

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

**A PRELIMINARY STUDY OF THE SEAFOOD EXPORTS
FROM ANDHRA PRADESH**

Study done for Natural Resources Institute,
University of Greenwich, United Kingdom

Revised

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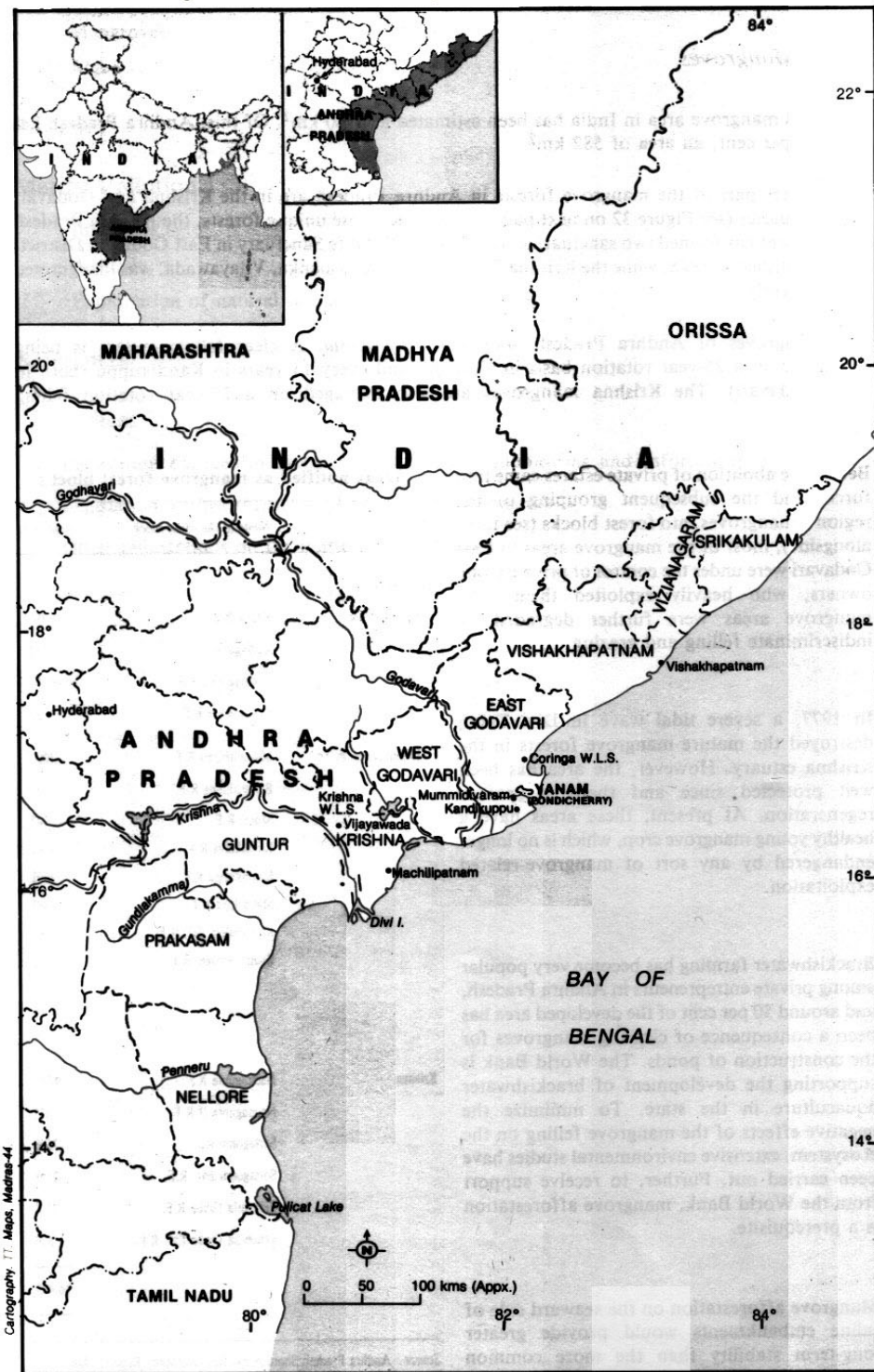
64-16-3A, Pratap Nagar, KAKINADA 533 004, Andhra Pradesh.
Tele: +91 (0) 884 364851 Fax: +91 (0) 884 354932
E-mail: jcm_kkd@satyam.net.in; sujata@hd2.vsnl.net.in

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Map showing coastal areas of Andhra Pradesh

Fig. 32. Marine habitats of mangroves and algae in Andhra Pradesh



EXECUTIVE SUMMARY

1. Seafood exports from Andhra Pradesh are mainly channelled through Vizag and Chennai Ports, while Kakinada Port is a new entrant, which began operations only in the last year. Unfortunately, the statistics available for Vizag and Chennai Ports do not distinguish the exports from Andhra Pradesh in their overall exports. The DOF-Andhra Pradesh statistics are confined to tabulating exports from Vizag Port alone (even though they also include exports from the neighbouring Orissa state), and MPEDA too does not have a separate category for state-wise export of seafood. Consequently, the statistics for Vizag Port have been used in this study to indicate overall trends in the export of seafood from the state.
2. The composition of exports from Vizag Port reflects the general 'low-volume-high-value' trend of the east coast. On average, the exports by volume from Vizag Port vary between 5 and 7 percent of the total exports from the country, but their value ranges between 15 and 20 percent of the total earnings.
3. Since early 1970s, there has been a rapid orientation of the production systems in the state towards harvesting exportable varieties. Andhra Pradesh has taken the lead in the production of shrimp from brackishwater aquaculture and carps from freshwater sources. Capture fishing too has undergone swift changes to accommodate the emphasis on exports: fishing systems that traditionally depended on a mix of different species have begun to concentrate on fewer varieties that have a good export value. New fishing gears such as trammel nets and long lines facilitated the process, while trawlers remained steadfastly committed to capturing shrimp by using smaller and smaller mesh sizes.
4. Correspondingly, there has been a tremendous growth in the infrastructure geared towards exporting seafood – freezing plants, ice plants and cold storages have proliferated in areas that have the production/processing/export facilities, rapid transport systems developed as a result of good roads laid to connect the remote fishing villages, telecommunication systems facilitated quick exchange of information between the producers and the buyers and all these helped reorient the fishing systems completely into export-based operations.
5. While there have been efforts to diversify – into deeper waters through the introduction of deep-sea trawling, into targeting alternative species such as Tuna – these have largely remained stillborn, and shrimp continues to be the mainstay of fishing and export operations.
6. The volume and value of exports from Vizag Port have shown a consistently increasing trend through the 1990s, except for a brief period during 1996-97, when exports came down possibly as a result of three reasons: (i) the white-spot disease that attacked most commercial shrimp farms heavily during the period; (ii) the Supreme Court Judgement restricting aquaculture operations in the coastal areas, and (iii) the EU Ban on Indian seafood, in that order. The effect of EU ban is likely to be minimal considering that a large chunk of exports are going to Japan.
7. The volume of fish exported from Vizag Port constitutes between 4.5 and 6.5 percent of the total fish production in the state. The contribution of fisheries in general and exports in particular to the state GDP could be more or less than reported, though it is difficult to determine this from the available information. Overall, exports increased from about 8,500 MT valued at Rs. 108 crores¹ in 1990-91 to 21,572 MT valued at Rs. 882.5 crores in 1998-99 (DOF, 1997 & 2000).
8. Japan has been the most important importer of seafood from Vizag Port, its imports accounting for 75% by volume and 86% by value of the total exported from Vizag. The US is the second largest importer of seafood from Vizag Port, followed by China, a number of Southeast Asian countries and the EU. Thus, it could be assumed, the impact of the EU ban on the seafood exports from Vizag could only have been minimal, and this is borne out by the interviews with the exporting companies. The growth in exports to the EU has been sluggish through the 1990s, and the percentage volume and value of exports have shown a decline during the period, mainly because of the growth in the exports to China and Southeast Asia.

¹ One crore = 10 million

9. Exports to China began only in the 1990s, but it has already become an important importer of seafood from Vizag Port, surpassing the EU (over a thousand MT as against 670 MT to all EU countries put together in 1998-99), although the bulk of exports to China are constituted by relatively low valued varieties like finfish.
10. With respect to shrimp, the cultured varieties, which entered the export chains only from 1993 (previously their quantities were so low that they were clubbed with the captured shrimp in the statistics), have come to dominate the exports constituting nearly two-thirds of the quantity and 75% of the value of the total shrimp exports from the state. There has been a corresponding decrease in the exports of captured shrimp in real as well as percentage terms. The reasons cited for the increased supply of cultured shrimp were: (i) increased aquafarming in the state, (ii) decreased quantum of shrimp landings from the marine sources, and (iii) reliability of supply and uniformity in size of the cultured shrimp.
11. There has been a steady increase in the quantity of finfish in the exports through 1990s. From about 2 percent of the total exports in 1991, they have increased to 26% by 1998, although shrimp continues to bring in nearly 96 percent of the export earnings. There are indications that the finfish constituents are continuing to increase in the overall exports from the state.
12. There are a total of 16 units in the state (three of which were fishing vessels with onboard processing capacity) that have obtained the necessary certification from MPEDA facilitating exports to the EU and the USA. It is possible, though not easily proven, that many small processors and exporters channel their products through the EU-approved plants.
13. Increased exports have meant the establishment of long chains of product flow and intricate networking between the various players involved in the activities both directly and indirectly. Research reveals that for the high quality species such as shrimp, there could be as many as six intermediate stages – each with its own set of players – between a rural producer and an urban-based exporter, all of them taking a share from the final price obtained.
14. With the change in the market channels for different seafood items, came a wide range of new players into the marketing systems. Commission agents, middlemen, carriers and transporters, truck operators, peelers and processors, packers and handlers, exporters and processing plant operators, ice makers and ice sellers, besides technicians, crate and basket makers, etc., have all found a place for themselves in the rapidly evolving export chains.
15. On the face of it, thus, the growth of export sector has only added to increasing employment opportunities in the state. That the need for exportable varieties has led to resource and habitat degradation, overexploitation, overcapitalisation, pollution and competition all of which in turn contributed to loss of livelihoods and increased vulnerability and unsustainability of operations is another strand to the story, which is not gone into in this paper.
16. Activities such as shrimp peeling by women, though widely practiced, were however confined to important port areas like Vizag, Kakinada, Machilipatnam and Nizampatnam, and are mostly a part-time job for the women, and are often not as well organised as in Kerala, so when a few of them got closed down as a result of the new export regulations, or more importantly, for lack of enough work, it does not appear to have made a serious difference to the workers at large.
17. Some of the finfish – such as ribbonfish, croakers, eels, and mackerels – have come to constitute a sizeable percentage of the overall exports, and these are also the traditional 'low-value' species, mainly catering to the poorer consumers, and also contributing to the livelihoods of the poorer processors and traders. Most of the fish exported from Vizag Port are frozen, with dried fish hardly constituting 0.2 percent of the total export, down from 0.42 percent in 1997.
18. However, there are – as yet – no serious indications that increasing exports have taken away traditional livelihoods on large scale. Though some cheaper varieties – mackerels, ribbonfish, eels, and croakers – have entered the export chains, the quantities exported are too low (the total exports hardly exceeding 10 per cent of the production in the state) and too localised to have an impact on a wide range of people. More than exports, it is the decline and uncertainty that pervades both the capture and culture sectors which is a more serious concern for most people, including exporters.

19. Moreover, some of the fish varieties that made it to the export category in the early part of the 1990s show signs of fluctuating widely in terms of quantities exported. Varieties like mackerels, freshwater fish (mostly carps), sea bream, and pomfrets have shown a declining trend in the overall exports. On the other hand, some traditional export items, such as cuttlefish, squid, shrimp (block frozen and IQF varieties) too have been declining in the exports. These declines have been cited to be the result of various causes – poor fishing, inconsistent landings, uncertain demand, low returns, fluctuations in international demand, poor quality of production and post-harvest systems, poor timing of landing vis-à-vis demand, etc.
20. In the beginning, increasing international demand spurred the export of seafood, responsive and enabling government policies helped consolidate the demand into a viable market opportunity, but over time, it appears that the same factors – international conditions and government policies – have taken on a different posture. Fluctuations in the international markets as a result of various factors (generally sluggish markets, events after 11 September etc.) have been a discouraging facet of 'globalisation', increasingly leading to raising unrest amongst the producers both from mechanised and artisanal sectors. The ban on India seafood in mid-1990s, though many now admit was a much warranted action, has led to some strict quality control measures being made compulsory in all processing units, irrespective of whether they exported seafood to the EU or not. The increased capital costs and running expenses, coupled with erratic supplies of raw material from the capture sources, led to serious problems for medium-scale exporters, many of whom simply closed shop or took recourse to subverting the regulations by exporting through approved channels. The government's initial enthusiasm has now given way to cautious policies for responsible conservation and management measures, which have their own impact on the fishing operations.
21. What the growing export demand and the consequent improvements in the infrastructure and marketing facilities at certain important centres such as Vizag and Kakinada have meant in practical terms was that the fish catches from a large number of villages surrounding these towns have begun being landed in the towns. This may have meant a loss of fish for the local traders and processors, but on the other hand, in the face of serious declines in catches, the fishermen have been able to keep their earnings more or less constant by doing so.
22. While these developments may have brought about many changes in the lives and livelihood profiles of the people who depended on them, no statistics or studies are available on the socio-economic impacts of the developments themselves.
23. In summary, seafood exports from Andhra Pradesh have shown a tremendous growth over the last three decades, opened new opportunities and spurred much development action. But there are indications that this growth may have been at the expense of sustainability and equity, and this has had serious impacts on the sector as a whole. The way it looks, the future holds more questions than answers for everyone involved in the sector.

MAIN REPORT

Objectives of the study

This study has been undertaken as part of a DFID-funded, NRI-managed, research project on "Globalisation and Seafood Trade Legislation: The Effect on Poverty in India". At a workshop conducted to initiate this research in India in June 2001, it was agreed that understanding the flow of the important seafood varieties from the landing centre to the export market would provide an idea of the different key players involved, their roles and responsibilities, as well as livelihood issues related to international seafood trade.

This study aims to provide some background to fisheries in Andhra Pradesh, a brief analysis of export performance of seafood from Andhra Pradesh through Vizag Port – using commodity-, quantity-, value-, and country-wise data from the secondary sources. It then aims to describe the flow of the key seafood items that are exported through Vizag Port. The key species studied were selected based on their importance to overall exports and the export chains were determined based upon the origin of the product (mechanised/artisanal, urban/rural, capture/culture) so that a comprehensive, albeit quick-and-dirty, idea could be obtained of the key factors determining the export chains from the state. It discusses some of the key concerns of the industry with respect to state of the resources and the future of exports as obtained from interviews with people at various levels in the seafood export business. While explaining the current situation, it also aims to highlight the gaps in the current knowledge and understanding of the issues related to seafood export trade in order to indicate the ways in which this research could go in the next stages.

Methodology of the study

The information in this report is obtained from three sources:

- (i) Secondary sources – reports (MPEDA, DOF, BOBP, DFID-PHFP, PHFRP, ICM, SWEDMAR), journals (Fishing Chimes), papers (workshop papers) etc.
- (ii) Interviews with key stakeholders in two urban centres (Kakinada and Visakhapatnam) and four rural areas (BCV Palem, Uppalanka, Uppada and Nakkapalli), and
- (iii) From observations at the landing, processing and trading centres.

By and large, it was the information obtained from desk studies, validated and/or supplemented by that obtained from field observations and interviews that forms the body of the report.

Limitations

Some of these limitations are more like areas that need future work from the project rather than confined to this study alone. Those that are specific to this study are discernible easily enough.

Obviously, in a sector that is characterised by diversity, as the fisheries sector in Andhra Pradesh is, no single chain of export flow is going to be sufficient for delineating the processes involved. It masks more than it tells, it diverts more than it focuses, and this will need to be borne in mind whenever categorical statements are made, particularly concerning livelihood issues. The primary information for this study comes from about six places altogether, and the choice of the locations themselves will have implications to a large extent on the kind of information that is obtained. At a generic level, the chains are valid, but the details vary from place to place.

