?

- ✓ To what extent is there capacity for compliance with current international food legislation?
- ✓ What would be the impact of more stringent regulations?
- ✓ How the quality Assurance Management System (QAMS) operated by the Indian authorities need to be broadened to take into account these future challenges?

Looking at the extensive nature of the scope of study, the diversity of the fisheries sector in India and the limited time and resources available for the study, it was decided that it would be useful to focus on few specific species for seafood exports rather than the entire catch. Hence four major export species i.e. prawn, cuttlefish, squid and lobsters would be the focus of study. During the first round of fieldwork for this research, it was established that almost 95% of the total seafood exports from Orissa (in terms of value) consist of prawn and shrimps. Hence in case of Orissa, the study largely focuses on prawns and shrimps. Export of other species like ribbon fish, pomfrets and seer fish is taken up wherever relevant.

2.1 Research tools and approach

The research approach and tools were jointly outlined at a workshop in Bangalore between Natural Resources Institute (NRI), Cirrus and South Indian Federation of Fishermen Societies (SIFFS). The first step was to prepare a list of key stakeholders to be contacted during the study:

- ✓ Fishermen in traditional sector (including both boat owners and crew members together)
- ✓ Crew members of mechanised sector
- ✓ Owners of mechanised boats
- ✓ Aqua-culture farmers
- ✓ Key informants
- ✓ General fishing communities
- ✓ Traders
- ✓ Independent peeling shed owners/pre-processors
- ✓ Processing plants & exporters
- ✓ Local fisheries department officials
- ✓ MPEDA officials

The list does not specifically include people not directly involved in the export supply chain. Thus, boat builders were not covered. Nor were small-scale fish processors, local traders and transporters. This was because of limitations of time and resources. Information that became available on the effects of globalisation and seafood legislation on such people has however been included in this report.

Checklists of issues on which information was to be collected were developed. These were discussed and pre tested in the pilot study in Kerala and again in Orissa. Inevitably, new issues emerged as field-work progressed, and these were addressed to the extent time and available resources allowed.

The tools used were a mix of desk research (secondary sources) and field level interviews, group discussions (primary sources) and unstructured/semi-structured interviews with checklist.

The following secondary sources were consulted:

1. Government of India / Orissa: Policy documents, Annual Statistics etc
2. Information provided by central agencies like Marine Products Exports Development Authority.
3. BoBP and PHFP publications, project reports.
4. Proceedings of workshops, seminars, symposia etc.
5. Fisheries magazines and periodicals etc.
6. Information from the Internet through the World Wide Web.
7. Export supply chain study done in the first phase.

Field research consisted of

1. Focus Group Discussions with primary stakeholders

FGDs with primary stakeholders identified in the preliminary workshop were conducted in sample locations. These stakeholders included fishermen, boat owners and crewmembers, women in the fishing communities, aquaculture farmers, fish traders, processors and other key players.

2. Individual interviews with checklist

Individual interviews were conducted wherever it was difficult to organise groups of stakeholders. These stakeholders mainly included the trawler owners, aquaculture farmers, large traders, processors and exporters. It was difficult to organise groups of these respondents as they were spread sparsely, and could give only limited time for the study. These were semi-structured interviews with a checklist of issues to be covered.

3. Meetings with secondary stakeholders

Apart from the primary stakeholders, interaction with key secondary stakeholders such as State Government fisheries officials, officials of Central Government institutions on fisheries and marine exports, associations of boat owners, traders etc were held during the field research. These were mainly through open-ended interviews guided by a checklist.

Quantitative survey through questionnaire was not resorted to as it was evident from the preliminary discussion that there was very little or no impact of the legislations at the primary fishermen level, and also their awareness level on such regulations was very low. Hence there was very little scope of obtaining useful information on household level with a sustainable livelihood focus.

2.2 Site selection

Before the start of the field research, sites/locations for conducting fieldwork were identified jointly by the Cirrus team and NRI representative in consultation with key stakeholders within fisheries sector including Department of Fisheries and MPEDA. The criteria for selection were

- Geographical spread (coverage of the different coastal zones)
- Scale and type of fisheries activities in terms of boats and gears used (mechanised and traditional sectors)
- Prevalence of aquaculture
- Landing sites for and trading in export species (esp. prawn & shrimp)
- Presence of processing plants, godowns.

The site selection process was a compromise in trying to match the limited financial and human resource available with covering as wide a cross-section of highly diverse sector as possible.

The sites selected for fieldwork for the study were (location of the sites are shown in Fig 2 below, and explanatory notes for each given thereafter).

1. Noliasahi, Chandrabhaga near Konark
2. Penthakata & Brahmagiri in Puri
3. Paradeep in Jagatsinghpur district
4. Balaramgadi in Balasore district
5. Dhamra in Bhadrak district
6. Balugaon on Chilka lake, Khurda district

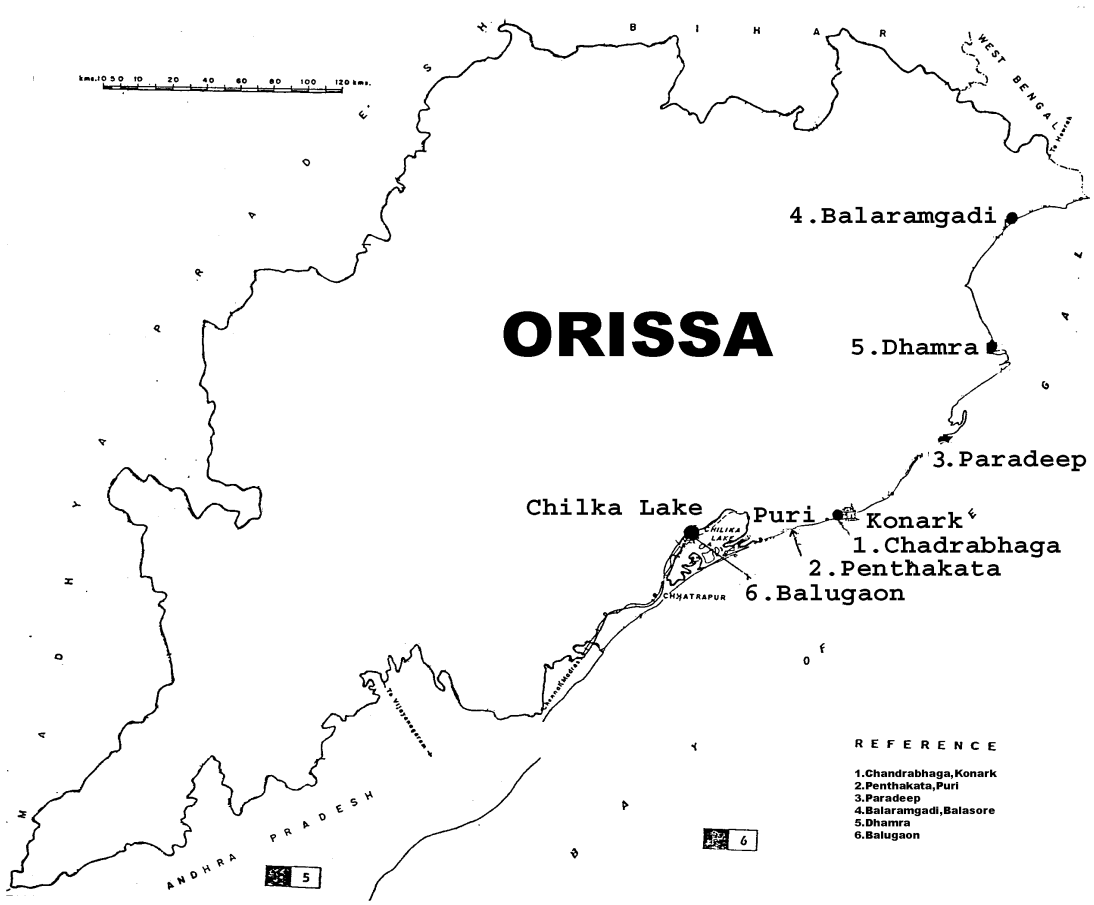


Fig. 1: Sites for Fieldwork

1. Noliasahi, Chandrabhaga near Konark

Noliasahi is a settlement of marine fishermen originating from Andhra Pradesh. This settlement is about 50 years old, in the south zone of Orissa coast. It has about 1,200 households (approximately 7,000 population) of mainly traditional[2] fishermen. There are about 300 wooden catamarans, about 300 fibre boats and 5 large In Board Motor (IBM) vessels in the community. Main export species caught here are prawn and shrimps, pomfrets and seer fish. There are about 10-15 local traders dealing in these exportable varieties (though there are many more traders for domestic species)[3]. The catch here mainly goes to the processing plants in Bhubaneshwar and Puri.

The stakeholders contacted in this location included key informants, fishermen (both crew members and boat owners), traders and an ice-plant owner.

[2] In the context of Orissa, fishing boats can be categorized into 3 types – Mechnised (trawlers), motorised (wooden or fibre boats with either in-built or out board motors) and traditional (non-motorised) boats.
[3] FGD with fishermen and interview with key informant Mr. Lachman Nayak, CPDA.

2. *Penthakata & Brahmagiri in Puri*

Penthakata is the largest settlement of marine fishermen in India, with about 3,000 households (20,000 population approximately) of traditional fishermen. It covers four wards under Puri urban municipality. They use similar crafts as that of Noliasahi, Chandrabhaga. Penthakata has about 200 large fibre IBM vessels, 600 fibre catamarans and about 200 wooden catamarans. Brahmagiri is a village (about 40 kms from Puri) with a very high number of aquaculture units. There are about 500 small-scale aquaculture farmers in the village with a total of 1200 households[4]. The government in early eighties promoted small-scale aquaculture farmers (average pond size of 0.8 acre) when aquaculture was being introduced in the state. Puri is one of the most important centres for marine fishing in Orissa, has many traders and processors. There is no reliable information available on number of traders dealing in export species, but the number is estimated at about 100[5], and there are two processing plants here.

Puri was an ideal location for contacting stakeholders in both capture and culture fisheries industry.

3. Paradeep in Jagatsinghpur district

Paradeep is a port town and also the largest fishing harbour for mechanised boats in Orissa. About 1300 small to medium sized trawlers (mechanised boats) harbour here. Paradeep also has two large settlements of traditional fishermen with more than 1000 traditional crafts[6]. It is the largest market for captured prawn in the state, with many traders, small-scale processors, processing plants and exporters. All the major exporting houses have either processing or procurement units at Paradeep.

A wide cross-section of stakeholders from the mechanised sector and processing industry could be contacted in Paradeep.

4. Balaramgadi in Balasore district

Balaramgadi in Balasore district is the most important landing centre for mechanised boats in the northern zone of Orissa (as is Paradeep in the southern zone). It has about 800 mechanised craft, many traders and small-scale processors, two processing plants of export houses. Balasore also has a flourishing aquaculture industry, mostly large farmers[7]. Quite a few export houses have their own aquaculture farms in the area. This site was again selected to cover stakeholders from both capture and culture fisheries; support service providers like ice suppliers; processors and exporters.

[4] Interview with key ineformant Mr Satyam and Asst Director of Fisheries Mr. BC Mishra
[5] FGDs with fishermen and traders both at Penthakata and Brahmagiri
[6] Interview with Boat Owner's association
[7] FGD with fishermen and traders.

5. Dhamra in Bhadrak district

Dhamra in Bhadrak district is the most important landing centre for traditional crafts and also an important centre for mechanised crafts in the north zone of Orissa coast with about 3000 craft of the nearby villages landing their catch here. This site was selected for interaction with the traditional fishing community in the north zone, and traders in the location.

6. Balugaon on Chilka lake, Khurda district

Balugaon is the largest landing and trading centre for brackish water aquaculture in Orissa. Almost all of the approximately 120 fishing villages in and around Chilka Lake depend on this trading centre. These are exclusively traditional fishing communities depending on the catch from Chilka for their livelihoods. There are also a large number of aquaculture farmers in these villages. This site was selected to obtain the views of brackish water fisheries sector in the study.

The following table summarizes the details of each research sites:

Table No 2.2.1 Site description

Site	**Geographical Zone of Orissa coast**	**Crafts**	**Major export species**	**Fishermen**
Konark – Chandrabhaga	South zone	Traditional crafts both non-motorised and motorised.	Pomfret, seer, shark, ribbon fish and shrimp	Migrated from Andhra Pradesh, settled here since last 50 years.
Puri – I Penthakata	South zone	Traditional crafts both non-motorised and motorised.	Pomfret, seer, shark, ribbon fish and shrimp	Migrated from Andhra Pradesh, settled here since last 50 years.
Puri – II Brahmagiri	South zone	- (aquaculture farms)	Prawn	Native Oriya farmers – not from fishing communities
Paradeep	South central zone	Mix of mechanised and traditional (dominated by mechanised crafts – trawlers)	Prawn, shrimps, seer fish, pomfrets, crabs ribbon fish and sharks	Mix of fishermen from Andhra Pradeh, Orissa and West Bengal

Balasore – Balaramgadi	North Zone	Mix of mechanised and traditional (dominated by mechanised crafts – trawlers)	prawns an shrimps, ribbon fish	Migrated from West Bengal, settled here for last 30-40 years
Dhamra	North Zone	Mix of mechanised and traditional (dominated by traditional crafts)	Seer, pomfret, prawns, shrimps, ribbon fish	Mix of fishermen from Orissa and West Bengal
Chilka lake – Balugaon	South zone	Traditional crafts	shrimps and prawns	Mix of fishermen from Orissa and Andhra Pradesh.