Enough has been said and written about the lack of information on the people involved in the fishing sector, and in any research attempting to look at poverty and livelihood issues, it will be a serious constraint at best, and a major failure at worst. No statistics exist on the numbers of people involved in the fisheries sector in general and export industry in particular. Dearth of organisations for representing the lower sections (the 'working classes') of the export industry also contributes to this serious lacuna. That there exists no reliable information on the prices, margins and mark-ups for various products is less serious than lack of information on the people, particularly when it is well known that the prices etc are not stationary anyway and are determined by a number of local, national and international factors from day to day. Consequently, the study remains more or less at a general level rather than point out specific groups of actors as being the beneficiaries or the victims of a particular change. What this has also meant in practice is that any issue can be argued from both sides – lacking concrete information on the people affected one way or the other, the force of most arguments derives from the exigencies of the moment than from concrete and verifiable data.

The fact that there is no single source of information to find out the total quantity of exports from Andhra Pradesh has been pointed out in the body of the report itself. This has meant that the study has remained more or less 'Vizag-centric'. Lack of time has meant that visits to Orissa and Chennai – both of which have implications as far as seafood exports from Andhra Pradesh are concerned could not be undertaken. It is hoped that this shortcoming will be rectified in the next draft ('Final First Draft') of the report.

It ought to be mentioned that many of the statistics presented in this report may have been analysed here for the first time since their compilation to draw out conclusions, and the strange crests and troughs some of the trends show from year to year are not always explicable – at least by this team of researchers. To the extent that the overall trend is considered to be reasonably valid, the figures should be taken to be valid too, but attempts to validate the exact percentages and quantities are hopeless and futile. Moreover, most of what passes for statistics is often dictated by considerations other than strict adherence to truth ('Is it good to show an increase in shrimp farms when an adverse court verdict prohibits aquaculture?' 'Is it good to show a decline in marine shrimp catches when at the same time requesting for assistance to mechanise 200 new boats this year?') Being more a 'desk' study, this paper has perforce to depend on what it has available on the subject of seafood production and exports. Drawing many conclusions, or stretching the implications of a conclusion beyond a point, based on the statistics as presented here is fraught with too many problems.

Considering that the only guide that provides a comprehensive idea of both the production and the export trends is the Handbook on Fisheries Statistics brought out by the DOF in the state, and considering that the latest one (for 1998-99) is at least three years old, the statistics also are confined to that period alone. It is true that more recent figures are available from MPEDA, but without the production figures from the DOF, it has not always been possible to present an updated picture.

An overview of the fisheries sector in Andhra Pradesh

Andhra Pradesh is one of the eight maritime states of India, with a coastline of 974 km, which is about 12.5% of India's coastal length. The continental shelf area up to 200 metres depth is 33,227 km² (DOF, 1998: 5). The inland waters consist of 24,000 tanks, 102 reservoirs, two large lakes (Kolleru and Pulicat) and two large rivers (Godavari and Krishna). The state has 23 revenue districts of which nine are on the coast. There are a total of 508 coastal fishing villages and 508 landing centres (DOF, 2000: 59). The continental shelf area off Andhra Pradesh is narrow in the south of the state and widens slightly towards the north. Of the total area of the continental shelf about 53% is in the 0-50 m depth range (BOBP, 1983: 1).

Vivekanandan et al (1997: 1), among others, viewed the coast of the State as being classifiable into three zones: south, central and north. The three zones are distinct not only in terms of the geo-physical and environmental conditions, but also in the diversity that characterises the fishing systems, communities and cultures in each zone – a result, possibly, of the adaptations that a particular ecosystem requires on the part of the communities living in it. Thus each zone is dominated by one or two major fishing castes, each with its own systems.

- (i) North zone: From Orissa border to Uppada in East Godavari. Open surf-beaten beaches. Traditional fishing craft: boat-catamarans, stitched boats. Shore-seines prevalent. FRP beach landing crafts, and other FRP boat are recent introductions. Vivekanandan et al report a new 'sandwich catamaran' in northern districts, which has subsequently spread all over the northern zone. Visakhapatnam is an important trawling base.
- (ii) Central zone: The central zone starts from Nizampatnam in Guntur district and extends to Uppada in East Godavari district. The most productive of the three zones. The rivers Godavari and Krishna discharge their waters, consequently the coast is shallow and the numerous creeks offer shelter for bigger crafts. Active creek-based fisheries also seen here. Kakinada, Machilipatnam and Nizampatnam are important trawl landing centres. FRP boats are a recent but very successful introduction in this area too.
- (iii) South zone: The south zone extends from Pulicat Lake in Nellore district to Suryalanka beach in Guntur district. Similar to the North zone, but the catamarans here are raft-catamarans. Shore-seines are a relatively new phenomenon. Motorization of traditional crafts (Outboard motors on catamarans) widely prevalent. Not many trawlers, but few operate from Krishnapatnam harbour.

The state has some 372,000 ha of pond resources, 234,000 ha of reservoirs, two lakes with an area of 136,000 ha suitable for fisheries development (DOF, 1998: 7). In addition, there are numerous rivers including the Godavari, Krishna, Nagavali, Vamsadhara, Sarada and Pennar.

Although fish constituted an important part of the diet of people in the state, it is mainly the economic value of fish that spurred much of the fishing activity in Andhra Pradesh. The lack of much demand for fish in the state ensured that large quantities of fish were mainly used for consumption by the poorer sections of the society as fresh or processed products (Vivekanandan et al, 1997: 74), while a large proportion of the fish was also exported abroad, and it is the latter that gave rise to a vibrant fishing industry in the state.

The fisheries sector also contributes very significantly to rural employment, particularly of the poorest groups. According to the Livestock Census of 1993, there were 872,000 fishworkers in the state of whom some 275,000 were actually engaged in fishing (DOF, 1998: 2-3). Another 112,000 were in fish marketing, while 22,000 were involved in fish processing. Fishworkers in coastal Andhra Pradesh number around 565,000 of whom about 200,000 are active fishers, nearly 80,000 are involved in fish marketing, 20,000 are involved in fish processing. In other words, 73% of the active fishers, 71.5% of those involved in fish marketing, 77% of the fish processors in Andhra Pradesh are working in the coastal areas (DOF, 1998:2-4). It is not known what percentage of the total workers in Andhra Pradesh are constituted by fishworkers.

Fisheries in Andhra Pradesh²

Fishing methods

The state has the largest fleet of artisanal craft in all India, but relatively few mechanised boats. Non-mechanised vessels are both motorised and non-motorised. There are some 45,585 artisanal craft in the coastal waters of Andhra Pradesh with most of the craft occurring in the northern districts of Srikakulam (8,894), Visakhapatnam (7,302) and East Godavari (7,104) (DOF, 1998: 14-16). About 8.5 % of these craft were motorised in 1997, in comparison with 1992 when only 3% of the craft were motorised (DOF, 1993: 10). These vessels are engaged in day fishing trips although the larger boats carry out much longer fishing trips, particularly those fishing for sharks.

Distribution of fishing craft, main fishing gears and catches in Andhra Pradesh

Fishing craft	Zones where represented	Main fishing gears used	Important catches
Catamarans	North and south (Marine)	Gillnets Trammel nets	Shrimp, small pelagics
Sandwich catamarans	North (Marine)	Gillnets Trammel nets	Shrimp, small pelagics
Small navas	Central (estuarine)	Gillnets, lines, tidal wall nets	Shrimp, crabs, estuarine varieties, Molluscan shells
Medium navas	Central (estuarine and marine)	Gillnets, trammel nets	Shrimp, medium sized fish (pomfrets, small seer, mullets) crabs
Large navas	Central (marine)	Gillnets, longlines	Seer, pomfrets, sailfish, sharks, etc.
FRP boats	All zones (marine)	Gillnets, longlines Trammel nets	Seer, pomfrets, sharks, Shrimp
Trawlers	All zones	Trawl nets	Shrimp, bycatch consisting of miscellaneous demersal fish.

Mechanised fishing fleet

The main harbours for the mechanised boats are Visakhapatnam, Kakinada, Machilipatnam & Nizampatnam where adequate shelter and shore facilities exist. Visakhapatnam is the only deep-sea trawler base on the east coast of India. In 1998, there were 8,642 mechanised boats in the state, of which 1,738 were trawlers, 6,043 were FRP beach landing boats (DOF, 1998: 14), as against a total of 5733 boats in 1993, of which trawlers constituted 1,651 numbers, showing that the number of trawlers has remained constant during the period.

The trawlers vary in size from 10 m to over 20 m in length. The smaller vessels go to sea for 1-8 days fishing mainly in the inshore coastal area of Andhra Pradesh or as far north as Paradeep in Orissa. The 14 m *Sona* type trawlers go to sea for voyages of 12-20 days, mainly in the area north of Paradeep. The 16-19 m twin rigged trawlers fish on the Sandheads off West Bengal and voyage for about 21 days. The larger, greater than 20-M trawlers also fish mainly on the Sandheads and voyage for 30-50 days (Gordon, 1991: 3-4; Rajendran & Swamy, 1992: 2-4). This last category – larger trawlers – has declined in importance over time, and from about 200 numbers in mid-1990s, the numbers have dwindled to less than 60³ (Fishing Chimes; Salagrama, 1998: 151).

² Adapted, revised and updated from ICM, 2000.

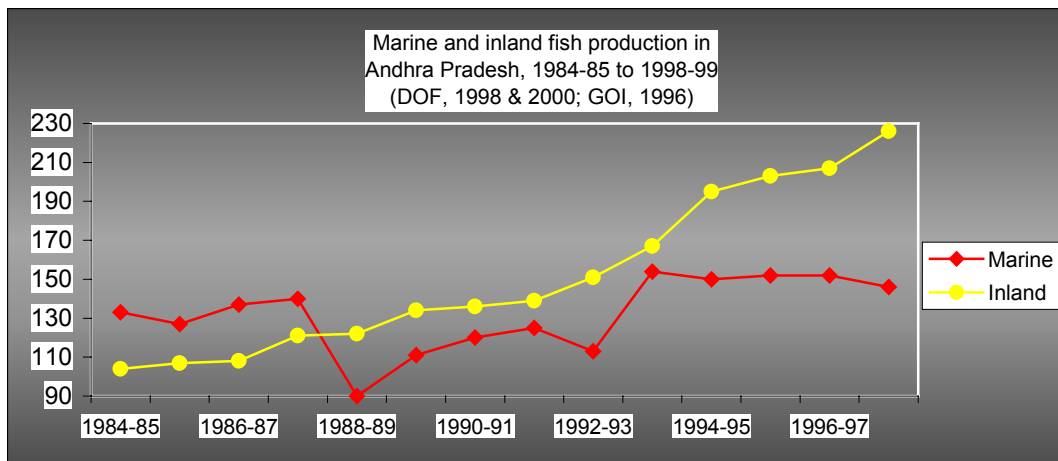
³ For a fuller story of the rise and fall of the deep-sea trawling fleet in Andhra Pradesh, see Vivekanandan et al (1997, draft)

A Preliminary Study of the Seafood Exports from Andhra Pradesh

A number of shore seines (beach seines) are also in use in the northern and southern zones (Vivekanandan et al, 28-30). BOBP (1983: 23) notes that there were a little over 3,000 shore seines in the state in 1982, but the numbers must have come down significantly since then. The main catches from shore-seines include small pelagics, which are processed for human consumption or for poultry feed.

Fish production

Andhra Pradesh provides most of its own fish needs and exports some surplus to other states and overseas. In the 10-year period from 1985/86 to 1995/96, the total fish production in the state is reported to have risen from 234,350 MT to 355,960 MT, a 52% increase, which is slightly less than that for the country as a whole (58%) (GOI, 1996: 24-25). Marine fish production rose from 126,850 MT to 151,990 MT, a 20% increase over the period, but very low compared against a 63% increase for the country as a whole (GOI, 1996:21). Inland fish production increased from 107,500 MT to 203,970 MT, a 90% increase, as against a 51% increase for the entire country (GOI, 1996:22)). In 1998/99 the quantity of fish harvested from inland sources was 260,829 MT (DOF, 2000: 31) and the marine production was 57.5% that from inland sources (DOF, 2000: 2). The total fish supply in 1998-99 is estimated at 455,685 MT (DOF, 2000: 21, 31, 34).



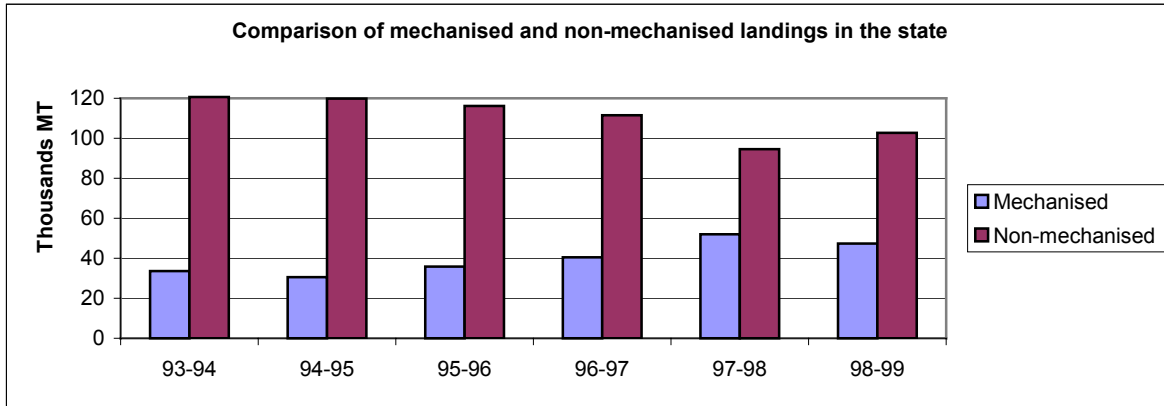
The factors responsible for the two 'dips' in the marine fish production in 1988-89 and 1992-93 remain obscure, and the answers ranged from poor fishing seasons to faulty statistics, and the truth may never be known.

Marine fish

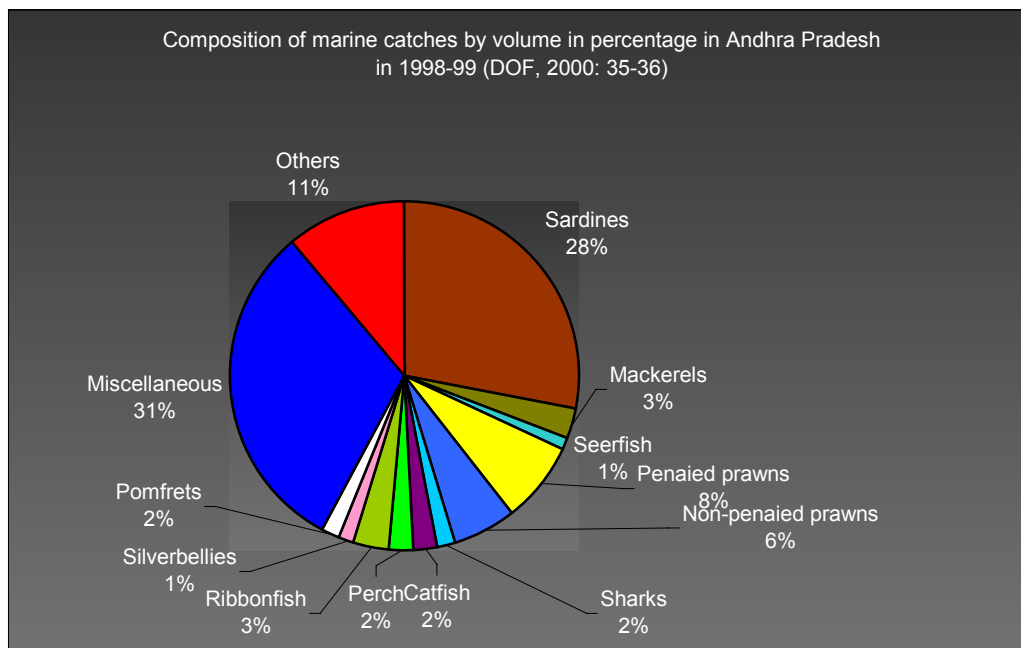
The marine fisheries of Andhra Pradesh are characterised by multi-species fisheries, which necessitate the fishing systems to be very versatile in terms of their ability to catch a diverse range of fish. The abundance of different species at different seasons in different parts of the coast determines the distribution of the fishing systems geographically as well as temporally.

The marine catch landed in Andhra Pradesh during 1998/99 was 150,000 MT, which has remained almost constant since 1992-93 (DOF, 2000: 34). In 1998/99, 68.5% of the fishery was harvested by the non-mechanised sector (DOF, 2000: 38), down from 78% in 1993-94 (1994:5), indicating the dwindling contribution from the non-mechanised sector, both in comparison with mechanised landings and in absolute terms (DOF, 1994:5; 1997: 40; 1998:31). Obviously, the increase in mechanised landings came from non-target species, i.e., other than shrimp, considering shrimp catches have shown a decline during the period.

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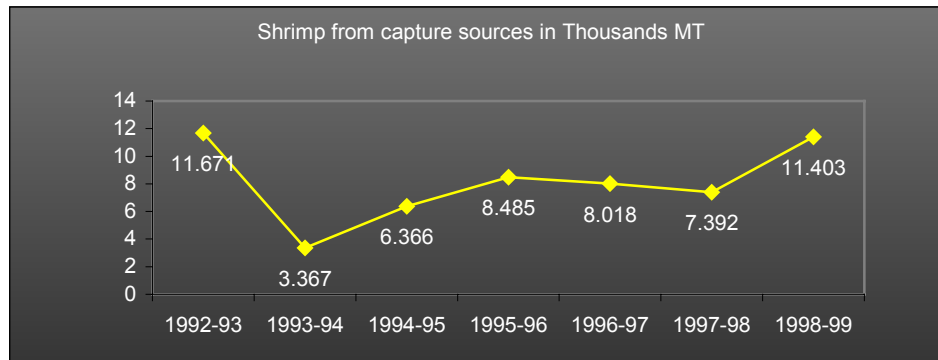
The marine fish catches in the state are dominated by Clupeids (i.e., small pelagics such as sardines, mackerels, anchovies etc), which constituted about 22% of the total catches during 1997-98. Mackerels, Seer fish, Penaeid shrimp and Non-Penaeid shrimp, Sharks, Catfishes, Perches, Ribbonfish, Silver bellies, Pomfrets are the other important varieties landed. In terms of value, Penaeid prawns (which constituted 7.6% of the total landings) accounted for nearly 59% of the total (DOF, 1999: 36,39).



Shrimp catches from the capture sources in Andhra Pradesh have fluctuated widely through the 1990s, and have mostly showed a downward trend (DOF, various). The overall shrimp exports from the state however managed to grow thanks to the increased production from culture sources. For capture fishing industry, these fluctuations have meant increased risk, uncertainty and expenditure. This is also the reason why more boat owners concentrated on landing more of the finfish in better conditions than before in order to maximise their returns. The improved quality, in turn, seems to have spurred a demand for some of the varieties – such as eels, ribbonfish – to be exported in frozen condition.

The other important export items elsewhere, i.e., cephalopods, have never been a major item of capture in the state, contributing a paltry 24 MT in a total marine fish production of 150,000 MT in 1998-99 according to the DOF (2000), or 389 MT in a total of 166482 MT in 1999 according to MPEDA

(2001:324)⁴. That the exports show a much higher quantity could only indicate the exports may have a different provenance, say, Orissa.



A more important item from the export point of view is the mud crab – *Scylla serrata*. Interestingly enough, it is very hard to quantify the production and export of mud crabs in the state due mainly to the fact that it is captured⁵ in the artisanal sector and that too from the estuarine waters and it is almost entirely exported from Chennai. The DOF statistics are entirely silent on the mud crab production in the state, while those provided by MPEDA indicate that there were no landings of crabs in the state in 1998 and 1999. Mud crabs are transported in live condition, packed in bamboo baskets, to Chennai for export to Southeast Asian countries (Malaysia and Singapore) (Raj, 1992). Raj (1992) estimated that, on average, about 500-750 kg of live mud crabs from Kakinada, another 300 kg from Nellore, Eluru and Repalle areas in Andhra Pradesh reached Chennai for export daily. In the period after these estimates were made, mud-crab fisheries saw a sudden spurt, with a large number of aquaculturists switching to mud crab culture, which must have increased the supply substantially.

Inland fish

Inland fish production includes the produce from the rivers, reservoirs, tanks etc., besides that from culture sources, but not including the brackishwater varieties. The inland species landed consist mainly of different types of carp, murrels, barbus and prawns. The composition of prawns in the catches has gone up from 8,856 Mt in 1992-93 (or 6.5% of the total inland production (DOF, 1993: 27) to 23,475 MT in 1998-99, accounting for nearly 10% of the total production, and 18% in terms of value (DOF, 2000: 32), which is quite significant in view of the fact that the inland fish production itself increased by 72% during the period (DOF, 2000:31).

Brackishwater shrimp

Brackishwater aquaculture will need to be considered in any study dealing with trends in seafood export from Andhra Pradesh because it is inexorably linked into export markets. Although brackishwater aquaculture gained momentum only in the early 1990s, it has seen rapid changes in fortune beset as it has been by adverse litigation, local community resistance and, most serious of all, diseases. While it shows signs of recovering from the setbacks, it is reported that the worst is not over yet and even if it bounces back into profitable operations, it will never reach the dizzy heights that it did early on.

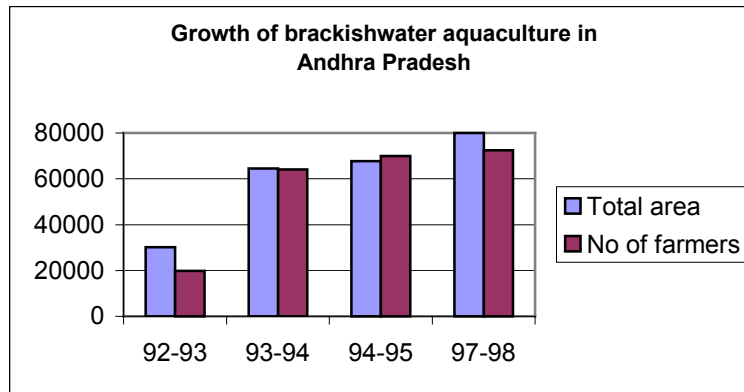
Aquaculture grew rapidly in Andhra Pradesh through the 1980s and '90s. Within the nine coastal districts there are some 150,000 ha of brackish water lands suitable for aquaculture (GOI, 1996: 139). BOBP (1983:

⁴ These differences in figures between the DOF statistics and the CMFRI/MPEDA statistics are something that cannot be easily explained in human terms, and should be taken to have divine origin and left at that.

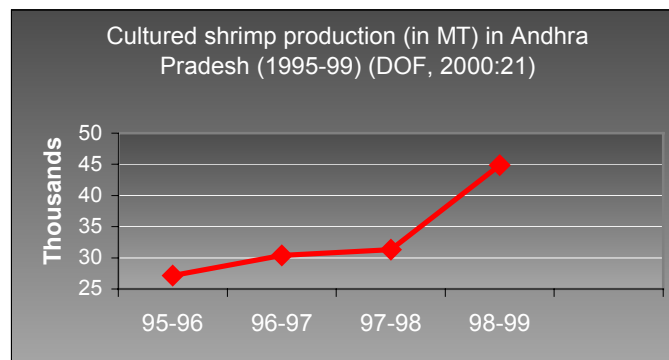
⁵ Mud crab is also cultured - 'fattened' – to a limited extent

A Preliminary Study of the Seafood Exports from Andhra Pradesh

11) mentions that only a few individuals were involved in brackishwater aquaculture at the time. By 1998, according to the DOF (1998: 10, 12) nearly 80,000 hectares was developed for shrimp culture, which included land converted from agriculture (31,000 ha.) and mangroves (2,837 ha.). The following table shows the growth of brackishwater aquaculture in Andhra Pradesh during 1992-93 to 1997-98 (DOF, 1993: 8; 1994:19; 1997: 13; 1998: 10)⁶.



Shrimp belonging to *Penaeus monodon* and *P indicus* are cultured extensively in the state. The cultured shrimp production in Andhra Pradesh nearly doubled between 1995-96 and 1998-99 (DOF, 2000: 21). Of late, freshwater sources have begun to be used for shrimp farming purposes, and according to MPEDA (undated), some 16,600 ha of freshwater area was utilised for tiger shrimp farming during the year 2000-2001.



Preservation and processing facilities in Andhra Pradesh

Infrastructure facilities in Andhra Pradesh have developed sufficiently well to cater to the export needs of the state. Visakhapatnam, East & West Godavari and Nellore districts, by virtue of being the centres of production and export in the state have well developed infrastructure facilities. In all, there are 55 processing plants registered with MPEDA in the state (see Annex IV), with sufficient capacities for freezing (total capacity 671.5 MT), IQF (total capacity 93.3 MT), blast freezing (total capacity 106.4 MT), together accounting for 871.2 MT per day. There are 96 cold storages with a total capacity of 7690 MT, and ice plants with a capacity of about 750 MT Per day (MPEDA, internal document). Obviously, the access to these facilities is determined by the location of a fish-landing centre to an urban centre, and it

⁶ More recent figures tend to put the total area and the numbers of farmers at the same level as in 1997-98, perhaps because no census was taken or because showing an increase would show that brackishwater aquaculture is growing in spite of the need for farmers to obtain permission from Aquaculture Authority of India (AAI).

is possible that in many areas – Srikakulam and Vizianagaram districts in particular – such access is very limited.

Apart from the bare figures indicating the increased processing and preservation capacity, very little is known – or documented – about the relationship between capacity vis-à-vis production cycles. Sources of demand, linkages between the preservation systems and credit-marketing networks, and seasonal fluctuations in demand are not studied.

Be that as it may, there is no denying that the growth in the basic infrastructure in the state has been very rapid and is one of the key reasons for the exponential growth of exports from the state. Even as late as 1983, the BOBP was reporting that there was a total freezing capacity of 157.7 tonnes (less than a fifth of what it is today), 2560 MT of frozen storage capacity (less than a third), and ice production per day was 583 MT (only a third less than in 2001 – possibly a reflection on the emphasis that has been placed on freezing and export). It is also possible that, being concerned with exports alone, the available statistics do not take into account all the ice plants in the state. Field research indicates that there has been a rapid growth in ice plants in many villages, but this was mainly a result of increasing domestic demand both within the state as well as ex-state, and consequently, the export statistics do not necessarily take cognisance of their growth.

A Brief Review of Marine Product Exports from Andhra Pradesh

The problem of quantifying seafood exports from Andhra Pradesh

The seafood exports from Andhra Pradesh are channelled through the ports of Visakhapatnam located in northern coastal Andhra Pradesh and Chennai in the neighbouring Tamil Nadu state. The recently constructed minor port at Kakinada began exporting fish around the middle of 2001, and is reportedly gearing up to handle significant quantities of fish from the current year.

While the exports from roughly about half the coastal areas (the northern belt, stretching from Srikakulam to parts of the Krishna district, and including Vizianagaram, Visakhapatnam, East- and West-Godavari districts) are channelled through Visakhapatnam Port (also known as Vizag), those from the southern belt – consisting of Guntur, Prakasam and Nellore districts, besides a part of Krishna district – are exported via Chennai Port. These demarcations are by no means watertight, with fish from the northern belt going to Chennai both for domestic and international markets. It is also not uncommon for cultured shrimp from the southern districts to be exported through Vizag Port. The problem of the origin of exports is compounded by the fact that Vizag Port also handles a large percentage of seafood exports from the neighbouring Orissa, whose only port – Paradeep – has not been handling seafood for a while now.

The Marine Products Export Development Authority (MPEDA) which has the responsibility of collecting and disseminating export statistics for seafood does not have a distinct category for Andhra Pradesh, and gives out port-wise information only. The result is that even the state Department of Fisheries in Andhra Pradesh, which draws its information from MPEDA, uses the export figures for Vizag alone as indicative of exports from the state. It is reported that the state government has requested MPEDA to start collating information for Andhra Pradesh state from this year onwards, and until such a practice becomes established, quantification of exports from the state will continue to remain an obstacle.

For anyone trying to detail the export flows of seafood from Andhra Pradesh, this will naturally mean confining the studies to Vizag alone, although even that is contentious because of the Orissa inflows. One way of overcoming this could be to use the available port-wise statistics of exports from Orissa and Tamil Nadu states (assuming that Tamil Nadu does have such statistics which are readily available) and deduct those from the total exports from Vizag and Chennai Ports respectively to arrive at the net exports from Andhra Pradesh. This, however, has been attempted in this study only partially for Orissa exports from Vizag Port, but not for Chennai Port for lack of ready information.

Even the deductions based on Orissa data need to be further validated, taking into consideration the species/commodity-wise break-up etc. The fact that MPEDA in Vizag does not have state-wise statistics for Orissa also made it difficult to crosscheck the information. Consequently, though this is an important area for consideration, it has not been pursued further in this study, at least for the time being, but is touched upon anyway in the next section as a point to ponder.

Net Andhra Pradesh exports from Vizag Port

As mentioned, the following sections are based on the assumption that the entire quantity of exports from Vizag Port has its origin within Andhra Pradesh, which however is not true. The following table attempts to disaggregate the quantity of seafood that had its origin in Andhra Pradesh from the overall exports from Vizag for the period 1991 to 1996 using available DOF-Orissa data for the period (DOF-Orissa 1996:73).

Year	Total exports from Vizag		Orissa's contribution		Net Andhra Pradesh export from Vizag		% AP	% Orissa
	Quantity in MT	Value in Rs. '000	Quantity in MT	Value in Rs. '000	Quantity in MT	Value in Rs. '000		
1991	9889.5	1857374	1851	325119	8038.5	1532255	81.28	18.72
1992	11692	2428615	2718	542410	8974	1886205	76.75	23.25
1993	14163	3563317	2527	616532	11636	2946785	82.16	17.84
1994	21491.5	7056965.75	4178	1163900	17313.5	5893065.75	80.56	19.44
1995	18836	5978124	4781	1255500	14055	4722624	74.62	25.38
1996	19340	5670721	7099	1743150	12241	3927571	63.29	36.71

What merits attention from this is the fact that the percentage of exports to overall production is smaller than represented in the official statistics. These revised figures indicate that Andhra Pradesh's share in overall exports from Vizag Port ranges between 65 and 85 per cent of that reported. Thus, it appears that only 3-4 percent of the total production from the state is being exported through Vizag. Even if Chennai is assumed to export an equal quantity of fish originating from Andhra Pradesh⁷, the total percentage of exports cannot exceed 8% of the total production in the state. This throws an interesting sidelight on the export-based fisheries economics that dominate all coastal states in India where a large proportion of the fisheries development projects and funds (see GOI, 1996) have been focused for nearly half a century in promoting seafood exports and export-based fishing practices, to the apparent detriment of everything and everyone else, only to account for a fraction of the total production from the state.

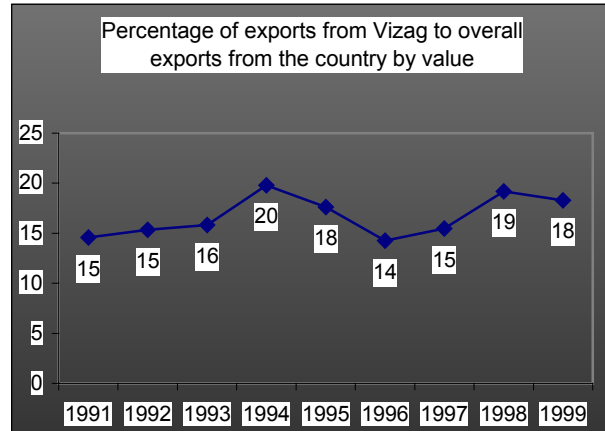
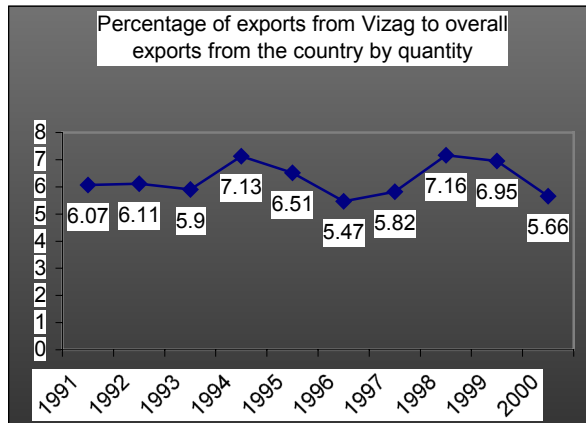
Exports from Vizag port

The east coast has traditionally exported low volume-high value products. In the year 2000, for instance, the total volume of exports from the east coast (95,520 MT) is less than a third of those from the west coast (325,555 MT), but in terms of value, the exports from the east coast were higher by more than 30% over those from the west coast (nearly 38000 million rupees as against 26000 million rupees on the west coast) (see also Nero Shahin & Asha Parameswaran, 2001). This holds good in case of Vizag also, as a comparison of the quantities exported from Vizag Port with their contribution to the overall export earnings will show. In the year 2000, the exports by quantity from Vizag Port amounted to about 5.6 percent of the total volume of exports from the country, but they fetched 18 percent of the total export earnings (MPEDA 1995 & 2000).