2.3 Types of informants

The list of key stakeholders to be contacted in the study was followed at each site. The interactions with various types of informants at different locations are presented in the table no. 2.3.1

Table 2.3.1 Key Stakeholders Contacted

Stakeholders	Sites where they were contacted
Fishermen in traditional sector	• Chandrabhaga (1 FGD), • Penthakata (1 FGD, 1 PPA) • Paradeep (1 FGD, 1 PPA) • Dhamra, (1 FGD) • Balugaon (1 FGD, 1 PPA)
Crew members of mechanised sector	• Paradeep (2 FGDs), • Balaramgadi (1 FGD)
Owners of mechanised boats	• Paradeep (3 interviews), • Balaramgadi (2 interviews), • Dhamra (1 interview)
Aqua-culture farmers	• Brahmagiri (1 FGD), • Balaramgadi (2 interviews), • Balugaon (1 interviews)
Key informants – local resource persons, NGOs	• Chandrabhaga, • Penthakata, • Paradeep, • Dhamra

Traders	• Chandrabhaga (1 FGD), • Penthakata (1 FGD), • Brahmagiri (2 interviews), • Paradeep (1 FGD), • Balaramgadi (2 interviews), • Dhamra (2 interviews), • Balugaon (2 interviews)
Independent peeling shed owners/pre-processors	NA[8]
Processing plants & exporters	• Bhubaneshwar (2 interviews), • Balasore (2 interviews)
Local fisheries department officials	• Puri (1 interview), • Balugaon (1 interview)
MPEDA officials	• Bhubaneshwar (1 interview)
Ice plant owners/Ice traders	• Paradeep (1 interview), • Balaramgadi (2 interviews), • Balugaon (1 interview)
Boat owners association	• Paradeep (1 interview), • Balasore (1 interview)
Fish Merchants Association	• Chandrabhaga (1 FGD), • Balugaon (1 interview)
Sea food exporters association	• Bhubaneshwar (1 interview)

All key stakeholders were contacted in multiple locations and efforts were made to cover as large a cross section of various stakeholders as possible within the time and budget constraints.

[8] Independent peeling sheds are not available in Orissa. The pre-processing activity stops at de-heading, and peeling is mostly done at the processing plants. In rare cases when processing plants get peeling done outside their premises, it is undertaken by their own agents and not by an independent peeling shed.

2.4 CONSTRAINTS:

- Lack of secondary information on recent fisheries statistical details like trends of species wise exports and contribution from various sectors to exports was a major constraint to analysis of recent trends. The last handbook on fisheries statistics was brought out by the state fisheries department in 1997. Detailed statistics after this period is not available from any source.
- Absence of information on number of people employed in the post harvest fisheries. Records are only available on the number of fishermen and active fishermen, but records on other key players like traders, commission agents, ice suppliers, transporters are practically non-existent.
- Information on the exportable varieties caught in Orissa shores but purchased by Andhra Pradesh or West Bengal traders are unavailable.
- Complexity and diversity of the fishing sector in Orissa, making it difficult to cover all areas with available human and financial resources.

3. General Context of Orissa

3.1 Information about Orissa

Orissa is situated on the eastern part of India on the coast along the Bay of Bengal located between 17^0-48' and 22^0-34' North latitude and 81^0-24' and 87^0-29' East longitude. The State is bounded by the bay in the east, West Bengal in the northeast, Jharkhand in the north, Chhattishgarh in the west and Andhra Pradesh in the south. The state is spread across with 155,707 sq. km. The state has a population of about 36 million (about 3.5 % of India's population)[9].

The territory of Orissa may be divided into four distinct geographical regions:

1.) The Eastern Plateau
2.) The Central River Basin
3.) The Eastern Hill Region and
4.) The Coastal Belt.

The entire territory lies in the tropical zone as a result of which high temperature is recorded particularly during April-May. However, the sea exercises a moderating influence over the climate of the coastal belt whereas the hill tracts experience an extreme climate. Six important rivers drain the state: the Subarnarekha, the Budhabalanga, the Baitarani, the Brahmani, the Mahanadi and the Rusikulya. The rich mineral belts lie in the western and north-western parts of the state. These areas are inhabited by tribal communities (who constitute more than 22 percent of the population of Orissa), with their concentration in Mayurbhanj, Keonjhar, Sundargarh and Koraput districts.

The state is very backward in terms of industrial development with just a few heavy industries like steel and aluminium. Thus there is lack of employment opportunities for the youth in the state, forcing them to depend on the primary sector like agriculture for their livelihood. More than 40% people of the state live below the poverty line.

More than 80% of the population lives in rural areas. The primary occupation of more than 70% households is agriculture and allied activities, the most important crop being '*paddy*'. It contributes to about one tenth of India's paddy production.

Heavy dependence on agriculture makes the state extremely vulnerable to natural disasters including floods, cyclones and drought. The western parts of the state have faced a severe drought for more than a decade, and are considered to be amongst the poorest parts of the country. A major cyclone in 1999 affected the state very adversely and was a major setback to the state economy.

In terms of various development indicators, Orissa ranks amongst the least developed states of India.

[9] Orissa the Land and its People GoO

Table 3.1.1 Development indices of select states in India

Human Development Index and Gender Development Index for select states of India – 1991-92						
State	Life Expectancy at Birth (years) - 1993-97	Percentage of population below poverty line	Literacy Rate (7+) – 1997	State Domestic Product Per Capita (rupees at current prices) – 1999-2000	Human Development Index (HDI) - 1996	Gender Development Index (GDI) - 1991-92
Kerala	73.3	13%	93%	18262	0.60	0.565
Andhra Pradesh	62.4	16%	54%	14715	0.39	0.371
Orissa	57.2	47%	51%	9162	0.36	0.329
India	*61.1	26%	*62%	15,562	0.42	0.388
Source: The Union Budget of India 2001-02, http://indiabudget.nic.in except column on GDI which is from "The Road to Human Development, India Development Forum, Paris, 23 - 25 June 1997"						

* excluding the state of Jammu and Kashmir

As can be seen from the table, Orissa is lowest in all developmental parameters among the three states where the study was undertaken, and is also consistently below the national average.

3.2 Fisheries in Orissa

Orissa has a coastline of 480 kms with a continental shelf of 24,000 sq. kms contributing an annual yield potential of 1.256 lakh tons of fish per year. Orissa is one of the main maritime states in Eastern India with 7% of the coastline (of India's 6700 Kms), 4.5% of the countries continental shelf (of India's 500,000 sq. kms) and 3.5 % of its yield potential (of India's 3.9 million tons of fish per year). It has 329 fishermen villages with a total population of 175,000 (which is 0.5 % of the total population of Orissa) depending on marine fishing for their livelihoods in six coastal districts (Balasore, Bhadrak, Kendrapada, Jagatsingpur, Puri and Ganjam). They are practising traditional and mechanised fishing to catch various types of commercial fishes in the Bay of Bengal region of Orissa[10]. It may be noted that Orissa does not have any traditional marine fishers. Most Oriya fishermen are either inland or estuarial fishers. The marine fishing in Orissa coast was initiated by migrating fishermen from Andhra Pradesh and West Bengal. Till date, all marine fishing villages in Orissa are inhabited by migrating fishermen from these two neighbouring states, both permanent and seasonal migration of fishers continues making them a highly marginalized community.

[10] Handbook of Fisheries Statistics, DOF

The coast of Orissa can be divided into two zones:

1. *North zone:* This zone ranges from Kistania in Balasore district (West Bengal border) up to Mahakalpada in Kendrapada district. It is characterised by shallow waters with broad continental shelf, gradual slope and great tidal effect. There is a concentration of large boats (mainly wooden *Dingi* type) or, small trawlers. This area has a significant population of Bengali fishing communities and also a large number of Bangladeshi settlers. The community here is relatively new to the marine fisheries and are more conservative in fishing. Post harvest activities (like trading, local processing, selling/vending etc.) are dominated by men. Women in the community are less prominent in post-harvest activities, and their role is limited to household activities. Most households traditionally depend on other primary occupations like agriculture etc.

2. *South zone:* This zone ranges from south of Paradeep in Jagatsinghpur district to Pattisonapur in Ganjam district (Andhra Pradesh border) and is characterised by a narrow shelf area, broad sandy beaches and open surf beaten shores. This area has more traditional smaller crafts (mostly wooden catamarans) and recently fibre catamarans introduced after the Bay of Bengal Project (BoBP). It is dominated by Telugu fishing communities (from Andhra Pradesh) who have been settled in this area for the last 40-50 years. They are traditionally marine fishing communities having been involved in the trade for generations. Women in these communities play an important role in post-harvest functions like local trading, drying, vending etc, whereas men control the harvest. These communities are almost exclusively dependent on fishing for their livelihoods.

3. *Brackish water fisheries:*

   Distinct in its characteristics from both the coastal zones are the brackish water fisheries. The brackish water fisheries in the state are concentrated on Chilka Lake spread across 79,000 hectares (in two districts of Khurda and Ganjam) – one of the largest brackish water lagoon in the world. The fishing community in Chilka is scattered across 128 villages with a total population of more than 100,000. It is characterised by small traditional crafts and traditional fishing (fishing with non-mechanised crafts). There are about 4,900 traditional non-motorised crafts and another 450 motorised crafts operating in the Lake. The community is a mix of Oriya and Telugu speaking fishermen who have migrated from Andhra Pradesh. The women in the community play an extremely important role in post harvest activities. They almost control the local selling and vending, fish drying and small scale processing sector. Men's role is limited to harvesting.

Fishing vessels:

The fishing vessels in use range from traditional crafts (non mechanised 'hulli' and 'dingi' type) to medium size trawlers (sona boats). The main harbours for the mechanised boats are Balaramgadi (Balasore), Paradeep (Jagatsinghpur), Nuagarh (Astaranga – Puri

district) and Gopalpur (Ganjam district). Paradeep fishing harbour, constructed at a cost of Rs. 380 million was opened in 1996. Traditional crafts are scattered all along the coast. No license has been issued to any deep sea fishing vessels under the Orissa Marine Fisheries Regulation Act (OMFRA). Hence coastal fishing (as opposed to deep-sea fishing) has always been the main focus of the fishing activities in the state and the shallow coastal water resources are intensively exploited and perhaps over-fished. The state recorded a catch of 156,000 metric tons (1997 – 1998) as against the estimated maximum sustainable yield of 125,000 metric tons. Of these 67 % is captured by the mechanised vessels including trawlers and beach landing crafts and the rest 33% by the non-mechanised boats. The contribution as a percentage of total catch of non-mechanised boats to the total landings has declined from 52.5% in 1985-86 to 33.4% by 1996-97, although their contribution in real terms has gone up from 28,000 tonnes to 44,500 tonnes during the period[11]. This indicates a growing dominance of the mechanised crafts.

Reliable information on number of mechanised crafts is not available. The handbook of fisheries statistics estimates the total number of crafts in the state as 686 trawlers, 590 gill netters, 2640 motorised country crafts, 810 beach landing crafts and about 8,353 non-motorised traditional crafts. The number of trawlers increased from 376 in 1985-86 to 686, that of gill-netters from 293 to 590. The numbers since are thought to have increased significantly especially in the mechanised sector, but correct up-to-date information on the number of crafts is not available. But the total catch from the Orissa coast has not increased in the same proportion over the period, indicating a reduced per unit catch.

Lack of proper infrastructure and inadequate shore facilities has resulted in slower progress of mechanisation compared to other states. A sizeable proportion of fisheries activity is still from traditional crafts. But when it comes to export species (especially prawn) the trawlers get a dominating share of the catch (almost upto 90%) because of the bottom trawling technique with small mesh size net. The traditional fishermen catch prawn occasionally, mostly in the peak season. There is no deep sea fishing vessel in the state nor is there any plan private or public for the promotion of deep-sea fishing.

3.2.1 Inland fisheries and aqua culture activities.

The fresh water fisheries resource comprises 114,822 hectares of small and big tanks and ponds 256,000 hectares of small, medium and large reservoirs and 155,400 hectares of rivers and canals. The brackish water area comprises of 79,000 hectares of Chilka Lake, 297,850 hectares of estuaries, 32,587 hectares of brackish water tanks and 8,100 hectares of backwaters. Most of the fresh water fish produced in Orissa is marketed in fresh form for domestic consumption in the towns and cities of Orissa and Howrah (Calcutta) market. A small portion (10 – 15 %) goes for drying and salting to be sold in the hilly tribal areas in and around the state and in north-eastern India[12]. Only brackish water aquaculture (which exclusively focuses on prawn culture) contributes to the seafood

[11] Handbook of Fisheries Statistics, DOF1997-98
[12] Handbook of Fisheries Statistics, DOF 1997-98

exports. More then a third of total prawn exports from Orissa is from cultured sources and this proportion is growing[13].

Brackish water aquaculture is emerging as a very important source of production of prawns. It grew very rapidly from almost non-existent levels in the early eighties to more than 12,500 hectares in 1996-97. Intensive culture is almost absent in the state and semi intensive culture is very limited (about 5%) of the total area covered. Most of the culture in the state is in extensive form. Brackish water prawn production rose from 205 tonnes in 1985-86 to 6,627 tonnes in 1996-97 accounting for nearly 40% of the total brackish water production in the state[14].

Since1996, there has been a stagnation in the growth of aquaculture, mainly because of the outbreak of viral disease (white spot disease). In the Chilka Lake area the growth of aquaculture has stopped after the Supreme Court judgement in 1996 banning aquaculture within the lake area.

3.3 Contribution of fisheries to the state economy

During 1996-97, fisheries contributed about Rs.4400 million, which was about 2.51% of the Net State Domestic Product of the state. The contribution of the fisheries to the state economy was growing as the Table 3.2.1 indicates.

[13] Handbook of Fisheries Statistics, DOF 1997-98
[14] Handbook of Fisheries Statistics, DOF 97/98.

Table 3.2.1 Contribution of fisheries to Orissa's economy

	1990-91	1991-92	1992-93	1993-94	1994-95
Net State Domestic Product (Rs. in Millions)	96,643	125,053	134,155	154,050	174,395
Income from fisheries sector (Rs. in Millions)	1,706	2,107	2,839	3,715	4,385
Percentage contribution of fisheries	**1.76**	**1.68**	**2.12**	**2.41**	**2.51**

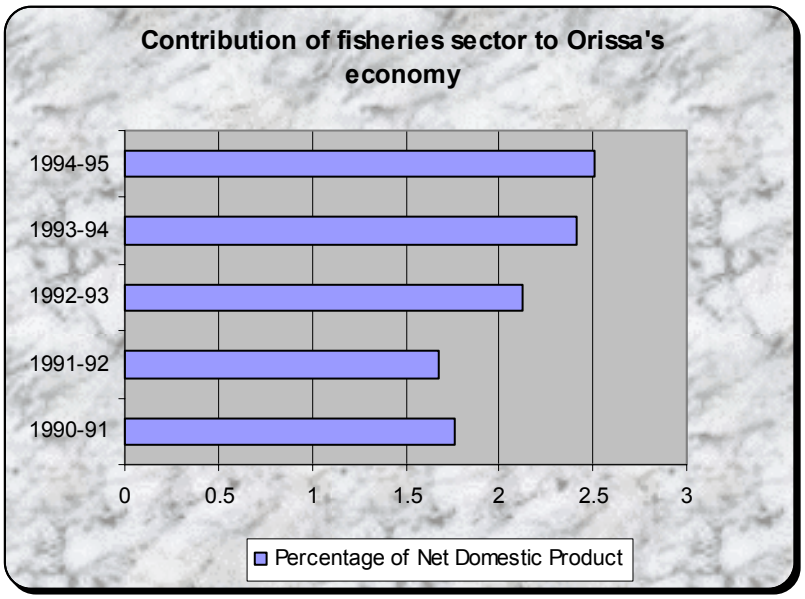


Fig. 2: Contribution Of Fisheries To State's Economy

Major species available for exports:

The seafood exports from Orissa almost exclusively depends on shrimp/prawn with about 95% (includes brackish water aquaculture and scampi – the freshwater prawn) in terms of value. Other items for exports include pomfret, seer fish, ribbon fish and very negligible proportion of other species. Export volumes and values are shown in Table 3.2.2.

Table 3.2.2 Item wise exports from Orissa in 2000-01[15]

Item	2000-2001			
	Qty in Millions of KGs	% share in volume of total exports	FOB value in Million of Rs	% share in value of total exports
Frozen Shrimp	7.88	74%	3532.1	92%
Frozen Ribbon Fish	1.18	11%	18.53	0.5%
Frozen Pomfret	0.58	5%	76.66	2%
Frozen Cuttle Fish	0.43	4%	25.20	0.66%
Frozen Scampi	0.21	2%	111.44	3%
Frozen Cut Crab	0.07	0.63%	7.59	0.2%
Frozen Seer Fish	0.03	0.33%	3.30	0.1%
Dry Fish	0.03	0.25%	3.88	0.1%
Cooked Shrimp	0.02	0.20%	3.59	0.1%
Frozen Sole Fish	0.20	2%	8.70	0.2%
Total for the year	10.64		3,791	

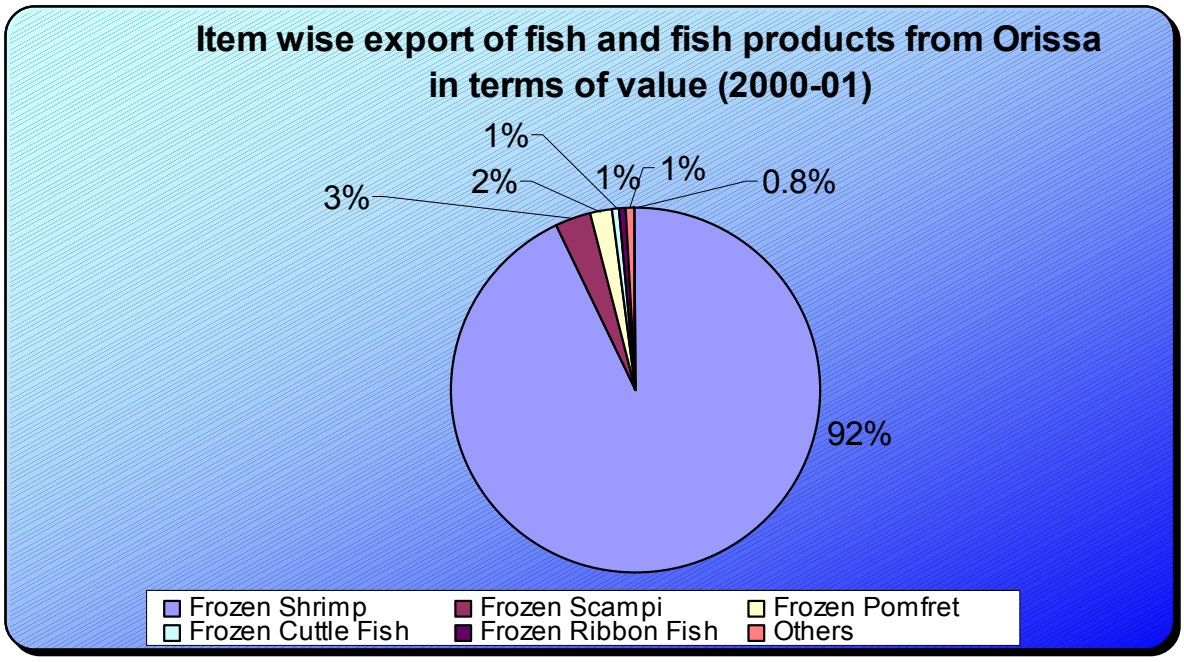


Fig. 3: Item Wise Exports From Orissa

[15] MPEDA Bhubaneshwar

Contribution of small scale fisheries

Contribution of small scale sector in capture of prawn is small and also getting smaller. As has been pointed out earlier, the contribution of non-mechanised boat to total marine landings reduced from 53% in 1985-86 to 33% in 1996-97[16]. In terms of number of crafts also, where the number of mechanised boats has increased over the years, the number of traditional crafts have either stagnated or reduced in most of the research sites (Chandrabhaga, Penthakata, Balaramgadi). The total number of traditional crafts in the state has gone down from about 13500 crafts in 1992-93 to about 8300 crafts in 1996-97 according to the handbook of fisheries statistics, DOF 97-98.

The proportion of prawn/shrimp in total catch of the traditional crafts is also low and in most sites the fishermen rated it as the second or, third most important item in terms of income and the least in terms of quantity. Whereas for mechanised boats, prawn is the most important item both in terms of quantity and income.

3.4 Constraints faced by the fisheries sector

Reduced catches:
Reduction of catches was cited as the primary concern during the discussions with fishermen, both traditional as well as mechanised sector. Exploitation of inshore fishing has gone beyond sustainable levels. There are no deep-sea vessels in the state, meaning all the boats (traditional as well as mechanised) fish with in 22 Kms of the shoreline. This coupled with the fact that number of boats operating on the coast has increased considerably has resulted in reduced per capita catches for the fishermen. Some items such as sea-white prawn and seer fish that were available in large quantities just a decade ago are rarely caught now-a-days. The secondary information gathered during the research indicates that though the total catches from Orissa coast has not reduced (rather stagnated or increased marginally), it has not kept in pace with the growth in terms of number of fishing vessels operating on the coast. Hence per unit catches have definitely reduced.

Sanctuary:
The Government of Orissa has prohibited fishing with in a sea-ward radius of 20 Kms from the high tide line of Orissa from Jatadhar river mouth to Devi river mouth and from Chilka mouth to the Rushikulya mouth, a length of 40 Kms, from January to May each year. This area is the site of congregation of the rare olive Ridley turtle, an endangered species. But, this restriction hits the fishermen very badly, as the same area has highest concentration of high value items (such as black tiger prawn and sea white prawns) and the period of ban coincides with the peak season of fish catch. Further the government has established the Gahirmatha (marine) wild life sanctuary, with total area of 1,435 sq Km, including reserve forests (mangrove), mud flats and accreted sand bars. It restricts the fishing activities in the area also.

[16] Handbook of Fisheries Statistics, DOF

In spite of the ban, some illegal fishing activities take place in these areas. A state-level monitoring team has been constituted to review the proper enforcement of the provisions against illegal fishing in sea turtle congregation areas.

Turtle exclusion devices (TED):
The United States Food and Drug Administration (USFDA) regulations, makes it mandatory for trawlers catching products for the US market to fit Turtle Exclusion Devices (TED) to the net, so that the fishing activities do not endanger the turtles. MPEDA has been providing the TEDs on a promotional basis to all trawlers. Initially, USFDA insisted on fitting the TEDs manufactured by them, but later on they have agreed to TEDs developed by Central Institute for Fisheries Engineering (CIFE) being used by the trawlers.

There has been much resistance to the use of TEDs by trawler owners because they feel that fish catches are reduced by up to 40% when TEDs are in place. Experiments carried out by MPEDA and CIFE however, indicate the loss of fish catch is not more than 2%. MPEDA is in the process of promoting more and more use of TEDs and is also advocating with the government to bring a notification making it mandatory for the trawlers to use TEDs.

4. Sea Food Export Industry

4.1 Background of seafood exports

In Orissa, exports of marine products started in the early 70's when a few exporters from Kerala started processing shrimp for the Japanese market. It had attained the status of a major industry by mid 80's with number of local players involved. In terms of number of species the exports diversified into quite a few fish varieties like pomfret, cuttlefish, seer etc. The seafood exports reached a peak in early 90's with growth of aquaculture, and also by diversifying exports to new destinations including the USA, EU and the Middle East. But from mid nineties a sharp decline in aqua-culture because of viral diseases and a Supreme Court judgement on aqua culture slowed down the growth of exports.

Foreign Exchange

In Orissa, there has been an increase in the export of fish and fishery products both to the out-state markets (like Calcutta, Mumbai etc.) and abroad. In 1996-97, the total fish production of the state was valued at Rs. 7,735 million and the earnings from exports to other countries amounted to Rs. 2,360 million or a little over 30 per cent (DOF, 1998). In comparison, the value of exports in 1992-93 was about Rs. 900 million or 24 per cent of the total production from the state, indicating that exports were becoming increasingly important to the state's economy.

4.2 Export commodity chain

The main species exported from Orissa have been listed in Table 3.1.2. It can be seen that the export industry is overwhelmingly dominated by a single species - prawn/shrimp. This study was designed to focus on four species being exported from India, namely shrimp/prawn, cuttle fish, squid and lobster. In the context of Orissa none of the other three species have any significant contribution to the exports; hence this report focuses on shrimp/prawn exports only. As can be seen from Table 3.2.2 in the previous section, almost 95% of the value of seafood export from Orissa comes from Shrimp and Prawn.