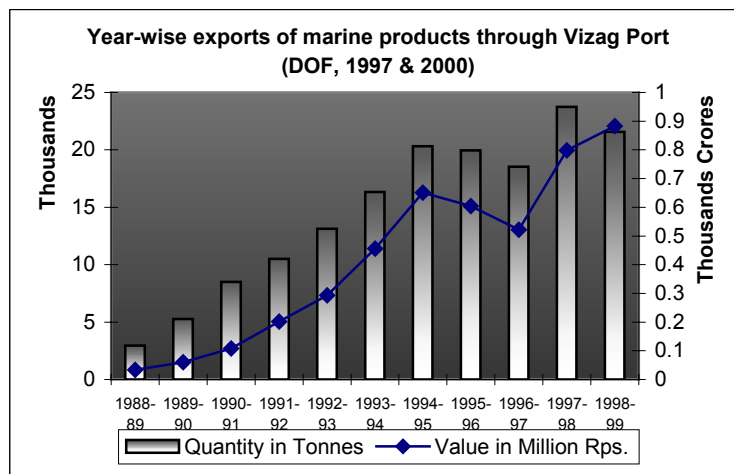
In Andhra Pradesh most fishing operations are geared to meeting demand from outside the state and there is a rapid increase in the export of fish from the state over the years. In 1997/98, 23,747 MT of marine products were exported to overseas markets from Andhra Pradesh. This was worth nearly Rs. 8,000 million (DOF, 1998: 39). In comparison, during 1989-90, the exports stood at 5,261 MT, valued at Rs. 600 million (DOF, 1994: 53). Some 12,347 MT of fish (valued at Rs 244 million), 682 MT of prawn (valued at Rs 106 million) were exported to other states (DOF, 2000: 51).

⁷ In 2000, Chennai exported a little over 34,000 Mt of seafood as against about 24,000 MT from Vizag (MPEDA, 2001).

A Preliminary Study of the Seafood Exports from Andhra Pradesh



During the period 1991-1998, the total volume of exports from Visakhapatnam had gone up by more than 200% from 9,889 Mt to 23,746 Mt, while the value went up more than four times from 1857 million rupees to 8000 million (MPEDA, 1995:298 & DOF, 1998: 41). Growth of exports from Visakhapatnam Port during 1988-98 (MPEDA, cited by various DOF Handbooks on Fisheries) is given in the following table.



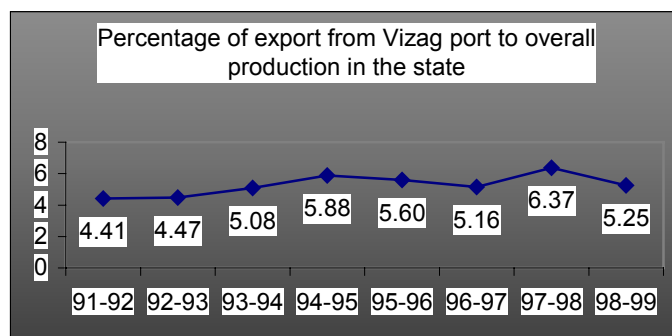
The drop in the exports from Vizag Port for the year 1996-97 is, for once, explicable because a number of things coincided during that period bringing the exports down. The foremost factor responsible for the drop was the white-spot disease that laid to waste a large number of aquaculture farms. Secondly, the adverse Supreme Court judgement brought down aquaculture activity in the coastal areas. Thirdly, but only marginally, the EU ban might have reduced the exports as well.

Percentage of exports to overall state production

Although exports have received the most attention in the fisheries development programmes, they constitute a very small percentage of the fish produced in the state (DOF, 1997 & 2001; MPEDA, 1995 & 2000). Even as a percentage of the marine fish landings alone, they constitute less than 15 percent.

A Preliminary Study of the Seafood Exports from Andhra Pradesh

	AP Production (Marine & inland) (A)	Marine production (B)	Export from Vizag	Percentage of exports to (A)	Percentage of exports to (B)
91-92	238011	99135	10501	4.41	10.6
92-93	293330	141855	13114	4.47	9.25
93-94	321365	154320	16327	5.08	10.6
94-95	345387	150259	20315	5.88	13.5
95-96	355959	151990	19942	5.60	13
96-97	359359	152047	18544	5.16	12.2
97-98	372859	146545	23747	6.37	16.2
98-99	410829	150000	21572	5.25	14.4



As a percentage of marine and brackishwater together, the statistics for which are available only for 1995-96 to 1998-99 period, the percentage of exports is as follows:

	Marine and brackishwater production	Export from Vizag	Percentage of exports
1995-96	179128	19942	11
1996-97	182424	18544	10
1997-98	177865	23747	13
1998-99	194856	21572	11

In terms of value, however, exports appear to constitute a sizeable amount of earnings, but the available information is inadequate to arrive at any ascertainable figure. If the DOF's estimate (1997 & 2000) of the contribution of fisheries to the state GDP is taken as a measure, it yields some, but by no means reliable idea.

	1993-94	1994-95	1995-96	1996-97
State GDP (in Rs. Crores)	53750	62412	71901	80744
Contribution of fisheries to the GDP (in Rs. Crores)	819	858	1019	1789
Percentage contribution of fisheries to GDP	1.52	1.37	1.42	2.22
Contribution of export of seafood from Vizag Port (in Rs. Crores) (MPEDA, various)	456	651	604	522
Percentage contribution of exports to fisheries	56	76	59	29

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However, there are apparent anomalies in the way the contribution of fisheries to the state GDP is presented here. There is a possibility that the contribution of fisheries is being calculated based on the value of exports alone – which is not improbable, considering that Chennai Port handles sizeable quantities of captured and cultured varieties of seafood, and between them, Chennai and Vizag seem to be accounting for the entire contribution of fisheries to the GDP as presented in the Handbooks on fisheries statistics⁸. Thus, there is a possibility that the contribution of fisheries to the state GDP is being under-reported, and thus the contribution of exports might appear to be more than it actually is.

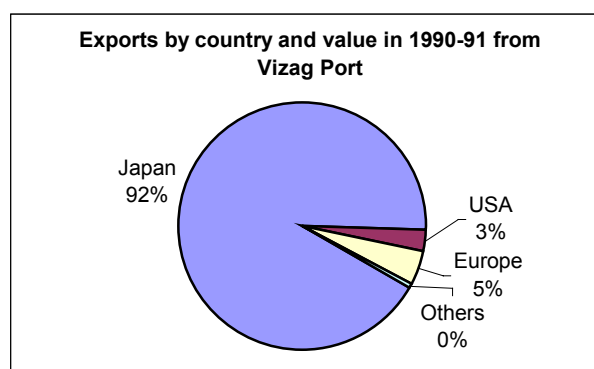
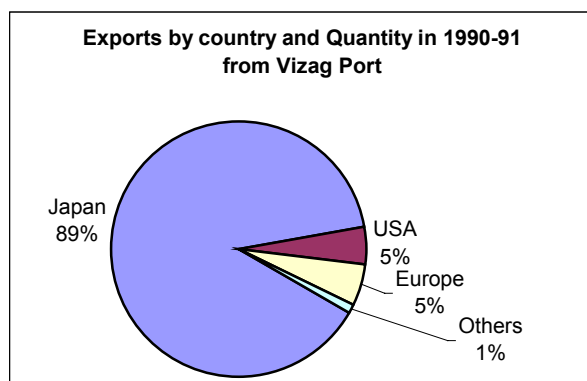
Country-wise exports of Marine Products through Vizag port

Japan has constituted the largest importer of seafood from Vizag Port, both in terms of volume and value. Although there has been a decline in percentage terms in the exports to Japan, in real terms, there has been more than a doubling of the quantities and a seven-fold increase in value of exports between 1990-91 and 1998-99.

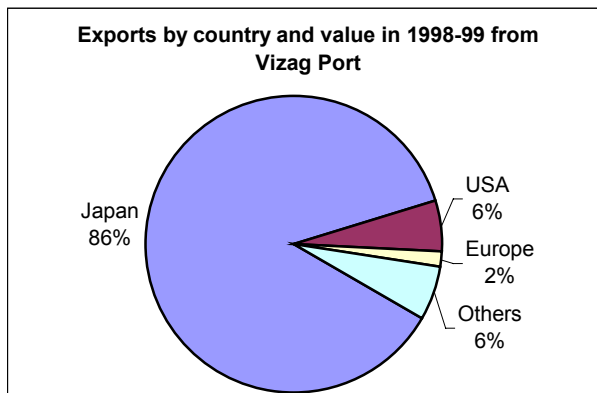
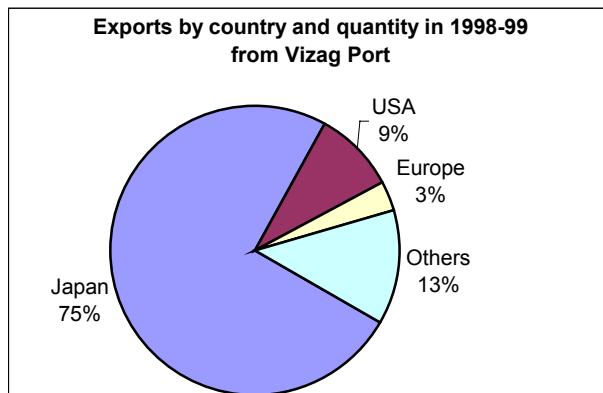
Europe accounted for about 5% of the total exports from Vizag Port and the decade of 1990s saw a decline in the percentage of exports to Europe, and in real terms, the growth of exports has been comparatively sluggish. For instance, exports to the US during the same period have expanded five-fold in terms of quantity and 17-fold in terms of value.

It has been countries like China, Malaysia, UAE, Thailand and Australia, which have become important importers of seafood from Vizag Port over the period, growing spectacularly and cornering a much larger share of imports – more or less equal to the imports by the US and the EU put together. It is also important to note that exports to these countries have included, besides traditional varieties like shrimp, many fish varieties including Ribbonfish, Seer, Pomfret, Croakers, Snappers etc, thereby opening doors to a large number of hitherto-local varieties in the international markets.

	1990-91		1998-99	
	By Volume (MT)	By Value (Rs. Crores)	By Volume (MT)	By Value (Rs. Crores)
Japan	7554	100	16105	766
USA	407	3	2011	51
Europe	465	5	672	14.3
Others	83.5	0.5	2783	50.8



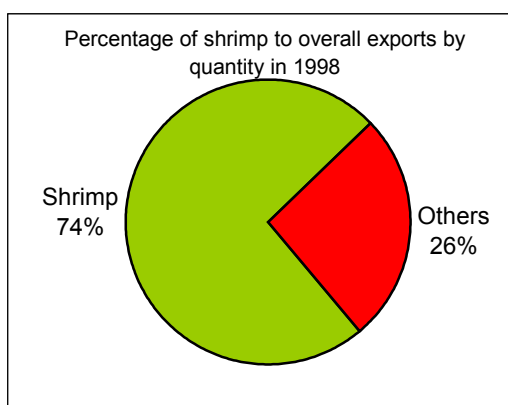
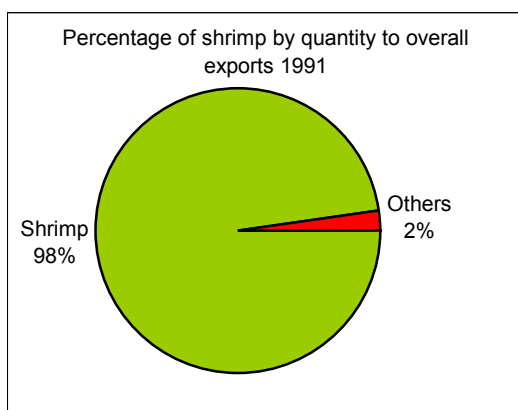
⁸ To confuse matters further, for 1998-99, the DOF Handbook gives a value of Rs. 677 crores for the marine landings (p.36), while suggesting that fishing contributed Rs. 272 crores to the state's GDP in the same year (P. 5).



Source: DOF (1993 & 2000)

Percentage of fish to shrimp in overall exports from Vizag Port

Andhra Pradesh supplies nearly half the total quantity of shrimp exported from India (The Hindu, 17 April 2002). Much of the shrimp of *Penaeus* spp that is produced in the state is exported (MPEDA, 1995: 2a). This is purchased by processing and packaging plants then exported directly or through specific exporters. The main markets are USA, Japan, West Europe, Middle East and South East Asia (MPEDA, 1985: 2a). In 1991, more than 97% of the total exports from Vizag consisted of frozen shrimp. By 1998, the composition of shrimp (including cultured shrimp) by weight in the total exports came down to 74%.



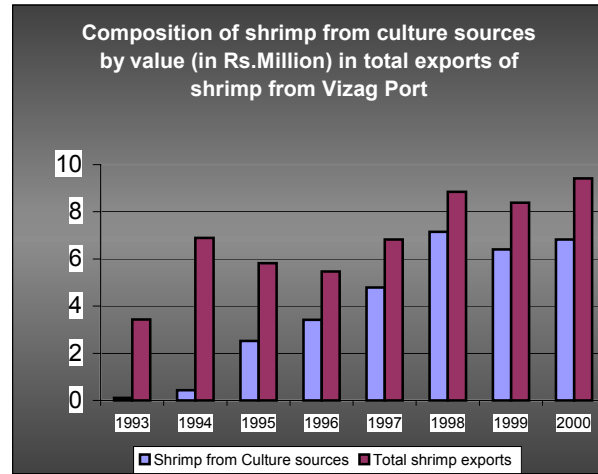
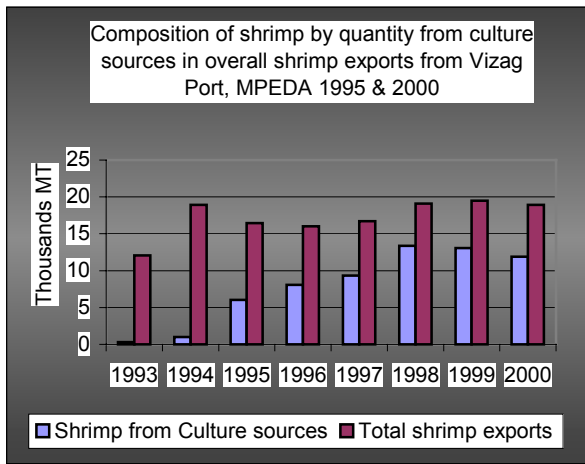
	By Quantity	By Value
Percentage of shrimp to total exports from Vizag Port in 1991 (MPEDA, 1995)	97.7	99
Percentage of shrimp to total exports from Vizag Port in 2000 (MPEDA, 2000)	79.4	96

Capture vs. Culture shrimp in exports from Vizag:

Export of cultured shrimp from Vizag Port began in 1993, when a total of 294 MT, valued at Rs. 11.5 million, were exported, as against a total of over 12000 MT of shrimp exported at a value of over Rs. 367 million. By 2000, the quantity of cultured shrimp exported exceeded that of the capture shrimp with a

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total of nearly 12000 MT in a total of about 19000 MT. Value-wise the cultured shrimp fetched nearly Rs. 700 million from the total shrimp export earnings of 940 million.



Export channels for the important varieties of seafood in Andhra Pradesh

There are mainly two export channels for seafood from Andhra Pradesh: Vizag and Chennai Ports. However, many fish species also take alternate routes of export and consequently, not only do they escape being considered as 'export' items, but also make it difficult to track their routes. Pomfrets, for instance, are mostly transported to Mumbai by trucks, from where they are exported abroad. A large proportion of dried ribbonfish reportedly reaches Bangladesh via Orissa and Bihar, and often clandestinely, which makes it very difficult to map the routes they take. Chilled ribbonfish are reportedly exported to the UAE and other countries in that region by air from Delhi. Many of the dried fish from Andhra Pradesh get exported via Mangalore and Veraval, and the reverse is also equally true – i.e., fish from Gujarat and Karnataka travel via Andhra Pradesh to Southeast Asian countries. Seerfish has a good local market in Chennai, and a large quantity of seer landed in Andhra Pradesh and Orissa reach Chennai by train, but it is also possible that a part of this is being exported. Live crabs from Andhra Pradesh are generally exported through Chennai Port. A part of the freshwater fish sold in Calcutta from Andhra Pradesh invariably finds its way into Bangladesh, but this export to Bangladesh remains completely shadowy and hence unquantified.