In terms of destination countries Japan has been the largest importer of marine food from Orissa. As has been stated above seafood exports from Orissa started with export of prawns to Japan in the seventies and for some time (till early eighties) Japan was the only importer of seafood from the state. Gradually the dependence on Japan market for exporting seafood has been reduced and new markets such as the USA, EU and Middle East have emerged. Table 4.2.1 gives details of destination country-wise exports from Orissa both in terms of value as well as volume.

Table 4.2.1 Destination country wise exports of seafood from Orissa[17]

Percentage of total export	2000-2001		1999-2000		1998-1999		1997-1998		1996-1997	
	Qty Wise	Value wise	Qty Wise	Value wise	Qty Wise	Value wise	Qty Wise	Value wise	Qty Wise	Value wise
EEC	17%	20%	15%	14%	8%	7%	5%	4%	22%	16%
US	19%	21%	27%	29%	28%	34%	17%	16%	12%	12%
Japan	36%	46%	38%	48%	45%	53%	40%	63%	49%	65%
China	13%	3%	9%	2%	10%	2%	20%	4%	9%	2%
S.E. Asia	6%	5%	5%	4%	4%	3%	9%	6%	6%	4%
Gulf	7%	3%	4%	2%	4%	3%	6%	3%	2%	1%
Others	2%	2%	1%	1%	8%	7%	4%	3%	0%	0%

(Source: MPEDA, Bhubaneshwar Office)

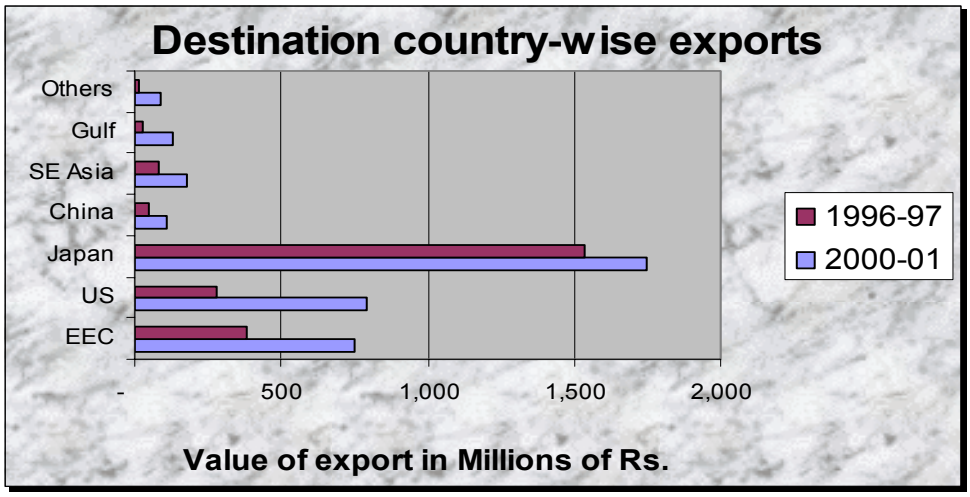


Fig. 4: Destination Country Wise Exports Of Seafood From Orissa

It can be seen that the USA has emerged as a very important destination followed by the EU. The importance of Japan has gone down over the years. Currently Japan's share in the exports is less than half.

In terms of demand for specific products, these three major markets again differ from each other widely. Japan imports mostly block frozen prawns (head on) of large size, where as the United States has a mixed demand for large as well as smaller size of prawns. European markets prefer smaller, peeled items and also value added products like IQF etc. In spite of its smaller size, the European market is very important for the exporters as it has a diverse market demand for many products, which do not have a market either in Japan or the US.

The recession in Japan over the last two years have affected the price offered by the Japanese importers leading to negative impact on the exports to Japan. Hence the USA

[17] MPEDA Bhubaneshwar

and the EU are emerging as important destination for the seafood exporters, and in that context the role of quality legislation becomes increasingly important.

It can also be seen, from Table 4.2.1 that the EU imposed ban on imports from India in 1997/98 produced a dramatic reduction of exports to the EU in this period. This was accompanied by an increase in exports to other destinations such as USA and China.

4.3 Main stakeholders in export supply chain

The export supply chain was mapped out in the first phase of the research. During the second phase fieldwork some additional information emerged on the export chain of shrimp or prawn. The chains for capture and culture prawns are presented in Figures 6 and 7:

Trader & godown owner - A case study

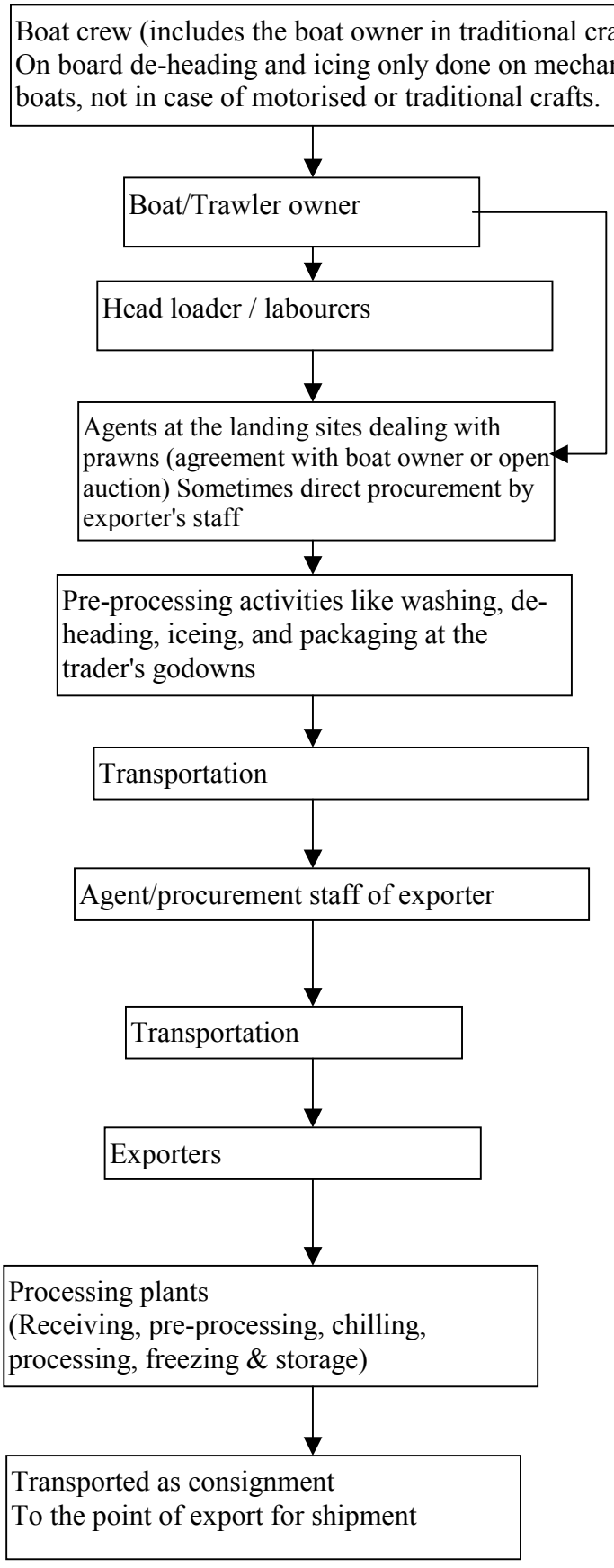
Mr. N Tatajee, Godown Owner & President of trader's Association Chandrabhaga

A native of Andhra Pradesh, settled in Chandrabhaga for last four decades, Tatajee was the first trader in the locality to supply prawns and shrimps to the exporters. He procures all of his supply from the local traditional fishermen and supplies to processing plants in Bhubaneshwar. He has established links with two processors, and has taken finance from them, hence supplies to these two processors only. He in turn has advanced to about 25 boat owners, who supply all of their catch to him.

He has employed head-loaders in the landing centre, who procure the material from the contracted boats as soon as they land and bring the catch to the godown. Generally the boat owner accompanies the material. It is sorted and graded; price is fixed with the boat owner according to the going rate in the market that day. Once the material is sorted, it is washed, cleaned, de-headed, peeled (only in case of small shrimps), graded again, iced and packed in plastic cartons. Each day evening the processors send their insulated vans to collect the material from his godown.

He is also the founder president of the local seafood traders association. In total 13 traders dealing with export species have formed this association to have unity among the traders, so that they can have better bargaining power vis-à-vis the processors and the boat owners. They also lobby with the government for favourable environment for seafood traders.

Fig. 5: Supply Chain For Captured Prawn



Most boat owners take an advance from a local trader with an agreement to supply the catch of export species to the trader.

Boat crews in turn take advances from the boat owners.

The crew members in the mechanised trawlers share 12% share of the value of the catch of exportable items like prawn, whereas in traditional crafts the entire catch is divided among the whole crew with the boat owner getting extra one share each for his boat, net and motors.

Where there is no agreement with a trader at the landing centre, the catch is auctioned to the highest bidder in an open auction.

Headloaders, appointed by the traders transfer the catch from boats to the traders' godown.

The traders generally obtain financial assistance to advance to the boat owners.

In many landing centres (large ones) the major export companies have set up their own godowns and do direct procurement from boats through procurement staff.

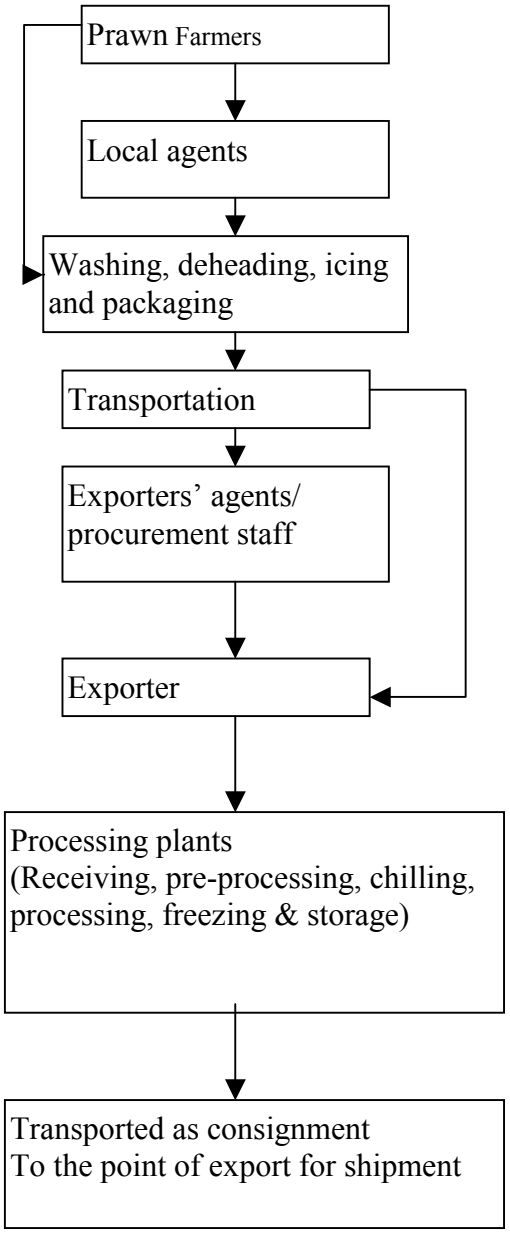
Price is generally fixed at the traders' level with the boat owners/fishermen having little influence on price.

Most exporters procure the material from local traders by sending their insulated vans to the landing centres. In case of remote centres, the traders arrange their own transport and supply the material to a commission agent of the exporter, from whom the exporters collect the material.

Most exporters process the items in their own processing plants, in case the exporter does not have own plant, he has to get it processed by hiring processing facilities of other exporters.

On board pre-processing activity (de-heading and icing) is taken up only in mechanised trawlers. Most traditional and motorised boats do not have ice boxes as they perceive it to be too expensive. There is also no perceived need for use of ice as most of their catch is meant for domestic market and they go for short voyages (one to two days).

Fig. 6: Supply Chain For Cultured Prawn



Most aqua-culture farmers obtain advances money as well as inputs like seeds, feed etc from local agents/traders with an agreement to supply the harvest to the agent.

Many agents co-ordinate with feed companies to provide technical guidance to the farmers.

The agents in turn take advances from larger agents or export companies to advance to the farmers.

Many export companies also supply seeds and feed to the farmers through their agents.

Most exporters procure material from the agents directly by sending their insulated vans to collect the material.

In case of remote centres the agents arrange their own transportation to supply to a larger agent/ commission agent from whom the exporters procure.

Most exporters process the items in their own processing plants, where the exporter does not have own plant, he has to get it processed by hiring processing facilities of other exporters.

Aquaculture farmer- a case study

Mr. Bhupen Nath Sahoo, Aquaculture farmer, Balasore

Bhupen is a native of West Bengal who has settled down in Balasore for last two generations. He is from the agricultural community and not a fisherman by caste. Due to repeated crop-failures he had to look for an alternate income generation source and came to know about prawn culture. In the 1997-98 season, he converted one of his fields of 0.8 hectares into a pond and started with aquaculture. At that time he was among the first farmers in the area to have taken up the activity. He got huge profits (300 – 400%) margins in the first two seasons. This prompted him to expand this activity by having four ponds of 0.8 hectares each. By this time hundreds of other farmers in the locality had also started the activity and it was now difficult to get good qualities of inputs supply in terms of seed and feed. A number of local traders have started supplying prawn seeds and feeds but can not be relied for quality. In addition, in the third season of his aquaculture activity, the deadly viral disease (white spot disease) started. Bhupen lost one full crop to the disease.

Now he has reduced the cultivation from semi-intensive to extensive, and goes for only one crop in a year. He has been able to control the disease reasonably well through these adjustments. Other farmers who still go for intensive farms or two crops lose their crops to the disease. He feels none of the medicines available in the market is effective in fighting the disease.

Initially he never used to depend on financier's money for his crops, but after losing the crop once to the white spot disease he has started accessing finance from the market. The traders, who finance the crop also supply good quality feed and procure the material once harvested. This way the risk of the farmer is hedged. Even if one crop is lost, he still gets an advance for the next crop, so that he can pay back all his debts once any crop is successful.

According to him, the profitability in this farming has gone down, due to the intensive farming, now the investment costs have increased where as the returns are uncertain.

Description of processing industry:

Lists of exporters and processors are provided in the Annex 1 & 2 respectively. The supply chain in Orissa does not have any independent pre-processing plants (peeling sheds). Partly the function of pre-processing is taken up by godowns (warehouse) of the local traders. Most of pre-processing activities are undertaken on-board or at the local agent's godown. This includes washing, de-heading, icing and packaging. The peeling activity for prawn is normally done at the processing plant premises. For the smaller size shrimps, peeling is done at the godown of the local trader by local labourers.

There are 17 export processing plants for export of marine products in Orissa (list provided in Annex 2). Of these four plants have lost their export license for non-compliance of quality norms. The processing industry is dominated by two major players, with these two maintaining almost 70-80 % market share in the export of marine products from Orissa. Only two processing plants (belonging to these two groups respectively) have received EU certification in the state. The use of HACCP systems for quality

assurance is now widespread with as many as nine of the 13 functional plants having got HACCP plans approved by the authorities[18].

Effect on domestic consumption

Increased diversification of the species being exported has meant a few species, which were not finding any export markets, are now going for exports e.g. pomfret, seer Fish. This has resulted in the increased prices for such species, making them unavailable in the domestic market. But most of such species (like the pomfret or seer fish) were consumed by the upper section of the society and thus their non-availability in the domestic market seems to have had a very little effect on the consumption of the poor.

One exception to this is the case of ribbon fish. It was not considered a lucrative catch even for the domestic market, and on most occasions the fishermen used to throw it back in the sea rather than carry it to the shore. A small fraction carried to the shore, used to go for the dry fish market through the small scale processors especially women. During the mid nineties export potential to China and South East Asian counties, of ribbon fish was discovered, and this resulted in increased price and demand for it. This resulted in fishermen bringing all of the catch of ribbon fish to the shore rather than throwing it in the sea. The top quality of the material did go to the export market where as the second quality continued to feed to the domestic dry fish market. During the FGDs, no significant reduction in the volumes of ribbon fish in the domestic market was reported. Lately with the Chinese and the South East Asian markets going down, again the demand of ribbon fish in the export market seems to have reduced leaving the domestic consumption at the previous levels.

4.4 Marketing mechanism & Price developments

The marketing of export species (especially prawn) is mostly done through advance payment basis. The primary producers (boat owners and aquaculture farmers) take advances and inputs from the local traders with an agreement to supply the catch or harvest to the trader. This practice is followed mostly because of the capital intensive nature of the operation and lack of access to any formal sources of finance for the fishing activities. But this dependence on the traders/agents lowers the bargaining power of the primary producer.

Price is very volatile and depends on many outside factors such as supply and demand at macro level that could be affected by government policies, import norms etc. Generally the traders decide the prices at local level and boat owners or aquaculture producers have very little say in that. The traders are constantly in touch with the exporters or their commission agents and know the going rate of various species for that day. They offer the price to the boat owner after deducting their margin[19].

[18] MPEDA Bhubaneshwar
[19] FGDs with Fishermen and traders at Puri, Balasore, Balugaon

Similarly the exporters also procure the material at a rate to cover their processing cost and margins. Hence any fluctuation in price or, lowering of the price is generally passed on to the primary producers who do not have any storage capacity and are thus at the mercy of the other players in the supply chain.

Price is also dependent on the quality of the catch. Apart from the count (size) of the prawns, the catch is segregated in to three categories, first quality (fresh prawn with hard shells and no breakage), second quality (either soft shells or minor breakage of the shells) and decomposed material. The second quality material is generally procured at half the price of the fresh material and it is exported after peeling. Fishermen and traders often see this as unfair as traders/processors buy the material at low price as the material is not good enough for export market, but after peeling it still exported for full price. Decomposed material is either wasted or goes for domestic consumption; it can not go for export.

4.5 Quality and quality criteria

The quality of catch plays a major role in deciding the price. The main criteria for determining the quality is the count or size of the prawns, the freshness of the catch (assessed by the hardness of the shell and no breakage), colour and smell. If the catch fails to meet any of the freshness criteria, the price can go down to half the normal price even for the same sized catch. A decade ago there was not so much quality consciousness among the fishermen, and the prawns were being sold at a flat rate irrespective of freshness. But now even ordinary fishermen are aware of quality of the catch as it makes a significant difference to the price. This has automatically increased the use of ice both for the fishermen as well as the traders. The use of ice varies from one landing centre to the other, depending on the availability and local practice. Normally it is higher in the north zone (Balasore, Bhadrak districts), whereas the traditional crafts in the south zone still do not take ice at sea, though they immediately put the high value items in ice on landing.

The increased use of ice in the business has also promoted the development of many ice plants, and ice is now increasingly available at every landing centre. There were reports of ice shortages during the peak season, but this is a very rare occurrence. Consequently the price of ice may increase during the peak season.

In terms of prawn handling, the major difference has been in the packing material. Instead of Bamboo baskets, plastic crates are more commonly used. Plastic crates assist in keeping the ice longer and it helps to keep the product fresh.

During the study the issue of impact on livelihoods of basket makers came up. The following points were noted:

1. Replacement of bamboo baskets by plastic crates began much before international regulations being studied, and seems to be proceeding independently of such regulations.
2. Basket makers continue to serve the needs of domestically consumed species

3. Only a small fraction of the business of basket makers seems to have ever come from exported species (export species caught by traditional fishermen). These are now replaced by plastic crates.

Most export firms use insulated vans for transport of the material from the local traders' godowns to their processing plants. Only in case of remote and inaccessible landing centres, the local agents arrange their own transport, mainly in open trucks or vans and bring it to a commission agent of the company. The insulated van of the exporters picks the material from these places.

There seems to be no evidence that small scale transporters (those transporting material on bicycles, tricycles and motorised small vehicles), have ever been part of the export supply chain. They seem to be involved in conveyance of domestically consumed species to the local market, and therefore remain unaffected by changes in the export supply chain. In the export chain, lorries and mini vans have given way to insulated vans. As in past, such transportation is directly owned/managed by processing plants. The transport sector as a whole remains largely unaffected by new legislation - yet.

Overall quality requirements of all processing plants have increased and there is a growth in quality consciousness in the industry.

4.6 Importance of export-species to the livelihoods of the poor

The focus group discussions with the traditional fishermen revealed that although the catch of export species is very small compared to their total catch, it plays a significant role in sustaining their livelihoods. In terms of income almost 30%[20] of their income comes from these species. The domestic varieties generally are just enough to cover the cost of operations, where as the income they obtain from shrimp/prawn is the real surplus they make in the business. During the FGDs, they were also asked to rank different species caught by them in terms of importance in their livelihood. Export species like pomfret, small shrimps and seer fish were ranked as the most important ones, where as Prawn came a distant third as the quantity of prawn caught by them is very low. Asked whether how the ranking would have been a decade ago, most replied Prawn and shrimps would have been the top ranked species, whereas pomfrets and seer fish would have been ranked alongside other domestic species.

For the trawler crew members, the income from the export species (especially prawn) is the mainstay of their livelihoods. Though most trawler crew have other sources of income like agriculture it is mainly for consumption purposes. As much as 90% of their household level income comes from the seafood catch. In terms of ranking, prawns were the single most important species in terms of influencing their livelihood, all other species were a by catch. For the other poor groups including labourers/head loaders for the traders and workers at processing plants almost their entire income comes from export varieties.

[20] FGDs with fisherment at Konark, Puri, Balugaon

During the FGD it was also revealed that the expenditure pattern of the fishing communities in coastal areas also revolves round the income from prawns. Most of the social functions like marriage or other festivals are scheduled during the peak season for prawn.

4.7 The 'poor' in the export supply chain

Table 4.4.1 (based on the mapping of the export supply chain) summarises the various players involved in the export supply chain and their respective roles.

Table 4.4.1 Main actors in export supply chain

Sr No	Actor	Activity and status
1	Head-loaders/ labourers at agents godown	Do not have any productive assets, employed by the agent for transporting the catch from landing site to the godown and for the pre-processing activities in the godown.
2	Fisherman Crew in traditional crafts (rayat)	Does not have a boat, works as wage labourer for fishing, under labour contract
3	Fisherman, boat and net share owner	Arranges a crew team, goes with the crew, gets share for his boat, net and motor and also his own wage share
4	Trawler crew	Goes on voyage in a team of 7-10, employed by the trawler driver. The team of crew members gets 12% share on A and B grade[21] catch, and the whole of C-grade and dry fish items.
5	Graders/sorters	They grade, sort and process fish in processing plants, sometimes get salaries, sometimes get paid in proportion to amount of prawn processed.
6	Aqua-culture farmer	Owns an aquaculture farm in addition to landholding, but major portion of household income comes from aquaculture. Depends on local agents/traders for advances and other inputs.
7	Godown owner/trawler owner	Provides advances to a few boat owners, has his own storage and transport arrangement operates his own mechanised boat. Sends fish to wholesale markets at Calcutta, Vizag etc.
8	Exporter's procurement staff	Purchase fish directly from boat owners or local traders, provide advance to a few traders and boat owners. They are salaried staff of the export companies
9	Commission/Collection agents	They collect fish at landing centre or at deep sea from individual boats by motor launch and supply to the specified godowns or exporters

[21] The catch is graded in terms of importance/value – Three main grades are available – Grade A consist of export species, Grade B of high value domestic species, Grade C of low value items, by catch etc.

10	Exporters	They have their own processing unit, where they process, pack and sell directly abroad or through clearing and forwarding agents. Few exporters do not own any processing plants; they hire the processing capacities of established exporters for their material.

As can be seen, different players have different degree of control over the pricing, marketing, procurement, processing decisions, capacity for storage in the industry. Extent of information availability (especially on prevailing prices and demand) at different levels is also varied. Consequently the risk exposure varies for different levels. This leads to a situation where a section of players in the supply chain are marginalised and poor, where as others are much better off.

Identification of poor in the supply chain

In order to identify the 'poor' among the various players involved, a Participative Poverty Assessment (PPA) exercise was undertaken in three research locations; Penthakata, Paradeep and Balugaon. The three locations covered a mix of traditional as well as mechanised sector, and also aquaculture fisheries. The PPA consisted of FGDs with people selected from poor wealth category (both men and women). The objectives were:

- Identify local perception on socio-economic category, its criteria and distribution
- Identify the 'poor'
- Constraints experienced by poor to pursue particular livelihood strategies
- Identify changes (in access to five capitals constituting livelihood) occurring within fishing communities and how these relate to poverty.

One constraint with PPA was that, it was very effective in identifying the poor with in the community, but the participants in PPA had very limited ideas on players involved in the export supply chain outside the community (e.g. labourers in the processing plants – graders, sorters etc.). Hence in addition to PPA, observations from other FGDs and interviews were used to identify the poor.

It emerged from the PPA that the head-loaders/ labourers at agents' godown; fisherman crew in traditional crafts (rayat); fisherman, boat and net share-owner; and the trawler crew (first four in the list of key players in the export supply chain) were identified as poor. The trawler owners were often outsiders, did not belong to fishing communities or caste, often wealthy business man and not involved in fishing business per se. Another category that of the labourers in the processing plants (graders and sorters) was added to the list of poor. This was based on FGDs and interviews with other key stakeholders and observation during visits to the processing plants.