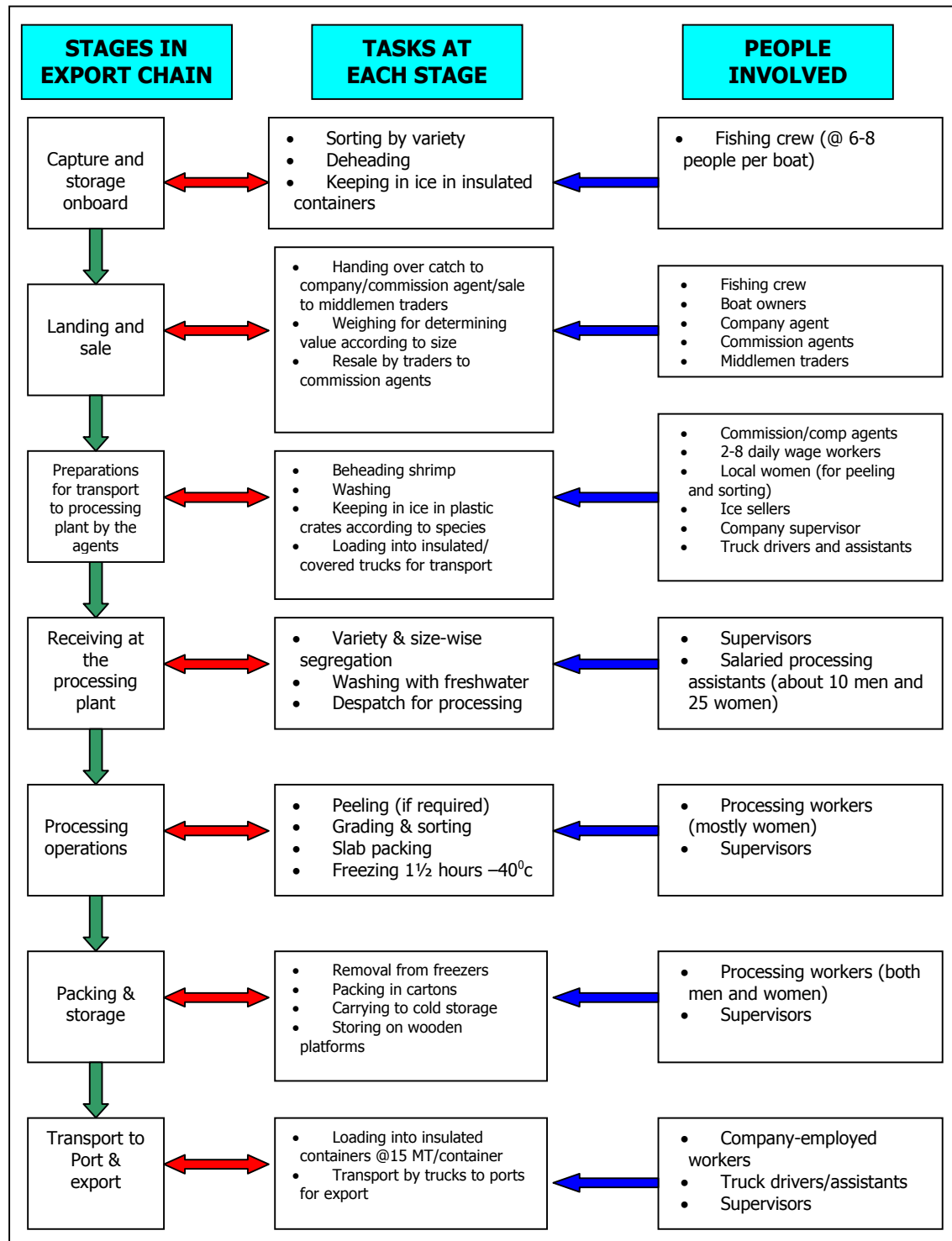
What all this means is that to try and map the route that an export variety takes is not a straightforward procedure at all, even at one particular location. The same species could take different channels at different times, and determining what route it takes on a given day is dependent on so many local, national and international factors that the decision could sometimes look completely arbitrary and unpremeditated. The fact of numerous intermediaries at every level of transaction also makes it difficult to understand the dynamics of operations.

In the context of Andhra Pradesh, to understand the export channels for various seafood items, the following commodities/species were studied:

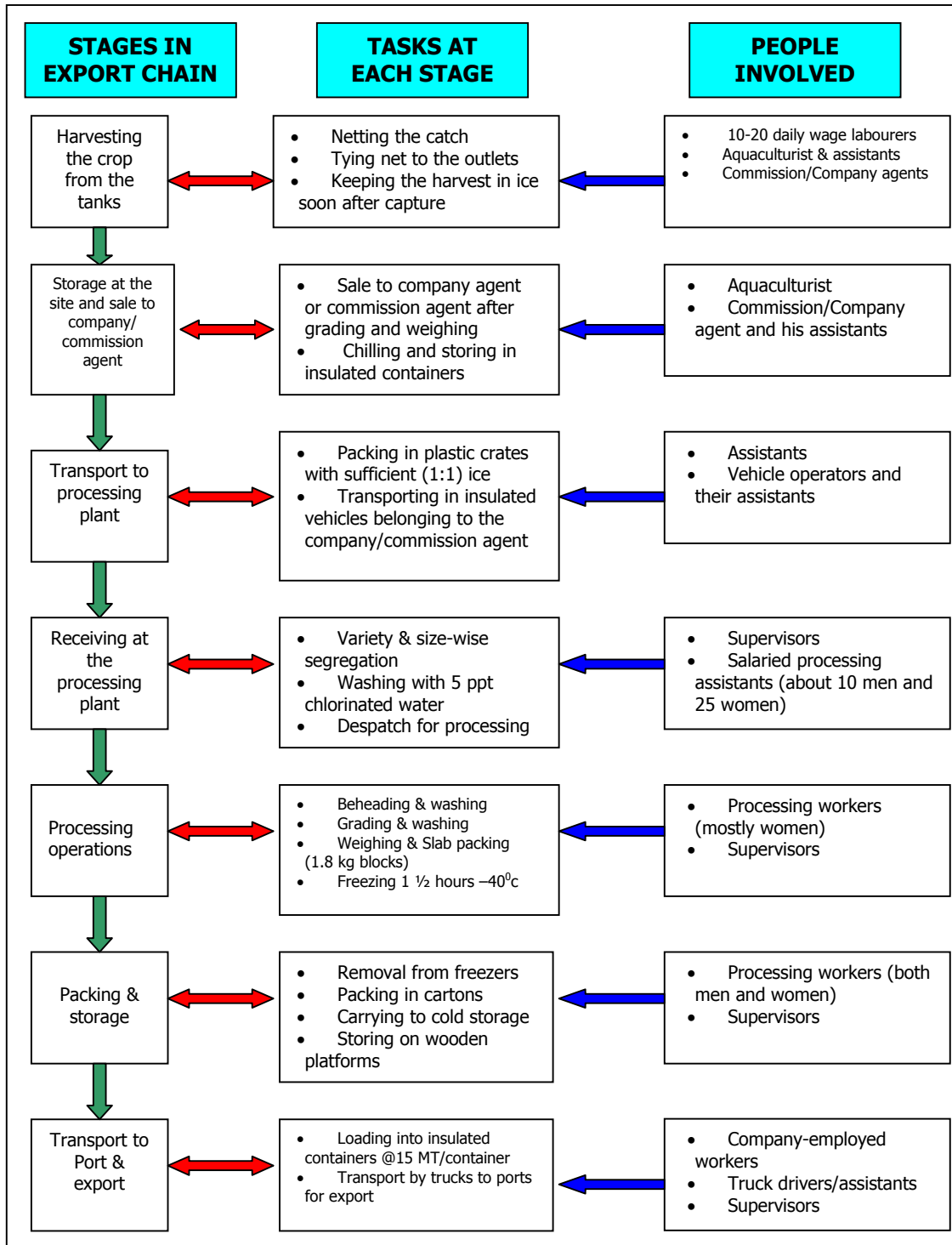
1. Black Tiger shrimp – from mechanised sector in an urban area
2. Black Tiger shrimp – from artisanal/motorised sector in a rural area
3. Black Tiger shrimp & Scampi – from the culture sector
4. Seer fish & Pomfret – from an urban/rural landing centre
5. Ribbon fish – from mechanised sector in an urban area

Although a large number of other varieties have been mapped out as well, at a generic level, the above listed fish species seem to account for most of the permutations that seafood exports take in the state; hence the study was confined to these varieties alone.

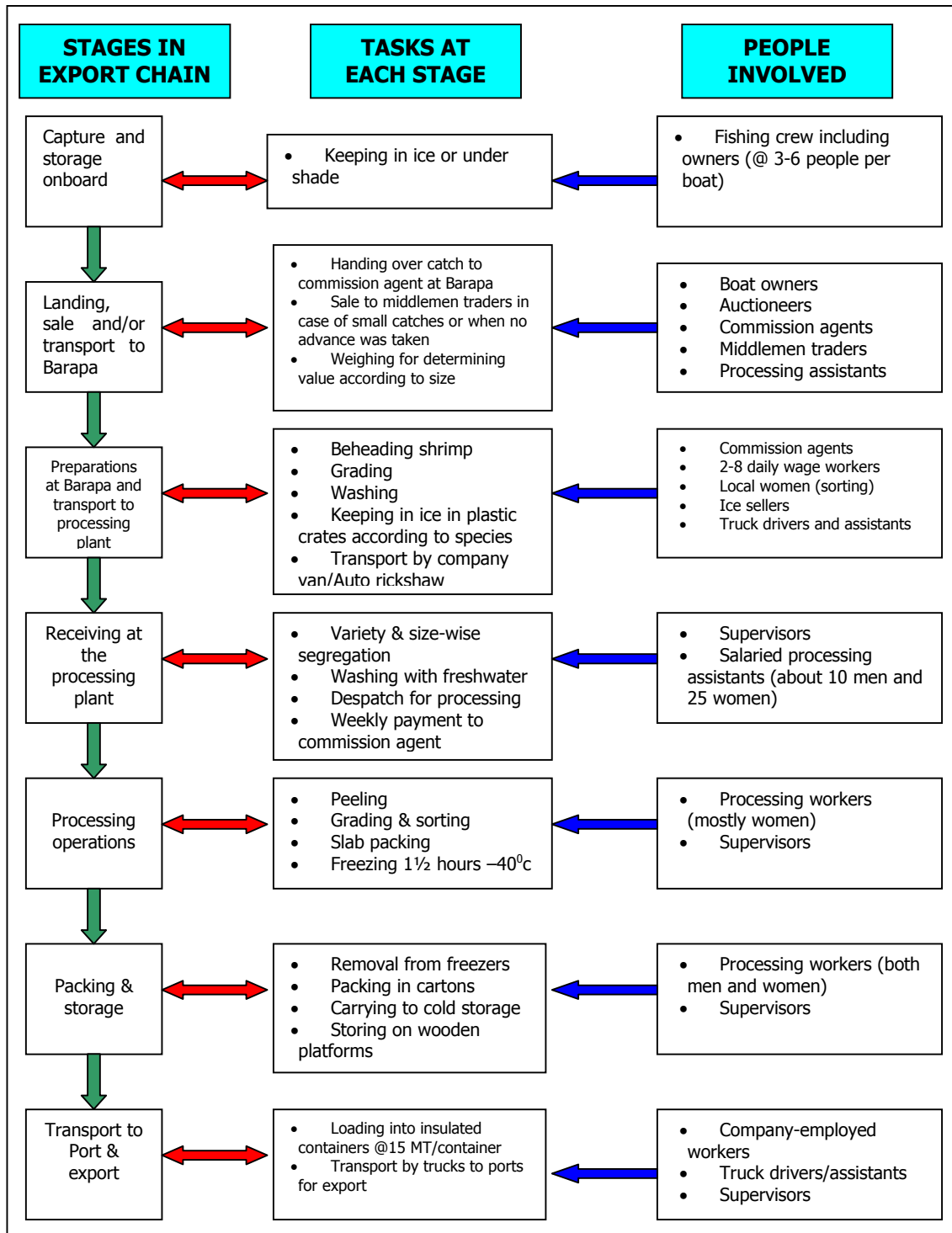
STAGES IN THE EXPORT OF BLACK TIGER SHRIMP (Capture/Mechanised sector/Urban landing centre - Kakinada):



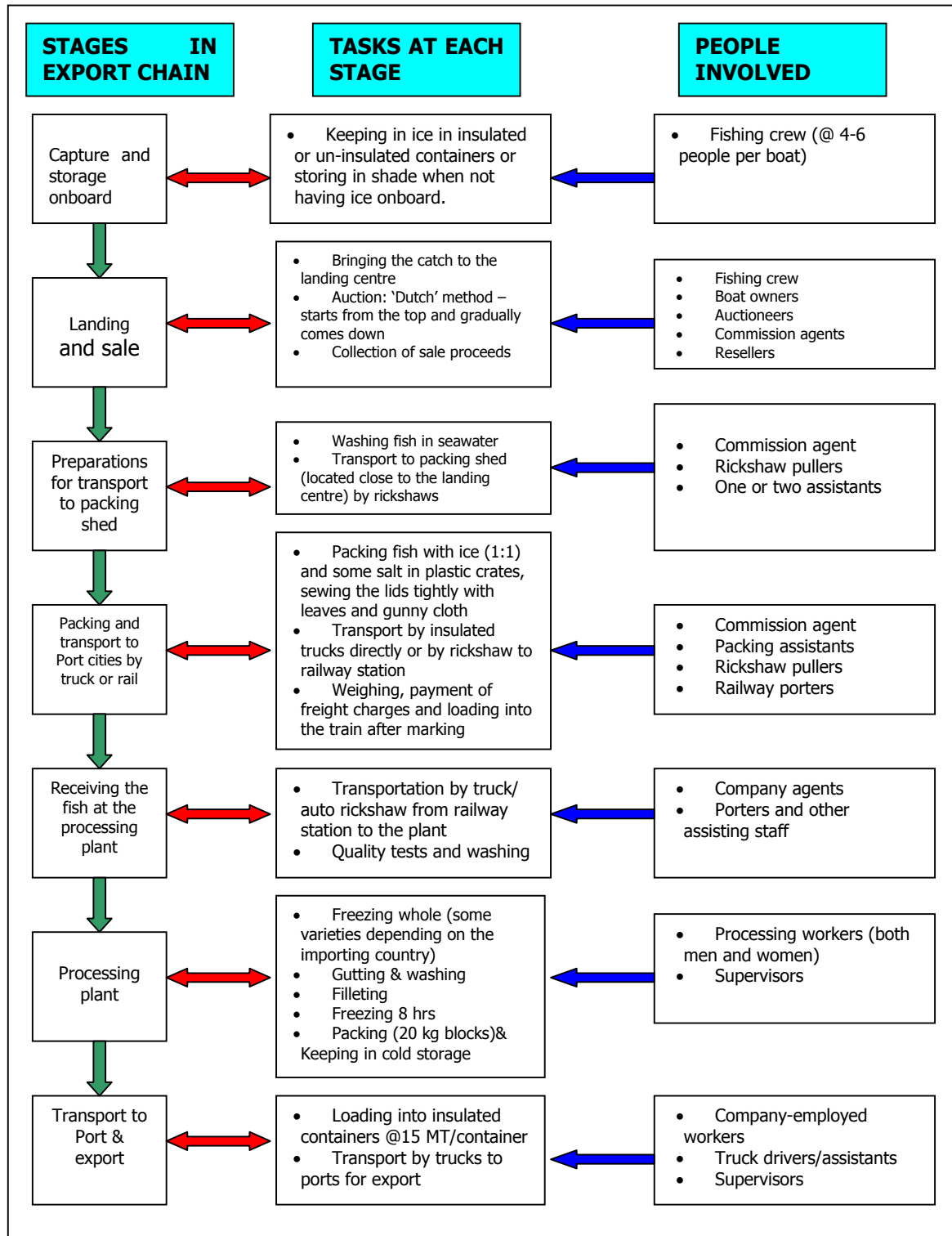
STAGES IN THE EXPORT OF BLACK TIGER SHRIMP/SCAMPI (Culture) (BCV Palem)