Case study: PPA at Noliasahi, Paradeep

Noliasahi is a Fishing village about 45 Kms from Paradeep, the largest fishing harbour of Orissa. It has 107 households all of fishermen caste, mostly of Oriya and Telugu origin. The major livelihood options are:

- Fishing (about 100 households)
- Agriculture – mainly Paddy (20-30 hh, in addition to fishing)
- Betel leaf farm (10-20 hh, mostly main occupation of the hh)
- Labour (70-80 hh)
- Processing (dry fish) & vending (10-20 hh, in addition to fishing)
- Trading in fish and also fishing related auxiliaries (10-15 hhs)

Although there is no mechanised trawler belonging to any hh in this community, about 10-15 men from the village work as crew members in different trawlers based at Paradeep. The fishermen of the village mainly fish at the estuaries of the rivers, within 5 kms from the shore. There were no aquaculture farmers in this particular community.

The village was devastated in the cyclone of 1999. Almost all the boats were broken and nets were lost. The community is still in the process of reconstructing their livelihoods. Almost all the boats in the village have been built with the help of aid agencies within last two years. The village has about 40 wooden catamarans, 3 large Bengali dingis and 1 fibre IBM boat.

According to the community almost every household in the village is 'poor' as their community is cutoff from the mainland, has poor communications, no schools or hospitals and very poor infrastructure for the major occupation i.e. fishing. However for categorising in terms of socio-economic conditions the community can be divided into four categories.

Category	Destitute	Very poor	Poor	Not-so-poor
Description	A woman headed HH. The lady goes to work at the landing centre or at trader's godown. No other earning members in family as they are too old or are small children.	HH having labour as the main occupation. Do not have their boats; go as 'rayat' on other's boats. Women do head loading at the landing centre.	Traditional craft owners or trawler crew members. Generally have small landholding also, and do seasonal agriculture.	Traders, who have advanced to 15-20 boat owners, also have larger agriculture farms, sometimes having their own betel leaf farm (a major cash crop in the area).
Approximate Numbers	10-15 HH	50 HHs	40 HHs	10-12 HH

- The major concerns of the community relate to lack of catches, reduced access to natural capital (after the cyclone destroyed many agriculture and betel leaf farms).
- The access to various capitals has undergone a drastic change because of the cyclone, the process still fluid as the community is still recovering form and reconstruction efforts are going on the village.

Two more similar case studies are at Annex 4.

4.8 Main problems – break up in terms of international legislation Vs other challenges/constraints

The main problems that face the seafood industry currently are mostly concerned with domestic problems rather than that of any international regulation. The most important problems faced by the fishing community are

- **Scarcity of catch** is the most cited problem faced by fishermen all across the coast both in mechanised and non-mechanised sector. Even though the total capture of seafood in the state shows a growing trend, the per capita catch has come down.
- **Increased cost of fishing** especially due to mechanisation and motorization of boats was another frequently cited problem. Fishing has become much more capital intensive with the cost of boats, nets and motors increasing. The operational expenses such as labour charges, cost of fuel has also increased. In the off seasons, it becomes unprofitable to operate the boats, and many traditional fishermen prefer to go as crew in other boats rather than putting their boat to sea.
- The biggest problem for the aquaculture industry currently is the **outbreak of viral disease** that has arrested growth of this sub-sector. No reliable method of prevention or cure for the disease has been found, and it has made investment in aquaculture much more risky.

Apart from these major problems, other problems include lack of facilities at landing centres, lack of formal financial services, increasing competition from mechanised sector were cited in the FGDs with fishermen and traders. It can be seen that most problems affecting the fishing community are of local nature. It was mainly the processors and exporters cited the problems due to enforcement of quality legislation. These included

- Increased cost of processing for no extra returns
- Process of certification is time consuming
- Frequently changing standards

5. Food Safety Legislation

The study team considered food safety legislation and regulations of all major importing countries and their effects on the fisheries sector in Orissa.

Primary stakeholders at the lower end of the supply chain (fishermen, traders etc.) remain largely unaware of details of these legislations.

Information and opinions of secondary stakeholders like the government officials, association of exporters and processors were obtained.

EU legislation dominated discussions rather than regulations in the USA, Japan or even domestic Indian legislation, mainly because of the more recent and immediate effects it has had.

The United States Food and Drugs Administration (USFDA), emphasises regulation of quality at the port of entry. The HACCP which relates to quality control during processing is a relatively easy and inexpensive to implement. Most processing plants are HACCP compliant. There seem to have been no major recent changes in US policy. No impact specific to USFDA regulations were reported.

Environmental concerns originating in the US have however had some impact, notably the turtle exclusion devices made mandatory for trawlers by Indian regulators as a result of US conditions. Compliance is low. There is an ongoing unresolved controversy regarding this. The impact is unclear.

Restrictions on use of antibiotics in aquaculture, as a result of globally expressed environmental and health concerns, are in place, but are not the primary cause of the decline in aquaculture which is more a result of Indian domestic environmental concerns and the outbreak of viral disease (white spot disease).

Japan places the responsibility of ensuring quality of imports on its own importing firms, and regulates (and penalises) them as a control measure. The focus of quality is again on the product (its freshness, size, colour etc.), rather than on the conditions prevalent processing plants. This leads to very high standards demanded by Japanese procurers in India. There has been no recent or observable change in these standards, and hence no reported impact.

In case of the EU quality is the responsibility of the Indian exporter. Specifications cover the product as well as processes. Quality right through the chain is emphasised rather than at any specific point. Much of the present study therefore inevitably discusses impact of EU regulations.

5.1 EU legislation – impact of ban

The ban imposed by the EU on the seafood exports from India, seem to have had limited effect on the primary fishermen, as suggested in the FGDs. In only three of the 12 FGDs did fishermen remember the ban, and those remembered also said the only effect on them was a reduced price for the catch for a limited period (about 2 months). They have encountered such price crashes pretty frequently like during the outbreak of Plague in Gujarat, Gulf War and more recently war in Afghanistan. The immediate impact was that of the crash of prices during the first 5-6 days, in some cases procurement activity from the exporting firms stopped and the catch had to be sold in the domestic market. After approximately one week the procurement resumed again though at a lower price compared to pre-ban period. This continued for almost two months, before the fishermen could get the normal price.

There is more awareness of the ban at the traders and processors level, but also it seems the only impact has been a temporary reduction in price[22]. Such price crashes are again not new to them. The reason for such limited impact could be that Europe was not a large importer of seafood from this part of the country.

Exporters, especially those who had already been dealing in the EU markets were more directly affected. Some had consignments on the way to EU, which were rejected as an impact of the ban, and some also lost their ongoing relationships with the regular customers/importers during the time. Alternative markets including Japan and South East Asian countries absorbed the produce at a lower price during the time. There was also an increase in exports to US and Chinese markets - see table 4.2.1

It took more than a year to resume business in the EU markets. Many exporters are still in the process of obtaining EU approval and have not yet been able to resume their operations in the EU. Also there is always a risk factor in sending consignments to the EU. Many exporters, especially the seafood exporters association talked about the testing mechanism not being uniform or consistent. The standards have been changing frequently and arbitrarily e.g. the limit for bacterial counts were changed suddenly in the wake of the anti-biotic usage crisis.

5.2 To what extent EU legislation is enforced/implemented

The enforcement or implementation of EU legislation is limited to exporters and processing plants. Exporters intending to supply material to the European Union countries have to process the material in an EU certified processing plant. The process of certification of the processing plants is being strictly enforced, with a jointly team of MPEDA, EIA and CIFT experts monitoring it. All processors contacted during the study felt that the process of certification is fair and efficient, and does not cause any undue delay.

[22] FGD with traders at different locations

Beyond the processing plant level however, there seem to be no changes in handling practices directly attributable to international legislation. However, over all quality consciousness and use of ice does seem to have increased, and quality expectations of all buyer countries including Japan, USA and the EU may have played a role here. Increased availability of ice, better export orientation, and development of distant domestic markets (capable of paying for costs of quality improvement) all seem to have contributed.

Hygiene at the landing centre levels especially in smaller remote centres still leaves a lot to be desired. There seem to be hardly any quality monitoring at godowns of the traders and agents. There is no registration for these godowns, especially because they are not involved in pre-processing (peeling) activities; (although de-heading, washing, icing and packaging are done here!).

5.3 Entry barrier for new players

EU regulations seem to have had visible and discernible impact only at the processing plant level. According to the exporters a middle sized (10 tonnes per day) processing plant, requiring upgrading to EU standards has to invest up to Rs.15 millions initially, and about Rs.2.5 millions every year for maintaining the standards[23].

Many small scale exporters in the state are incapable of making such large investments. Only two of the existing 13 processing plants in the state have obtained EU certification. Another four plants are in the process of making the requisite modifications in order to obtain the EU certification.

After the EU ban, the Indian government came out with revised national standards for all marine product exporting processing plants in 1998. These standards cover all the basic requirements of EU certification and are reportedly stricter in some aspects due to different interpretations.

This situation has certainly acted as an entry barrier for new players in the industry. In the early nineties, as marine exports were identified as a field with huge export potential, there were efforts from the government's side to promote marine exporters. Before the EU ban, MPEDA had many schemes for helping new entrants in the trade to establish their business. This resulted in mushrooming of many new exporters, with little attention to quality.

But with the new regulations, the marine product export trade has become extremely capital intensive. In Orissa, no new player has entered the industry in the last 3 years whereas there was a mushrooming growth of exporters in the early nineties. Declining catches and recession in aquaculture due to the white spot disease could also have contributed to this.

[23] Interview with Mr. Mukherjee, representative of Sea Food Exporters Association

5.4 Capacity for compliance

The capacity of the system to enforce compliance is limited. As has been pointed out earlier the compliance is limited to the processing plant level. A joint team from EIA, MPEDA and CIFT act as a technical advisory committee to monitor compliance of the processing plants. This monitoring is rigorous when the plants are applying for EU certification. After the certification process is over, there are inspections by the team to ensure compliance, but they are neither frequent nor rigorous.

Beyond the plants - at procurement centres, landing centres, and on board craft - there is hardly any quality monitoring by MPEDA. The state government's fisheries department is responsible here; their capacity to ensure quality compliance is limited, the task is enormous for that, few experts available. Lack of infrastructure and facilities also hinders compliance. Different local authorities are in charge of maintaining landing centres, and the department of fisheries / MPEDA have no direct control or influence. There are few stakes in ensuring clean and upgraded facilities.

Small processors do not have the infrastructure or the financial capacity to invest in quality maintenance. The small scale of their operations inhibits new investment. Knowledge, awareness and capacities of people - fishermen, those at landing centres and traders - remain low.

5.5 Role of government and private sector – its perception

Governmental agencies like EIA, MPEDA, central government agencies like CIFT and the state government's fisheries department play a vital role in the implementation of the EU legislation.

The Export Inspection Agency, which is responsible for quality inspection of all kinds of exporters, does not have an office in Orissa. The Kolkata regional office oversees exports from Orissa. As a result, problems in monitoring seem to arise. The EIA could not be contacted for its views on international legislation.

MPEDA is responsible for marine products exports and plays a more significant role in quality assurance of seafood exports. It has a regional office in Bhubaneshwar, which monitors all the seafood exporters in Orissa. They also provide guidance and technical advice to exporters who want to upgrade their infrastructure. MPEDA also has a subsidy scheme for processing plants upgrading to EU standards.

The general perception of the agency (MPEDA) on international legislation relating to quality is positive. There is a feeling that quality had indeed been compromised in the process of increasing the volumes of exports and in developing the export industry. In the early nineties any entrepreneur coming into the marine food trade was given all assistance and support to set up his unit with minimal level of quality inspection. MPEDA was also seen more as a marine exports promotion agency rather than a monitoring agency. In spite of clear guidelines on quality, many exporters and processors

chose to ignore them and no action was taken against them. The EU ban indeed came as a rude shock to the industry, which forced the government to emphasise quality. Most people seem to agree that if there had been no ban, regulations would never have worked even at processing plant level.

The private sector can be divided into two sections on their perception towards the EU regulation –

1. Large exporters, who have obtained their certification, are not unhappy with international regulations, since it reduces competition. They also agree that better standards are necessary in the long run. They see a need for improved transparency in the system that enforces EU guidelines and the process of certification.
2. Smaller exporters who have not been able to upgrade their plants to EU level feel that the regulations are unjust. They feel that the focus is not on the quality of the product, but on the quality of the plant, which does not ensure that seafood processed in the plant is of high quality. They feel that EIA regulation is not practical in the Indian context.

5.6 Stakeholders' perception of EU and EIA

Awareness on the quality regulations is minimal among the stakeholders at the lower end of the export supply chain especially the poor in the export supply chain. At the boat owners, fishermen and aquaculture farmer's level, they are apparently unaware of even the existence of international quality regulations. Their operations and businesses seem to continue unaffected. They have had practically no training or education on quality expected by the international market. Regulations and food safety standards are perceived as meant for processors and exporters. This study did not discover any trickle down effects of international quality regulations to stakeholders at the end of the chain. Against this, there are clear upward trends in utilisation of ice and on keeping the product fresh, but how much this can be attributed to international regulations remains unclear.

Trawler owners and traders, although aware of the existence of quality regulations, do not seem to be aware of details. Nor was any evidence of concern for compliance visible. No changes in practice attributable to international regulations seem to have occurred.

Because current enforcement does not go beyond processing plants, international regulations seem to have had little effect on the lower end of the export supply chain.

5.7 Possible future impact of stringent regulations

The potential impact (of strict enforcement of EU regulations related to "farm to fork" traceability) is significant, especially on poorer small-scale operators least capable of investments and changes needed for compliance. Some likely provisions expected and their effects are summarized below:

Traceability of the material:

In case traceability of catch is made mandatory and enforced effectively, it will make it extremely difficult for the traditional fishermen (especially in the remote landing centres) to be able to supply their catch to the exporters. There are large numbers of traditional fishermen, scattered all along the coast. They often depend on few local traders who accumulate and supply to larger commission agents for exporters. In many places the catches are auctioned off at the same auction centre. Many smaller landing centres have no communication facilities. It would be extremely difficult to track the traceability of the catch.

In terms of volume, though these players contribute very little to total exports from the state, incomes from the export species make up a significant proportion (about 30%) of individual household incomes. This would be greatly affected if export channels were closed or restricted.

Quality enforcement on inputs like ice:

If quality regulation on inputs like ice were enforced stringently, there could be a crisis in the industry. Apart from captive ice plants in the premises of the processing plants, none of the independent ice plants seem to be complying with quality regulations. Although there are domestic regulations, which specify quality parameters for ice and water used, there is very little enforcement of these regulations.

Regulation of hygiene conditions at landing centres and on board fishing craft:

The current hygiene conditions prevalent in most landing centres (especially in the remote centres) are quite poor. There is scarcity of clean water for washing, the catch is generally unloaded on sand (in the absence of platforms for unloading), there are no electricity and communication facilities, and ice & transport are not always readily available. Although there are proposals with the government, to improving facilities at the landing centres government officials admit that implementation and enforcement could be difficult and slow. Under a strict enforcement regime, most sites especially those used by the traditional fishermen, would be pushed out of the export supply chain.

In term of on-board facilities, most traditional craft do not have proper storing facilities or iceboxes. Their forays into the sea are as short as 6-8 hours, and they carry little or no ice with them. It would be very difficult and costly for these craft to comply with quality regulations, and would be pushed out of the export supply chain. Even mechanised boats

would find it difficult to comply with quality regulations; many of them are not even registered. Larger trawlers would complete their take over.

Financing of operations

The entire fishing industry (both mechanised and non-mechanised sectors) depends on the informal sector for finance. In most cases, financiers of fishermen are the very dealers/traders who buy their catch and are able to control prices and information flow. With stricter quality regulation, dependence of small fishermen and boat owners on their financiers would reduce their bargaining power.

6. Implications of This Study

6.1 For policy makers

- *Impact of regulation on Poor:*

The largest market for exports of seafood from Orissa is Japan, which imports mainly block frozen large prawns[24]. The Japanese quality regulation has not had any significant changes in terms of quality requirements lately. The focus of the quality regulation is on the importers to ensure quality of their imports rather than monitoring the exporting countries. The practises of the Japanese import firms have not changed significantly and are not exclusive of any party. Hence the regulations of Japan do not seem to have had any direct impact on the livelihoods of the poor.

The second most important market for seafood exporters in Orissa is the US, which has a mixed demand for large and small prawns both block frozen and value added products. The quality regulations in the US focus at strict monitoring at port of entry rather than at production and processing points. Regulations like HACCP have been well accepted by the processing industry in Orissa, and almost all the processing plants have already obtained the HACCP certification and their procurement process remains unaffected by the HACCP. The study has not identified any significant changes in the livelihood of the small traditional fishermen or that of the crew members in the mechanised boats as a result of these regulations. But environmental provisions in the US regulation like the mandatory use of TED is likely to affect the mechanised sector and consequently livelihoods of the crew involved. Although the fisheries officials believe that the usage of TEDs would not affect the catch, the trawler owners believe upto 40% of their catch would be lost if they are to use the prescribed TEDs. But as yet, this has not had any major impact in the actual catches as TEDs are rarely used as of now.

Exports to European Union from Orissa mainly consist of smaller peeled shrimps and value added products. European Union's regulation has a potential of affecting domestic fishermen's livelihood because its provisions covers the entire process right from procurement to processing. This study establishes that at this moment the EU seafood legislation has had no significant or visible impact on the poor, except in the case of labourers in the processing plants where it seems to have had a positive impact. The number of such workers is small and limited to organised sector seafood processing industry. No indication of lower margins of the exporter or processors being passed on to fishermen was available. In most cases prices have increased. In the few cases where prices have fallen it is more to do with macro economic factors like supply-demand rather than quality regulations. The reason for this is mainly is that the enforcement of the regulations has not gone beyond the processing plant. **But in future if the enforcement of the regulations become more stringent and the proposed 'farm to fork' principle is adopted, it is likely to affect the livelihoods of both the traditional as well as mechanised fishers & crew adversely.** As the hygiene conditions during on-board

[24] Page 27 final paragraph

handling at present is not up to the mark, most boat owners would have to make significant investments to be able to supply their product into the supply chain that goes to EU market. Any investment to be made by the boat owner is likely to affect the earning of boat owners as well as the crew. Also if the principle of traceability is applied, many small and remote landing centres would lose the opportunity to take part in the supply chain because of the prevailing hygiene levels. As such landing centres is mainly used by poor traditional fishermen, it is likely to have very significant impact on their livelihoods and that of the crew working in these boats. Improvements of the infrastructure at the landing centres and that available for on-board handling would go a long way towards mitigating the affect of such future regulations and their enforcement.

The other markets are not large enough nor are the changes happening in their quality regulations significant enough to have any visible impacts on the livelihoods of the poor.

From the consumer's point, the export of seafood has not affected the poor section of the consumers as it was never a part of their consumption pattern. The exported species like prawn, shrimp, pomfret were otherwise being consumed by the high-end customers in the market.

- *Monitoring and enforcement of Orissa Marine Fisheries Regulation Act (OMFRA):*

The major problems for the fishermen in marine fishing are local in nature pertaining to over fishing, increasing number of unlicensed trawlers, encroachment of trawlers into the traditional fishing zones etc. The state government has an extensive legislation in OMFRA, which addresses all these issues. But enforcement on the ground of OMFRA has still a long way to go. The capacity of the fisheries department to enforce OMFRA has also to be built up in terms of human resource, systems and infrastructure.

- *Assessment of numbers of players involved in various sectors and different activities of post harvest:*

As has been pointed out there are large gaps in information relating to numbers of players in different activities in post harvest activities. The estimates based on the statistics provided by the department of fisheries are at best sketchy. It is extremely important to understand the numbers of players and their roles in the post harvest fisheries for taking any policy decision.

- *Upgradation of facilities at landing centres, jetties and harbour*

Lack of facilities at various landing centres, jetties and harbours hinder the compliance of quality regulations. Even at the largest and recently upgraded harbour in Paradeep, basic facilities such as clean water and electricity are not there. The situation in remote landing centres is far worse.

- *Package of practices for aquaculture farmers.*

Access to good quality inputs such as seeds and feed and training in their use is currently difficult for aquaculture farmers in the state. Due to this, the farmers are not capable of fighting the viral disease effectively. In some cases the private firms and local agents or export companies provide these inputs. But these inputs are focused at increasing the sales of their products rather than capacity building of the farmers. A package of practices for aquaculture farmers (including supply of quality inputs, training and marketing support) is necessary for clean and less risky aquaculture farming.

6.2 Quality Assurance Management Systems

- *Creating awareness on quality regulation at ground level:*

In spite of the efforts by agencies like MPEDA, and state government, the awareness on quality regulations at ground level (including the local government extension officials) is far from satisfactory from the EU regulation point of view. Implementation of the regulations would be much more effective if there is awareness about the details and better understanding and consistency in interpretation of quality norms. Before any more stringent quality regulations are implemented it is essential to create the requisite awareness on the importance of the regulation and its would-be effect on the fishermen. As noted earlier in this report, it is not clear however, that more stringent enforcement of EU regulations will impact on the poor one way or another.

- *Capacity building of government system to ensure compliance:*

The current system for compliance focuses mainly on the processing plant levels. It does not have the requisite strength either in terms of human resources, systems or infrastructure to be effective beyond the processing plants. This will be a handicap if proposed 'farm to fork' traceability regulations are adopted.

- *Involvement of stakeholders in the upkeep of landing centres:*

Currently there is a very low level of involvement of the fishermen, traders or exporters in the upkeep of the various landing centres, jetties and harbours in which they have the maximum stake. They pay a small fee for use, but have no control or influence. This has resulted in a lack of cooperation between the primary users and consequently poor upkeep. There is no system of addressing the needs of the users and they have very little say in the way the landing centre is maintained. A system for involving the key stakeholders in the maintenance of the landing centre is important to upgrade conditions prevalent there.

7. Summary

The study identified as poor certain groups in the export supply chain: traditional fishermen and their crew, crew in the mechanised sector, head loaders and other labourers in the chain, and unskilled workers in processing plants.

Although the contribution of the traditional fishing sector to overall volumes of exports appears small, contribution of export species to individual household incomes of fishermen is far from insignificant. The most important export species for traditional fishermen are pomfrets, seer fish, and small shrimps followed by prawn. Overall, there is low involvement in export supply chain by the traditional sector. The mechanised sector on the other hand depends almost exclusively on the export market of a single species – prawn. Other species are treated as by-catch by them. Similarly, brackish water aquaculture depends on a mono culture of black tiger prawn, almost exclusively for the export market.

Labourers do play a role in the processing of seafood for exports and hence are affected by changes in the industry, mainly in terms of wage rates and working conditions.

International quality regulations have forced the industry to undertake process improvements. This has definitely improved standards in processing plants, but not necessarily beyond. The quality assurance mechanism beyond the plants remains weak, especially at the landing centres and procurement points. This limits competitiveness of the industry as a whole in international markets, with possible effects on poor downstream, although the last is not clearly established. The response of the government has been reactive rather than proactive in the case of regulating the seafood export industry.

Improvement of facilities for on-board handling and at the landing centres is clearly important. Information (on demand, supply and prevailing prices) flow to the stakeholders, especially those at the bottom end of the supply chain would increase their bargaining power vis-à-vis the traders and dealers. Lack of availability and accessibility to formal sources of credit is another impediment resulting in increased dependence of poor fishermen with middlemen and traders.

Present levels of enforcement of regulations do not seem to have had any visible or discernible adverse impact on livelihoods of the poor involved in the export supply chain. This study seems to indicate that livelihoods of poor people in the chain are at this moment only marginally affected by international legislations, mostly in a negative way. These effects are however likely to be accentuated if EU type legislations become more stringent or are enforced more stringently. In particular, stricter regulations and enforcement, especially with regard to traceability, could have significant impact on the poor.