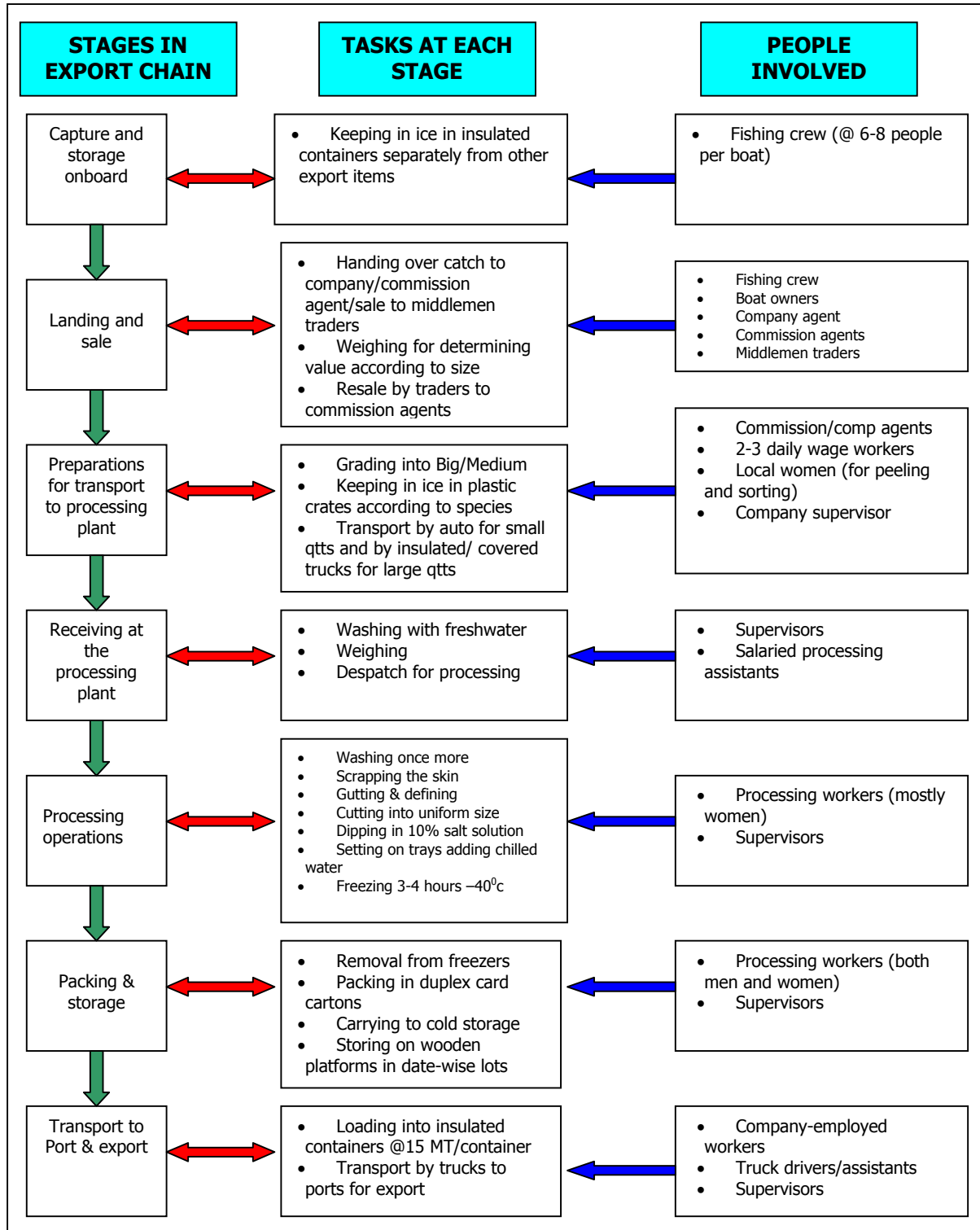
STAGES IN THE EXPORT OF BLACK TIGER SHRIMP (Capture/Artisanal sector/Rural landing centre - Uppada):



STAGES IN THE EXPORT OF HIGH QUALITY FISH (Seer, pomfrets)(Capture/ Artisanal/ Urban - Kakinada)



STAGES IN THE EXPORT OF RIBBON FISH (Capture/ Mechanised/ Urban - Vizag)



Notes on Shrimp export channels from Andhra Pradesh

Andhra Pradesh is the largest exporter of black tiger shrimp in India, and until recently, shrimp captured from marine sources was the mainstay of this activity. Trawling and brackishwater aquaculture in the state are entirely centred on producing shrimp, of which black tiger constitutes a substantial part.

Both capture and culture shrimp follow the same channel once they reach the processing plant, but obviously differences exist in the manner of their procurement and also in the players involved.

Players and activities involved in the export of shrimp from capture sources

Fishing crew obviously are the first link in the chain. Each trawler (or 'mechanised boat' as the 14-mt or less sized boats style themselves) carries six to eight people onboard. Kullberg (1989: 7-9; 12,16) gives a description of the activities of the shrimp trawler crew during voyage. They receive wages as well as a share in the proceeds from sale of low value species of fish, besides having ownership of the fish that are dried onboard. According to DOF (2000), there are about 1738 mechanised trawlers in the state (a figure which is patently under-reporting the actual numbers, because it indicates there are no trawlers in Visakhapatnam, obviously the biggest trawler base in the state, if not on the east coast of India!), which could mean that nearly 15,000 people are employed as crewmembers on these boats.

Considerable quantities of shrimp are also caught using trammel nets in the artisanal/motorised sector. The shrimp catches in the artisanal sector come both from the marine and estuarine waters, and a large number of fishing systems depend almost entirely on the shrimp for a livelihood. According to DOF (2000), there are nearly 50,000 motorised and non-motorised artisanal boats in the state, which gives a figure of approximately 200,000 people actively employed in fishing operations in the sea and estuaries. The returns from the catches are shared equally between the owner and the crewmembers after deducting the running expenses.

The total number of mechanised boat owners, the second link in the chain, could be between 1,000 and 1,500, considering that several owners have more than one boat. Most of the boat owners reside in urban areas, by virtue of the boats being able to operate from well-developed harbours, and considering that each fishing trip (of 8-10 days duration) requires an investment of approximately Rs. 50,000, are relatively the better off people in the fishing industry. The Government of India helps this section of the industry by construction of major and minor fishing harbours, and more directly by subsidising the Central Excise Duty on HSD oil supplied to them, in order to 'increase their fish production and export of marine products' (GOI, 1996:206). The artisanal sector receives support for motorisation.

Almost all mechanised boat owners receive 'advances' ranging from Rs. 50,000 to Rs. 200,000 from commission agents (who in turn receive advances from the processing plants) in return for assured supply of their shrimp catches to particular processing and exports units. A tiny fraction of the owners tend to remain independent for whatever reasons. In Vizag, some of the boat owners have come together to form a syndicate into which they contribute 10% of their earnings from each trip. These savings are mainly used as a revolving fund for insurance needs and possibly for working capital needs also. Those who do not take an advance from the processing plants, they tend to receive a higher price than those who take advances. In addition to advances, most boats also obtain ice free of cost from the processing plant with which they have an arrangement.

In the case of the artisanal/motorised boat operators, the amount of advance varies with the boat, location and season, but most boats that catch good quantities of shrimp and high value fish do have access to 'advances'. However, processing companies do not directly deal with the artisanal sector generally and commission agents play an important role in these transactions. The owner in turn pays

advances ranging between Rs. 3 – 5 thousand per crewmember to retain them on his vessel through the year. This does not carry any interest, but the crewmember will have to pay the money back if he wants to shift to another boat.

On landing, the shrimp are disposed off in one of two ways: all those owners who have an agreement with a company/commission agent (who represents the processing plant at the landing centre) hand over the catch to the employees of the company/commission agent. The company agent differs from the commission agent in that the former is a salaried employee of the company, while the latter is paid a commission based on the business he does for the company. Important landing centres such as Kakinada tend to have company agents at the landing centres, while rural and remote landing centres have commission agents. Conversely, shrimp could be sold to a third party when (i) the boat owner does not have an obligation to sell his catch to particular agents or (ii) his company agent fails to turn up at the landing centre for any reason. In this case, the fish are sold to 'middlemen-traders' who sell them in turn to another commission agent for a profit. In many cases, this does not involve the middlemen putting any investment at all – they pay only after selling the shrimp to another agent, after pocketing their share. People acting as middle-'men' could be women as well. Both the commission agent and the middlemen-trader are relatively new phenomena, who arrived on the scene only after the shrimp export markets began to grow. The numbers of commission agents and traders obviously varies from place to place and from time to time.

In the mechanised sector, shrimp are weighed, sorted and packed with the least amount of delay. The prices paid for shrimp are dependent on the prevailing international price, quality and quantity of the product and the amount of advance taken by the boat owner. After handing over the catch, the boat owners in Kakinada receive a voucher for the value of the shrimp they have sold (if sold directly to a company agent), which they can encash from the company offices in the town. For their immediate needs, some amount of money is paid at the landing centre itself. In Vizag, payments are made on taking delivery of the shrimp at the harbour itself. In rural areas, the commission agents make payments on a weekly basis to the fishermen. When the sale is made through a middleman, obviously the boat owner receives a lower price than if sold directly to the company.

The boat owners in most places have associations of their own, which play an important role in resolving conflicts, and in Vizag and Kakinada, the associations also have a role in deciding the selling price for shrimp.

In case of the artisanal sector, shrimp are carried to the commission agent's place ('Barapa') directly by the fishermen, where the catches are weighed before icing. The commission agent pays a portion of the money owed to the fisherman immediately, but the final payment is generally made at the end of the week on a stipulated day when he receives his money from the company in the town. The commission agent receives 10% as his commission. The competition amongst the commission agents for shrimp ensures that they retain only 10% of what the company pays them and pass the rest to the fishers – otherwise, the fishers could easily change agents. In villages where the commission agent has a monopoly of procurement, the prices he pays are more arbitrary. The cost of ice is borne by the fishermen themselves for carrying onboard. While the wide network of commission agents in most coastal areas has the apparent benefit of enabling the fishers to sell their catches immediately on landing and also in terms of giving them access to credit for various needs, the arrangements often hide a range of hidden costs. For instance, the fishers in BCV Palem receive about 15% less on the cost of their shrimp when sold in the nearby main village of Tallarevu, although Kakinada, where the processing/collection facilities exist is hardly 20 km away. Naturally, this leads to the fishers tending to land their catches mostly in urban landing centres, whenever good catches of shrimp and high value fish are caught. Over course of time, it has also been observed that the fishers tend to operate from the urban landing centre itself, which gives them good access not only to markets, but also to fuel, ice and other requirements. The impact of such concentration of landings has been widely recognised to have far reaching consequences.

Access to ice and preservation systems has been seen to be another important factor determining the prices obtained by the fishers. The better access they have to ice and storage, the better the prices they manage to obtain. In most cases, having an onshore ice storage system (such as a large icebox), even though it is never used, has meant that the fishers could bargain for, and obtain, a better price. The road access to the village, the credit arrangements and the systems of fishing too have a bearing on the payment received for the catches.

Each company/commission agent employs some workers at the landing centre who could be salaried or paid daily wages, and who assist the agent in weighing the shrimp, washing and sorting them and packing them in ice for transport to the processing plant. Depending on the quantity of the shrimp and the requirements of the importing country, the commission agent also employs from time to time a large workforce of women for beheading and, in case of rural areas, for peeling. These women come from the fishing community and are involved in a wide range of other occupations besides peeling. In Kakinada, for instance, there are about 100 women who undertake shrimp beheading as a group venture from time to time. They remove heads of the shrimp at the fishing harbour itself and are paid based on the quantity of shrimp they have peeled. The current restrictions on undertaking processing anywhere except in factory premises reportedly reduced the work opportunities for the women. In Vizag, shrimp are carted off to the processing plant without beheading, because most processing plants are located within short distances from the landing centres, whereas in rural areas, beheading and peeling will need to be carried out in the village itself because of the distances and times involved in transporting the shrimp to a processing plant. The cost of the transaction from procurement at the landing centre till the consignment reaches the processing plant reportedly works out to Rs. 70 per kg.

Insulated vehicles have been the distinguishing feature of the shrimp export chain. Although they had been in use prior to 1990, subsequently their numbers grew so prolifically that besides shrimp, much else has come to be transported by them, and as pointed out by some of the traders in Kakinada, it is not improbable that the growth in the export of non-shrimp varieties was a direct result of the increased capacity to transport fish over long distances in good conditions. Most of the insulated and covered vehicles are owned by the exporting/processing companies, and in places where the commission agents or middlemen-traders take on the responsibility of transport to the processing plant of shrimp etc., they tend to hire covered (generally non-insulated) vehicles for the purpose.

Players and activities involved in the export of shrimp from culture sources

Instead of a boat owner and his crew, it will be the aquaculturist and his assistants who will be responsible for bringing the harvest out of the pond. The aquaculturist arranges with a company or a commission agent for lifting the catch immediately after the harvest and then only sets to harvesting. He employs about 10-20 people depending on the size of the ponds and the time of the day when harvesting begins. These will generally be people from the neighbouring village though bringing people all the way from a distant town, in order not to give the 'locals' an entry point into the pond premises, is not uncommon – the local people are considered to be hostile and thieving, and if allowed to get into the farm once, could be a potential threat in future. In most areas, large farm owners tend to remain aloof from the neighbouring villages and depend on the distant towns for meeting even their basic needs. This however is not valid when the owners come from the local community itself.

Be that as it may, the people involved in harvesting are often professional fishers who take up pond harvesting only as a subsidiary activity. In some areas, sea- and creek-fishing people have ceased fishing operations altogether and have begun working in aquaculture farms as wage earners. In places like Krishna district, where aquaculture has remained more or less a small-scale activity, most communities divided up the village commons amongst all members who gave up fishing altogether and became full-time aquaculturists. It is said that harvesting was done as a communal activity to begin with – one

aquaculturist helping another – but the disease-related problems made aquaculture a difficult proposition for most villagers, whose capacity to invest large sums of money into every crop was limited.

Once the harvesting is done, shrimp are weighed and their value estimated, after which they are kept chilled inside insulated iceboxes waiting for the trucks to come and take them to the processing plant. Once the transaction reaches this stage, the responsibility of the farm owner ceases and it will be the company/commission agent who will take responsibility for the next stages. The difference between the company agent and the commission agent is that while the former is a representative of the company which pays him a fixed salary, the latter is more of a middleman, who negotiates the sale of shrimp with the farmer and buys it for the company and receives a commission for his services. Commission agents are more prevalent in transactions involving small aquafarmers. The commission agents arrange for simultaneous harvesting by a number of small farmers on the same day so that it becomes viable for the company to send a vehicle with ice etc.

Often, most aqua-farmers receive loans in kind and rarely in cash from the processing factory, which supplies seed, feed, fertilisers etc., to the farmer in return for selling his crop to the company. Most processing industries in the aquaculture belt have an interest in shrimp hatcheries, feed and fertilizer supply agencies etc. At the time of sale of the harvest, the company deducts its investment and pays the rest to the farmer. Shrimp seed for stocking purposes is generally given free of cost to the farmers. Of late, because mass mortality of shrimp due to diseases has become rampant, the companies have begun the practice of providing seed free of cost for three consecutive cycles in case of successive failure of crops, which helps the farmers immeasurably.

Shrimp seed collection thrived as a full-time livelihood activity through the 1990s, with many fishers in the coastal villages withdrawing from the increasingly uncertain capture fishing operations to concentrate on seed capture. The arrival of shrimp hatcheries on the scene, the practice of the processing units providing shrimp seed free of cost and most importantly, the government regulations banning shrimp seed collection have all curtailed seed collection activities to a large extent. Shrimp seed collection continues in many places, but at a much smaller scale.

Players involved in the export of shrimp at the processing plant level and beyond

Each company also employs a large contingent of salaried processing people – generally women dominate men by a ratio of 10 to 1. Women from Kerala were preferred for processing operations for a long time, because they were considered to be adept at peeling and sorting. Even now, there are Malayalee girls working in processing factories, although they face increasing competition from local women. It is not known how many processing assistants there are in the state, but considering that there are 55 processing plants in the state, employing on average from 100 to 150 people each (though not all of them fulltime), it could be said that about 10,000 people are employed in the shrimp processing units. This figure needs to be verified.

Besides these, shrimp processing and export activity depends on a large number of ancillary workers, technicians, transporters etc., and the total number of people thus employed is not known.