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Annex 1

LIST OF SEA FOOD EXPORTERS FROM ORISSA

Sl. No.	Name and Address of Exporter	Name of the Chief Executive
1	M/S Suryo Udyog Limited A-68, Sahidnagar BHUBANESWAR-751007	Sri Amarendra Dash
2	M/S Aditya Udyog A-68, Sahidnagar BHUBANESWAR-751007	Smt. Annapurna Dash
3	M/S Suryo Foods & Industries Ltd A-68, Sahidnagar BHUBANESWAR-751007	Sri Amarendra Dash
4	M/S Falcon Marine Exports Ltd A-22, "Falcon House", Ist Floor, Cuttack Road, BHUBANESWAR-751006	Sri Tara Ranjan Patnaik
5	M/S Patra Exports Pvt Ltd Matimandap Sahi PURI-752001	Sri Santosh Kumar Patra
6	M/S Utkal Udyog 246, Lewis Road, BHUBANESWAR-751014	Sri Sachikanta Routray
7	M/S SK Exports Pvt Ltd 246, Lewis Road, BHUBANESWAR-751014	Sri Sachikanta Routray
8	M/S Kay Pee Exports Pvt Ltd Flat No.307 Mahadev vihar Bomikhal, Cuttack Road, BHUBANESWAR-751010	Sri Kailash Kishore Das
9	M/S Noble Aqua Pvt Ltd A-228, Sahid Nagar BHUBANESWAR-751007	Sri P K Johnson
10	M/S Seal and Fisheries Pvt Ltd A-118, Sahid Nagar BHUBANESWAR-751007	Sri Rajendra Nath Mishra
11	M/S Konark Aquatics & Exports Pvt Ltd Plot No.1, Sahid Nagar BHUBANESWAR-751007	Sri Tarakanta Mohapatra
12	M/S Bijaya Marine Products AT:Atharnala Patna, PO: Gopinathpur, Dist: PURI-752002	Sri Naba Kishore Das

13	M/S K K Patnaik & Co. 308,Sahid Nagar, BHUBANESWAR-751007	Sri Klamilni klanta Patnaik
14	M/S AB Marine Products Pvt Ltd AT/PO: Panaspada, Via: Brahmagiri, Dist:PURI-752011	Sri Pradipta Kumar Sahoo
15	M/S Niladri Exports 376, Goutam Nagar, BHUBANESWAR-751014	Sri Rajeev Ray
16	M/S Sabri Food Products HIG-137, Kanan Vihar, BHUBANESWAR-751031	Sri P G Sasi
17	M/S Sri Jagannath Exports and Imports AT:Atharnalapatna, PO:Gopinathpur Dist:PURI-752002	Sri Bijay Krushna Das
18	M/S S.Chanchala Combines AT:Atharnalapatna, PO:Gopinathpur Dist:PURI-752002	Sri Naba Kishore Das
19	M/S Fishco Aqua Exports Pvt Ltd Chakratirtha Road, PURI-752002	Sri Bibhuti Bhusan Das
20	M/S P & P International Pvt Ltd Plot No. 1451, CDA, Sector-6, Abhinab Bidanasi, CUTTACK-753014	Sri Satyasiva Patnaik
21	M/S Capital Freezing Complex 139, Sector-A, Zone-b, Mancheswar Industrial Estate, BHUBANESWAR-751010	Smt Lokeswari Devi
22	M/S Essbee Marine Exports Pvt Ltd A-42,Sahid Nagar BHUBANESWAR -751007	Sri Sanatan Balabantaray
23	M/S Oceanic Marketing Pvt Ltd Plot No.1451: Abhinab CDA Sector-6, Bidanasi CUTTACK-753014	Sri Niranjan Mohanty
24	M/S Spak Enteroprises Pvt Ltd 40-A: B J B Nagar, BHUBANESWAR-751014	Sri Ajay Kumar Mahapatra
25	M/S Prag Exports Pvt Ltd Bamphi Sahi, Tala Telenga Bazar, CUTTACK	Sri Parthasarathi Das

(Source : MPEDA, Bhubaneshwar Office)

Annex 2

LIST OF PROCESSING PLANT, COLD STORAGES, CHILL STORE, ICE PLANT AND PEELING SHED WITH E.I.A CODE NO. OPERATING IN ORISSA

Sl No	Name and Address	E.I.A code No.	Capacity of Processing Plant	Capacity of cold storage	Capacity of Chill room	Capacity of Peeling Shed	Capacity of Ice Plant
1	M/S Bijaya Marine Products AT:Atharnalapatna PO:Gopinathpur Dist:Puri-752002	343	09.5tonnes	50.0 tonnes	-	6.5 tonnes	-
2	M/S Sri Jagannath Exports and Imports., AT: Atharnalapatna, PO:Gopinathpur, Dist:Puri-752002	387	04.0 tonnes	40.0 tonnes	-	3.0 tonnes	-
3	M/S Chanchala Combines AT: Atharnalapatna, PO:Gopinathpur, Dist:Puri-752002	358	14.0 tonnes	130.0 tonnes	-	-	15.0 tonnes
4	* M/S Patra Exports Pvt Ltd At:Gokhara PO:Brahmagiri, Dist:Puri-752002	344	10.0 tonnes	100.0 tonnes	-	1.5 tonnes	-
5	* M/S Veejay Impex Chakratirtha Road Dist:Puri-752002	346	12.0 tonnes	80.0 tonnes	-	-	-

6	M/S Suryo Udyog Ltd Industrial Estate, Paradiph Garh, Paradip, Dist: Jagatsinghpur	335	31.5 tonnes	320.0 tonnes	-	6.0 tonnes	20.0 tonnes
7	M/S Falcon Marine Exports Ltd., 1067, OSIC Industrial Estate Paradiph Garh, Paradip, Dist: Jagatsinghpur	336	17.0 tonnes	230.0 tonnes	-	1.0 tonnes	-
8	M/S Aditya Udyog AT:Telengapentha Dist: Cuttack	370	23.0 tonnes	300.0 tonnes	40.0 tonnes	1.5 tonnes	10.0 tonnes
9	M/S Utkal Exports M/S.S.Bgro(INDIA)Ltd(Leasee) Industrial Estate Mancheswar, Bubaneshwar-751010	333	08.5 tonnes 03.5 tonnes	50.0 tonnes 90.0 tonnes	- -	0.5 tonnes -	- -
10	M/S Falcon Marine Exports Ltd 138,Zone-B Mancheswar, Bubaneshwar-751010	332	10.0 tonnes	130.0 tonnes	-	1.5 tonnes	-
11	* M/S Capital Freezing Complex (A)M/S SK Exports Pvt Ltd(Leasee) * (B)M/S Noble Aqua Pvt Ltd(Leasee) 139, Sector-A, Mancheswar, Bubaneshwar-751010	379 368	08.0 tonnes 03.0 tonnes	50.0 tonnes 40.0 tonnes	- -	- -	- -

12	M/S Sunshine Packaging Industries (A)M/S Alsa Marine & Harvest Ltd (Leasee) 138, Sector-A, Zone-B, Mancheswar, Bubaneshwar-751010	331	11.0 tonnes	80.0 tonnes	-	1.5 tonnes	-
13	M/S The Capital Freezing Complex Champajhar Dist:Khuruda	384	14.0 tonnes	100.0 tonnes	-	5.0 tonnes	-
14	M/S Suryo Foods and Industries Ltd AT/PO: Kuruda Dist:Balasore	380	06.0 tonnes	250.0 tonnes	15.0 tonnes	2.0 tonnes	-
15	M/S Kalinga Marines and Transport Pvt Ltd M/S NavayugaExports Ltd(Leasee) AT:Shampur, PO:Ghatikia Bhubneswar	355	28.0 tonnes	400.0 tonnes	-	7.0 tonnes	10.0 tonnes
16	M/S Sealand Fisheries Pvt Ltd Biruan, N.H.%, Dist:Balsore	342	08.0 tonnes	110.0 tonnes	-	2.0 tonnes	10.0 tonnes
17	* M/S SL Textiles Pvt Ltd S-3/81 & 82 Mancheswar Industrial Estate Bubaneshwar-751010	-	04.0 tonnes	40.0 tonnes	-	-	-

- The E.I.A Code No. of approval was withdrawn due to non fulfilment of GOI standards. Hence defunct. (Source : MPEDA, Bhubaneshwar, Office)

Annex 3

Outline of activities

Date	Place / Venue	Activity
22 April	Noliasahi, Chandrabhaga	• Interview with key informant, Mr. Lachaman Nayak, CPDA (a local NGO working with fishing communities). • FGD with traditional fishermen. • FGD with traders dealing in export species. • Interview with the president of Fish Merchants Association, Mr. Tatajee.
23 April	Penthakata, Puri	• Interview with key informants, Mr. Satyam and Mr. Samsung, Social workers. • FGD with traditional fishermen • Participative Poverty assessment with the community (both men and women) • FGD with traders • Interview with Iceplant owner, Shanti Freezers
24 April	Brahmagiri, Puri	• FGD with aquaculture farmers • Interview with traders and godown owner
25 April	Puri	• FGD with fish traders and godown owners • Interview with the Mr. BC Mishra, Asst. Director of Fisheries at Puri.
26 April	Bhubaneshwar	• Interview with Mr. PK Parmanik, Quality Control Incharge, MPEDA Bhubaneshwar Office. • Interview with Mr. A Mukherjee, Sun-Biotech Ltd. Exporter • Interview with Mr. A Padhee, Export Manager, Surya Udyog Ltd.
29 April	Paradeep	• 2 FGDs with crew members of mechaniseds crafts • 2 Interview with owner of mechanised boats • Interview with Mr. Tara Patnaik, President of Trawler Owner Association.
30 April	Paradeep	• 1 interview with trawler owner • 1 FGD with traditional fishermen • Interview with ice trader. • Participative Poverty Assessment with the community at Noliasahi.

1 May	Balaramgadi, Balasore	• 1 FGD with crew members of mechanised crafts • 2 interviews with trawler owners. • Interview with traders • Interview with Mr. Ashok Tripathy, of Surya foods and industries, Balasore. • Interview with Mr. B Dash, Sea Land Exporters, Balasore.
2 May	Balaramgadi & Dhamra	• 2 Interview with aquaculture farmers • 2 interviews traders and godown owners • Interview with Trawler owners.
3 May	Balugaon	• Interview with the ADF, balugaon • FGD with traditional fishermen • Interview with local trader and godown owner
4 May	Balugaon	• Participative Poverty Assessment with the community in Chandraput village near Balugaon • Interview with Trader and Godown owner • Interview with ice supplier at the landing centre
5 May	Balugaon	• Interview with aquaculture farmer • FGD with traditional fishermen • Interview with the Fish Merchant's Association
7 May	Bhubaneshwar	• Interview with the Mr RN Mishra President and Mr A. Mukherjee, Vice. President of Sea Food Exporters Association.

Annex 4

Case study: PPA at Penthakata, Puri

Penthakata is a Fishing settlement of marine fishers with in Puri Urban area, comprising four wards of the town. There are approximately 3000 hhs with a population of 20,000. It is the largest fishermen's settlement in the country. The major livelihood options are:

- Fishing (all households)
- Processing (dry fish) & vending (half the hhs , in addition to fishing)
- Trading in fish and also fishing related auxiliaries (10-15 % hhs)
- Labour (70-80 hh)

The fishing community here is having half Hindu and half Christian population. They are all traditional fishermen, having wooden catamarans (both motorised and un-motorised) mostly and a few fibre boats.

The settlement has some facilities of urban wards, like schools and health centre. However these are very few for the population living here, and the community lives in very unhygienic conditions. In terms of socio-economic conditions the community can be divided into three categories.

Category	Very poor	Poor	Not-so-poor
Description	HH having labour as the main occupation. Do not have their boats, go as 'rayat' – crew on other's boats. Have loans up to 30,000 rupees per hh. They have large families, and sometimes the females in the hh go for labour at trader's godowns or construction work for survival.	Traditional craft owners sometimes go as labour also. They have loans up to 40,000 on them. Their food security is slightly better, and women in the hh do not go out for labour.	Traders and large boat owners. They provide advances to 4-5 small fishermen. Have some assets like the TV etc. at their place. Their children regularly to the schools outside the settlement area.
Approximate Numbers	1500 hhs	1200 hhs	300 hhs

- The major concerns of the community relate to lack of catches, reduced access to natural capital.
- Lack of access to education and health facilities is sighted as the major constraints for the continued poverty.

Case study: PPA at Chandraput, near Balugaon on the Chilka Lake.

Chandraput is one of the 128 fishing villages surrounding Chilka Lake. All the 500 hhs in the village belong to the fishermen community and depend on Chilka for their livelihood. The major livelihood options are:

- Fishing (almost all households)
- Agriculture – mainly Paddy (100 hh, in addition to fishing)
- Trading in fish and also fishing related auxiliaries (100 hhs)
- Labour (70-80 hh)
- Processing (dry fish) & vending (10-20 hh, in addition to fishing)
- Aquaculture (limited to 20-30 hhs)

This village has seen significant changes in the socio-economic conditions in last 15-20 years, ever since prawns emerged as having great export potential. All the developments in the village over the years can be attributed to the prospering prawn business. Their economy fully depends on the export market for prawns.

Among the villages surrounding the Chilka Lake, Chandraput has the advantage of being the closest to the main trading centre – Balugaon. Hence many people from this village have been able to get associated with the trading in fish and prawn, which has made them prosperous. There are numbers of hhs, who have succeeded in aquaculture farming. In terms of socio-economic conditions the community can be divided into three categories.

Category	Destitute	Very poor	Poor	Not-so-poor
Description	Survive only on labour, almost begging conditions. Go for migrant labour in other states as a coping mechanism. Women in the hhs also go for labour.	Men work as crewmember in traditional boats, and women go for dry fish processing and vending.	Traditional craft owners . Generally have small landholding also, and do seasonal agriculture.	Traders who have advanced to 15-20 boat owners, also have larger agriculture farms, sometimes having their own aquaculture farms.
Approximate Numbers	100 HH	100 HHs	300 HHs	100 HH

- The major concerns of the community relate to lack of catches, the reduction of the water body of Chilka, where the Gheri (prawn culture) was rampant till the Supreme court of India banned it. Now the catches in the lake is increasing, especially since the last year when the mouth of the lake to the sea was widened.

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