Quality maintenance and control

The use of ice and insulated ice containers onboard as well as on shore has been going on for at least two decades in Andhra Pradesh, particularly in the mechanised sector and this seems to have made an emphatic difference to the mechanised boat operators, considering that no boat ever ventures into the sea without ice.

Until early 1990s, shrimp were packed in bamboo baskets for transport to the processing plants, but, over time, plastic crates have taken their place. The crates are sturdy, can be stacked one above the other without crushing the shrimp, easy for quantification purposes, reusable and are relatively inexpensive. It is reported that the basket weaving community, whose livelihood depended on purchase of the baskets by the fishing industry, was affected adversely.

Following the EU and the USFDA ultimatums on the need for improving the quality of Indian seafood exports, many processing plants have upgraded their facilities and infrastructure in keeping with the quality requirements imposed by MPEDA and EIA, the two agencies responsible for quality inspection in the country. MPEDA also subsidised the cost of upgradation for most units. Most shrimp processing plant operators reported that the upgradation still entailed high investment, increased running costs, employment of larger number of people and decreased profitability. Many processing plants have been leased out to bigger exporting companies in Vizag and Kakinada. Some companies reported working at less than half their working capacity, and many processing plants also closed shop – the five processing plants near fishing harbour in Vizag have been reportedly closed down.

On the export front, Vizag has been upgraded into a container port, and this has reduced losses due to spoilage, cut transaction costs and berthing times and improved the quality of the product significantly.

Trends in shrimp export

The most important concern with respect to shrimp export from the state has been the wild fluctuations in the marine catches. On the other hand, international markets for shrimp remained sluggish through the year 2001, a supposedly good fishing year for shrimp. Beachside prices came down to about Rs. 150 a kg during August-September, from about Rs. 500 in May-June period, forcing the fishers to stop fishing altogether for more than a month. They picked up once again in 2002, but the trauma of the experience has made the boat owners extra cautious.

But, shrimp continues to remain the most sought after export item. With brackishwater aquaculture itself going through a period of serious problems, the marine catches seem to have sustained the demand adequately.

Notes on High Quality Fish Export Channels from Andhra Pradesh

Much of the high quality fish in the exports – seer, pomfrets (both black and white) and snappers – are caught mainly by the artisanal motorised and non-motorised boats. The crew on these boats generally fall into the 'poor' category, and often the owners of the boats tend to be fishermen onboard as well.

Few of the artisanal boats carry onboard ice storage systems. Many make do with a makeshift insulated container made up of galvanised iron or wood. Many boats of FRP construction have inbuilt iceboxes able to carry up to 50-150 kg of ice/fish. Even those boats that do not have onboard iceboxes tend to carry ice – stored in the shade with paddy husk to cover it from direct exposure – in small buckets etc.

The high quality export varieties are caught mainly with large- and medium-mesh gillnets, and the time of capture varies from place to place, but generally night fishing is preferred. Two or, rarely, three hauls are made in one trip, thus catches tend to remain onboard for considerable periods after capture.

On landing, fish are dumped on the beach and a professional auctioneer performs the auction. Dutch auction is followed in most landing centres, in which the price begins at the highest level and comes down gradually. The buyers for high quality fish are large urban traders or their agents, commission agents for processing plants (who are confined to a few areas only), and some local traders as well. The commission agents receive a 10% commission on their purchases and often employ local women and

men for participating in the auctions. It is increasingly the case that the commission agents pay an advance to the fishers – particularly for export items such as shark fins – in return for an assured supply, the amount advanced ranging between Rs. 10,000 to Rs. 30,000/-. When a boat that had obtained advance from a trader lands sharks, the fins are cut off immediately on landing and the carcasses are only sold in the open auction. Similarly airbladders are removed from catfish on landing, and the rest is allowed to be sold in the open auction.

The traders dealing in shark fins and airbladders employ some women to process the fins and the airbladders to the required dryness before sending them off by baskets to Chennai for onward export.

The buyer has to pay the value of the fish almost immediately after the auction is over, and then gets the fish carried by rickshaws, if large quantities, or by head loads if the quantities are low, to the processing shed which is generally located in the same premises or within the same neighbourhood.

At the processing shed, the fish are packed in plastic crates, with layers of ice in between fish at a ratio of 1:1. When some of the fish show signs of being soft or semi-spoiled, salt is sprinkled on the fish while packing – it is said that the salt tightens the texture of the fish by extracting water. The plastic crates are sealed at the top with leaves of various kind and gunnysack.

Many processing factories tend to keep their own vehicles waiting at the landing centres when they know good catches are in the offing. These trucks will immediately be loaded with fish and transported to the processing factories elsewhere. When catches are particularly good, these trucks roam up and down the coast visiting fishing villages picking up the fish that the agents belonging to the company will have procured and kept in ice.

Alternatively, where train connections are good and more convenient, or when catches are too low to make transport by truck unviable, the commission agents send the packed crates to the railway station by rickshaw and book them for transport by train that same day. Generally, the fish will reach their final in-country destination within 24 hours of landing, and the quantity of ice kept in the crates is generally sufficient to keep them in good condition for the entire duration.

Notes on Other Fisheries Exports from the State

Freshwater fish

Andhra Pradesh is a leading producer of freshwater fish – primarily carps – almost all of which are produced for ex-state and export markets. It has been reported that prior to the Gulf War in early 1990s, freshwater fish from Andhra Pradesh commanded a good price in the Middle-east markets, particularly amongst the large immigrant community from India. However, their share in the export markets came down by mid-1990s because the local demand itself grew to a level that it was not viable to export carp species anymore. The international prices did not exceed the local market prices, and there has also been an increased competition for the same markets from countries like Bangladesh, Thailand and Burma. The price of freshwater fish fell from \$1.90 in 1992 to \$0.90 by 2001⁹. Currently, it is reported, about one container of freshwater fish is exported every two months from Vizag Port.

Surimi

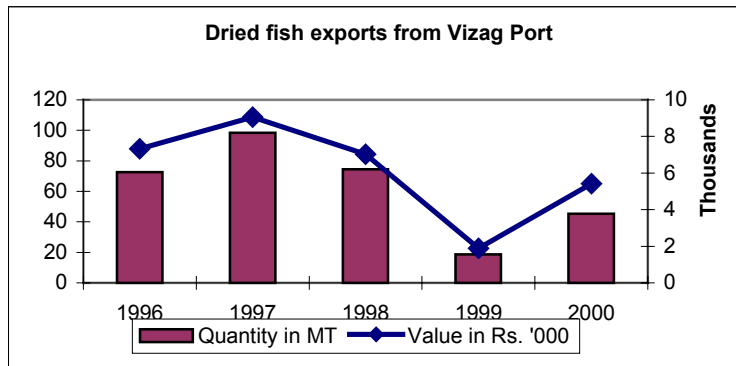
Surimi is being produced in the only plant located on the east coast of India in Visakhapatnam, and it has seen considerable ups and downs, indicating the difficulties faced by any capital-intensive enterprise,

⁹ Information obtained from M/s. Navayuga Seafood Exporters, Vizag, reportedly the only company continuing with export of freshwater fish from Andhra Pradesh

which is based on capture fishery. The surimi plant, set up as a 100 percent export-oriented joint venture between India and South Korea, faced problems right at the beginning with the economic slowdown in Southeast Asia, particularly S Korea. Subsequently, it changed hands and came to be owned by M/s. Hindustan Level Limited, which owns four surimi plants on the west coast of India, and when it tried to operationalise the Vizag plant procuring their raw material from the local fishing harbour, it became apparent that (i) being newcomers, they were forced to pay more than the going market rate for the fish, (ii) the quality of the fish they were interested in was quite poor by the time it was landed, and (iii) there was no consistency with quality or quantity and the problem was exaggerated by uncertain nature of fish catches, which are often mixed. To overcome these problems, the management has been forced to resort to procuring their raw material all the way from the west coast of India.

Dried fish

Export of dried fish from Vizag Port began in 1995, but they started showing a decline from 1997 onwards.



Some Issues concerning Seafood Exports from Andhra Pradesh

Shrimp

The seafood export sector has seen many changes over the last decade, but shrimp continues to remain at the top as the most important item of export. Shrimp catches from the marine sources started showing decline by late 1980s, and it was to complement the flagging catches from the sea that brackishwater aquaculture had been given much support. The problems that aquaculture faced subsequently meant that the pressure on the marine catches remained as strong as ever. While there has been no significant increase in numbers of mechanised boats, it has been seen that wherever good catches are sighted, a large number of trawlers congregate in the same area. With declining catches, the mesh sizes too have become smaller and this has implications for the survival of not only shrimp but a variety of other species as well.

The marine capture sector also faces a serious problem of over-capitalisation, so much so that even slight fluctuations in the international prices of shrimp have an immediate impact on their operations. When the price of shrimp came down to a little under Rs. 200 a kg, it was still substantial and expensive by Indian standards, but it was way below the money spent on the fishing operations by the mechanised sector and thus was taken to be a serious setback.

Brackishwater aquaculture, as mentioned, was engulfed in a range of serious problems ranging from adverse litigation and popular protests to disease problems and pollution. What was expected to supplement the flagging catches from the capture sector has now been fighting for survival against heavy odds, and it is still not clear how the sector can pull itself out. Many shrimp farmers have now shifted to culturing *Macrobrachium rosenbergii*, the giant freshwater prawn, but it is not as lucrative as the tiger shrimp, and there are still many questions about its ability to stand in for tiger shrimp on other fronts as well.

What all this means is that the export-based industries are facing serious problems. Many fishing boats – the deep sea trawlers, in particular – have almost completely stopped operations, many processing plants in Vizag are either leased out or simply closed, and many brackishwater aquaculture farms have become defunct¹⁰. This is going to be an important area of concern in the future, particularly in the light of the fact that no alternative species has yet been found to reduce pressure on the shrimp. Alternative fishing methods may have to be developed to diversify the operations of the mechanised boats, alternative species will need to be cultivated in the aquaculture farms and all this will need to be fairly quickly.

Finfish

While the increase or decrease in shrimp – though vital for the well being of the sector and a large number of livelihoods dependent on them – when it comes to the finfish the issues are more clear – there is a traditional dependence on those varieties, and a large number of people do make a living out of them, so their interests and concerns will need to be considered before thinking of increasing finfish exports. There are indeed a large number of finfish species that are at present poorly or un-utilised, large quantities of fish still go for poultry feed, and all these will need to be channelised into a productive arena like exports, but only after considering all the implications, particularly as they affect the poorer sections of the communities.

With increased emphasis on export of finfish, the treatment given to the once-cheaper varieties like ribbonfish and croakers onboard and after landing has undergone a shift. The decreasing percentage of

¹⁰ Information on the numbers of processing plants and aquaculture farms thus affected are not available – the next phase of research could unearth more information – largely qualitative – on this issue.

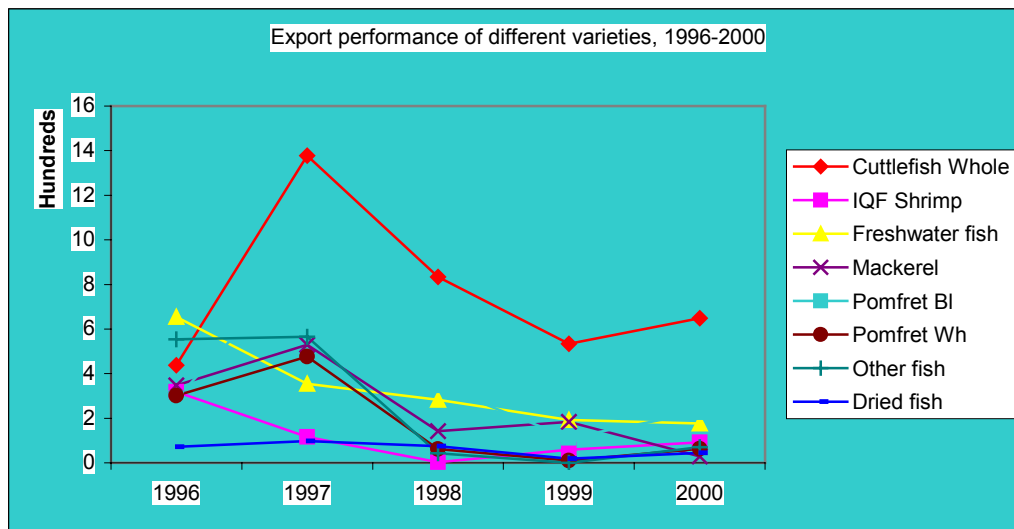
shrimp in the overall catches has meant that the owners needed to maximise their returns from the other varieties in the catch, and the transformation of ribbonfish into a 'quality' fish (albeit still low-yielding) has been nothing short of miraculous in some fishing ports like Vizag and Kakinada.

Whilst there has been an increase both in quantity and percentage contribution of the fish in the overall exports, questions still remain as to their consistency. Many social, economic and technical problems have been raised in the context of increasing their stake in the overall exports, and the general situation of the marine fish catches in the state raises more problems.

The status of the finfish catches is no better either when compared to shrimp. There are wide fluctuations in the quantities, sizes, seasonality and availability of various fish including seer, pomfrets and other exportable varieties. Traders who dealt exclusively with certain varieties like pomfrets have either stopped operations completely or send only one or two consignments in a year.

Inconsistent performance of the 'traditional' and 'new entrant' varieties of fish in the exports from Vizag Port

While the overall exports have been showing signs of increase over the years, an analysis of the trends of export for individual varieties/commodities of seafood indicates that the year-wise exports of most varieties are characterised by inconsistency, and often by declining contribution to exports. Traditional export varieties such as squid, lobsters, cuttlefish and even shrimp (block-frozen and IQF varieties) have shown declines in real terms, and it is the increase in value that keeps some of them going.



The reasons for the fluctuations and declines in the exports of different species are: (i) low catches, (ii) inconsistent landings, (iii) uncertainties in seasonality, (iv) uncertain demand, (v) fluctuations in international demand, (vi) poor returns, (vii) poor production and post-harvest systems, (viii) poor timing of landings vis-à-vis demand, (ix) too many intermediaries, and (x) high costs of investment etc.

This dichotomy of more fish entering into the export market on the one hand, while showing signs of decline and inconsistency on the other is one of the interesting features of the export sector in the state. It is possible that the signs of exhaustion that are perceptible in the capture sector have begun to make their presence felt in the export sector, and hence will need to be considered carefully while making any future projections.

Impact of International Seafood Trade Legislation

Activities such as shrimp peeling at the landing centres have been curtailed in places like Vizag, but continue to take place in other areas. The women who are involved in the operations undertake a range of other livelihood activities as well, hence the impact of curtailing such operations does not appear to have been seriously felt. The fact that most of the exports are going to Japan and Southeast Asia could be one reason for this, but, as everyone agreed, it was at best a temporary measure.

But the Government of India does take seriously the possibility of restrictions on the Indian seafood and has been imposing stringent controls on the exports – particularly the shrimp. For instance, following the EU ban on import of shrimp from China, and the issue of red alert notices to Vietnam, Thailand and Myanmar following the discovery of certain antibiotics, Indian government has swung into action and is taking steps to prevent a possible ban on Indian imports (see Text Box 1).

The consequences of these controls for the already ailing industry are already visible. Over-capitalisation, which has been shown up to be a major problem above, is a direct result of the need on the part of the producers and processors to keep up with the changing supply positions on the one hand and the conditions on the exports on the other. Most people interviewed for this study indicated that their operations could become unviable in a few years time, if allowed to continue at the current rate. There are indications of many corporate firms in the sector gradually moving away from fishing and fish processing operations into less risky – albeit less profitable also – areas. It was reported that there have been no new proposals for setting up processing plants in Vizag for some time now.

Stringent controls to be imposed on shrimp exporters (from 'The Hindu', 17 April 2002)

Hyderabad, April 16. A set of rigorous controls will be imposed on shrimp processors and exporters in India to prevent a possible ban on imports by the European Union (EU) and the United States.

The EU has already banned import of shrimp from China three months ago and placed Vietnam, Thailand and Myanmar under red alert with a warning that they too would face a ban if they did not stop using certain antibiotics.

Shrimp from China were found by EU inspectors to contain residues of certain antibiotics used in hatcheries which were harmful to health, while Thailand had to recently recall a consignment of shrimp from the sea following the red alert.

India too faced such a possibility when the Marine Products Export Development Authority (MPEDA) received a communication from the EU that three consignments, which left from Chennai, Cochin and Paradip for the UK, contained the banned antibiotic, Nitrofuron. Acting swiftly, the Government of India banned the offending companies. It had earlier issued an order specifying the maximum residual limits for antibiotics, pesticides and heavy metals used in fish and fishery products.

In order to prevent the problem from assuming larger dimensions, the MPEDA and the State-Level Export Promotion Council (SLEP) of Andhra Pradesh convened a meeting of exporters, processing industries and shrimp farmers from Andhra Pradesh and Tamil Nadu today to discuss certain self-imposed regulations...

The intense competition that arose in early 1990s as a result of ever growing demand for exports too has been cited as one reason for the non-profitability of the ventures in due course, and this has led to many plants becoming sick. Many companies have reported taking ailing processing plants on lease either on annual basis, or in terms of the quantities processed. Thus, it is not uncommon to find one plant processing the products from 4-5 companies simultaneously.

While moving away is possible for some sections of the sector, a large majority of the people – particularly the poorer sections – will continue to depend on the sea and the exports for their survival, and their needs will need to be considered seriously.

Livelihood issues

As yet, there are no serious implications of increasing exports on the traditional livelihoods of the post-harvest workers. Indirectly, the craze for exportable varieties of seafood has led to a major shakedown of the system, but exports – *per se* – do not seem to have hurt many people. If anything, they may have supported new livelihood activities and also by concentrating the fish from different areas, made it possible for many poor people to get an assured supply of fish, albeit at a higher expense in terms of money and time spent. Considering that exports constitute hardly a fraction of the total production, their reach is not very wide so they do not necessarily make a serious difference to the traditional post-harvest workers, whose more serious problem has been to do with the serious declines in overall fish catches.

However, there are indications that vast changes are occurring with respect to the livelihoods of those people who have gained a livelihood *within* the export sector as a result of changes both in the international seafood legislation (the EU/US guidelines insisting on all processing to be carried out under one roof etc), slump in the exports, growth in factory-based processing capacity in the state etc.

The case of shrimp peelers in Kakinada: a study

In 1990, there were about 300 women directly depending on shrimp-based activities at the landing centre in Kakinada. There were about 40-50 'Kaatas' (literally, weighing balance, actually meaning the centres where each commission/company agent conducted his business) in Kakinada fishing harbour in those days, and each Kaata employed 6-8 women for helping out in the various tasks – washing, beheading and peeling, besides packing in baskets/crates.

By mid-1990s, three new processing plants came up in Kakinada, and that has meant a serious loss for the women. Having their own employed labour within the premises, the factories began procuring head-on shrimp, and the women lost the job of beheading and peeling. The employment of a large workforce became necessary as a result of the insistence on certain minimum number of people to be employed for each task for obtaining the permissions from the government to set up a plant in the first place.

Commission agents too shifted to buying and supplying head-on shrimp, and they did not need as many women as they used to. Moreover, there has been an influx of people – mostly from agricultural activities – into fish business and this has increased competition for whatever work was going. The decrease in shrimp catches have meant that most boats began fishing on a daily-basis (instead of the 'voyage' fishing that took one to two weeks), and the relatively few shrimp in the catches could be easily handled by the crew onboard or their wives on shore, making the whole activity of employing women for the purpose superfluous. The women began to diversify – into fish trade, mostly, but also into a range of non-fisheries related activities as well. A kaata these days employs 2-3 women on a daily wage basis.

The catches from the rural artisanal sector and also from aquaculture sources, which used to be beheaded and often peeled at the farm/landing site level, have now begun to be done at the processing plants, so the women who were doing the job in the villages may have been affected as well.

While the women were not aware of any seafood legislation that requires all processing to be carried out within the factory premises, the company agents explained the shift in processing operations to the factories as an outcome of the EU/US guidance and MPEDA's insistence.

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Annex I: Item-wise exports from Vizag Port 1996-2000 (MPEDA, 2001: 320-322)

Item		1996	1997	1998	1999	2000
	Quantity in tonnes					
Block Frozen Shrimp		7641.78	7252.7	5736.93	6362.89	6946.31
	Value in Rs.'000					
		1923357.5	1996149.8	1700782.92	1964195.5	2569864.63
Cultured Shrimp	Q:	8052.22	9347.48	13349.82	13062.53	11884.02
	V:	3416941.21	4790813.04	7145387.74	6405005.9	6822056.45
IQF Shrimp	Q:	318.74	116.24	3.47	58.49	91.57
	V:	129236.95	32887.33	2179.79	11623.47	26088.73
Frozen Fresh Water Fish	Q:	654.54	355.13	283.39	192.96	176.96
	V:	32523.27	19617.6	16141.26	11121.11	10552.74
Frozen Mackerel	Q:	347.01	528.59	142.43	183.39	28.48
	V:	15601.48	24241.63	4497.25	4671.16	705.19
Frozen Pomfret (Black)	Q:	287.93	920.18	346.86	111.98	227.28
	V:	17525.69	62705.44	18225.48	5521.08	12226.79
Frozen Pomfret (White)	Q:	302.33	476.53	61.04	9.8	62.89
	V:	27978.76	47249.05	11827.38	1359.52	10911.43
Frozen Ribbon Fish	Q:	236.96	1098.46	913.44	482.04	951.58
	V:	4917.94	28794.44	24914.49	10525.53	22493.73
Frozen Seer Fish	Q:	238.18	775.61	499.38	356.83	367.84
	V:	16160.54	55058.57	37678.74	24679.77	28221.13
Other Frozen Fish	Q:	554.07	566.05	43.18	0	70.85
	V:	32261.26	37361.76	2646.05	0	3839.15
Frozen Cuttlefish Whole	Q:	437.06	1378.46	834.26	534.48	649.7
	V:	24714.63	87857.59	47712.53	35502.46	40159.26
Frozen Cuttlefish Whole Cleaned	Q:	74.27	43.16	20.04	78.28	0
	V:	5649.93	3128.64	1766.42	6785.9	0
Frozen Deep Sea Lobster	Q:	42.63	0	0	156.79	119.01
	V:	11785.74	0	0	125470.26	88461.94
Frozen Lobster Meat	Q:	0	0	0	30.17	4.88
	V:	0	0	0	13781.34	744.26
Dried Fish	Q:	72.61	98.32	74.44	18.65	45.38
	V:	7322.93	9062.62	7033.77	1890.17	5417.37
Frozen Cut Swimming Crab	Q:	0	0	21.73	23.18	212.61
	V:	0	0	1923.7	2148.77	27878.85
Frozen Surimi	Q:	0	124.5	89.12	1065.68	1940.44
	V:	0	5178.71	3330.1	72214.28	131929.82
Port Total	Q:	19339.8	23237.68	22445.15	22744.86	23825.16
	V:	5670721.76	7215370.76	9027780.31	8698230.6	9802649.82

Annex II: Item/country-wise exports of seafood from Visakhapatnam (MPEDA, Vizag: internal document, March 2001)

		2001		2000	
		Quantity (Kg)	Value (Rs.)	Quantity (Kg)	Value (Rs.)
Frozen Pomfret (White)	USA	19200	3304199	0	0
	China	22000	3276113	0	0
	Hong Kong	22100	4226788	0	0
	UAE	9000	1116135	0	0
	Australia	5590	1066988	0	0
Frozen Pomfret (Black)	Canada	7465	482538	49110	1798279
	USA	25400	1496617	22800	1149793
	Malaysia	77460	4293654	74860	3875241
	Bahrain	3200	197990	0	0
	UAE	44000	2736058	27500	1226128
	Australia	5160	339214	5500	350347
Frozen Snapper	Malaysia	0	0	200	7438
Frozen Ribbon Fish	China	664180	16984095	856330	18680293
	Hong Kong	100000	2246270	24000	489682
	Republic of Korea	73500	2027036	0	0
	Australia	17660	451661	0	0
Frozen Mackerel	USA	12160	342954	0	0
	Malaysia	0	0	85640	1748918
	Bahrain	2000	49344	0	0
Frozen Seer Fish	Canada	12224	1188372	76919	5620191
	USA	28798	2843306	499881	36319052
	Indonesia	0	0	19068	1451520
	Malaysia	13480	489910	0	0
	Bahrain	6497	507691	0	0
Other Frozen Fish	China	153660	6463464	0	0
	Hong Kong	25000	1157553	0	0
	Qatar	21190	1568632	0	0
	UAE	500	19184	0	0
Frozen Freshwater Fish	Japan	3900	583475	7500	914514
	Bahrain	4300	232103	0	0
	Qatar	42100	2693376	44060	2633584
	UAE	20500	803010	113100	5668896
	Kuwait	44000	2749765	67000	3888711
Frozen Eel	China	0	0	8680	206842
Croaker	Australia	4860	254742	0	0
Dried Fish	Hong Kong	17310	2108292	28065	3194579
	Thailand	9300	1303761	0	0
Dried Shrimp Powder/Meal	Japan	40000	786900	0	0
Frozen Deep sea Lobster	Canada	0	0	72146	57305459
	USA	105655	85747449	84642	68164798
	Italy	13356	2714487	0	0

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Lobster Meat	Canada	0	0	11655	8328504
	USA	4884	744263	18516	5452835
IQF Shrimp	Canada	0	0	7505	1932365
	USA	44001	12981095	16626	3334659
	Rep Korea	50000	12274789	58355	10839400
	Australia	14260	7359276	0	0
	Netherlands	9000	3023475	0	0
	Spain	0	0	14400	4492274
Block Frozen Shrimp	Canada	32000	12487593	8232	2788171
	USA	688443	208116391	981246	244118984
	China	272244	71930791	194164	52235699
	Taiwan	48660	3690247	13000	795195
	Republic of Korea	0	0	7355	1224965
	Malaysia	31254	9930722	141956	28365469
	Thailand	64008	23350640	13000	3733753
	Japan	3891903	1646074967	3817577	1451277669
	Vietnam	32080	10106594	6852	1734486
	Bahrain	2340	435582	0	0
	Qatar	660	84227	0	0
	UAE	488600	98727603	363920	57909744
	Australia	46981	18365660	0	0
	Belgium	192688	42850238	98846	23823710
	France	55993	14781769	13600	2126318
	Germany	21740	11196509	82987	28072866
	Italy	21500	3963733	0	0
	Netherlands	48720	11285004	18000	2901348
	Ireland	13500	5281122	0	0
	UK	486482	194465884	564609	188617097
	Spain	31200	10378393	0	0
Cultured Shrimp	Canada	56943	29418344	122115	50662367
	USA	780584	446222009	1202262	557715869
	China	730213	298623846	447164	171845345
	Taiwan	17930	9064586	0	0
	Hong Kong	38048	20167887	15660	5839248
	Indonesia	37592	16675029	103831	41665243
	Malaysia	0	0	71549	21561679
	Singapore	36720	18475290	70762	30437069
	Thailand	640453	351955919	784987	332359357
	Japan	9097647	5386879701	9858980	5114699028
	Vietnam	210287	110269564	274490	129359315
	Bahrain	50	15701	0	0
	UAE	2200	715622	10800	6879084
	Israel	0	0	9180	3376099
	Australia	430937	215790340	114070	54344029
	Belgium	1220	312936	36760	19674074
	France	0	0	11340	4517225
	Germany	0	0	5574	2234938

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	Netherlands	16104	7079851	9000	3410756
	UK	63134	31090118	108498	47714364
Frozen Cuttlefish Whole	China	488600	30323747	395680	22770486
	Thailand	0	0	138600	8642538
	Japan	7480	566766	11284	836356
	Australia	640	50831	0	0
	Netherlands	0	0	22400	1155467
	Portugal	0	0	20712	1219366
	Spain	23000	1710095	31500	3330970
Fr Cuttlefish Whole Cleaned	Germany	0	0	5000	536537
	Spain	31048	3347005	33020	3372822
Squid Rings	UAE	500	56682	0	0
Stuffed Squid	Spain	0	0	2460	194439
Fr Cut Swimming Crab	USA	7791	779936	0	0
	Republic of Korea	102830	15014217	33146	4279147
	Japan	63480	7317697	28540	2636624
Frozen Whole Crab	Japan	16656	1575078	0	0
Surimi	Lithuania	418000	29281208	0	0
	Taiwan	0	0	54000	4086846
	Republic of Korea	276500	16640126	0	0
	Malaysia	93100	7084649	144000	10262027
	Singapore	0	0	25000	1919628
	Thailand	0	0	135000	9769814
	Japan	1064000	73253615	758980	51585433
	Australia	66000	4680195	0	0
Frozen Skewers	Germany	0	0	2400	981111
Seafood Mix	Germany	0	0	3000	344568

Annex III. List of processing plants approved for exporting their products to the European Union:

Sl. No.	Apv. No	Name and Address	Village/District Dt. of EU Apvl.	Category
1.	801	Jasper Aqua Exports Ltd Vamulavalasa (Village) Anandapuram (Mandal) Visakhapatnam, Andhra Pradesh 531 363 Mr. T Antoni Samy, Chief Executive Ph++91 891 566662, Fax ++91 891 566038 E-mail : jasperaqua@vsnl.com	Visakhapatnam Andhra Pradesh Sept 99	PP
2.	807	KRM Marine Exports Ltd 1-22, 23, Attili Road, Palakoderu, Bhimavaram 534 210 Mr. M. Vellaswamy, Managing Director Ph++ 91 44 6212183, Fax ++91 44 6262528 Email: krm@eth.net	Bhimavaram Andhra Pradesh Dec 2001	PP

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3.	809	Avanti Feeds Ltd Ravulapalem Mandal, Gopalapuram 533 274 Mr. A Indra Kumar, Executive Director Ph ++ 91 8855 41681 / 41570 Fax: ++ 91 8855 41680 Email: avantirp@pol.net.in	Gopalapuram Andhra Pradesh August 2001	PP
4.	864	Nekkanti Sea Foods Ltd Ethakota Vill, Ravulapalem Mandal East Godavari Dist.533 238, AP Mr. N S R Murthy,Chief Executive Ph++91 891 701039/567767 Fax++91 891 567504 E-mail: nekkantifoods@eth.net	Ravulapalem Andhra Pradesh June 2001	PP
5.	875	Devi Marine Food Exports Ltd Chinkapalem, Repalle 522 262, AP Mr. Md. Siddik, Manager Ph++ 91 8648 76512, Fax++91 8648 76513	Repalle Andhra Pradesh June 2001	PP
6.	879	Haripriya Marine Food Products Enamadurru Road, Near K G R L Degree College Bhimavaram, West Godavari Andhra Pradesh 534 201 Mr. T Venkateswara Rao, Chief Executive Ph ++91 8816 36844, Fax. ++91 881636866 Email: hari_priya@vsnl.com	Bhimavaram Andhra Pradesh March 2000	PP
7.	886	M.F.V. Surya Teja-III Suvarnarekha Marines Pvt. Ltd Ocean Park, Maharanipecta, Beach Road Visakhapatnam, Andhra Pradesh 530 002 Mr.T Raghunatha Reddy, Chief Executive Ph++91 891 562504, Fax++ 91 562504	Visakhapatnam Andhra Pradesh Sept. 98	ZV
8.	888	M.F.V. Ravi Kiran-III Suvarnarekha Marines Pvt. Ltd. Ocean Park, Maharanipecta, Beach Road Visakhapatnam, Andhra Pradesh 530 002 Mr.T Raghunatha Reddy, Chief Executive Ph++91 891 562504, Fax++ 91 562504	Visakapatnam Andhra Pradesh Sept. 98	ZV
9.	894	Suvarna Rekha Exports Pvt. Ltd Vellanki Peddipalem Village, Boddapalem Post Anandapuram Mandal, Visakhapatnam Mr. T Raghunath Reddy, Director Ph ++ 91 891 958933 / 892164 Fax ++ 91 891 562504 E-mail: srml@excite.com	Vizag Andhra Pradesh Oct 2001	PP

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10	897	<p>Universal Cold Storage Ltd 4-139, Peda Amiram, Bhimavaram West Godavari, Andhra Pradesh 534 204</p> <p>Mr. Afzal E Kader Ph ++91 8816 23630, Fax. ++91 8816 22906 Email: libvvrmd@md4.vsnl.net.in</p>	<p>Bhimavaram Andhra Pradesh</p> <p>March 2000</p>	PP
11	916	<p>Devi Seafoods Ltd NH-5, Peravali Road, Tanuku 534 211 Andhra Pradesh</p> <p>Mr. K A John, Director Ph ++ 91 8819 21488, Fax ++ 91 8819 21489 E-mail: dsftd@md3.vsnl.net.in</p>	<p>Tanuku Andhra Pradesh</p> <p>Oct 2001</p>	PP
12	927	<p>D C L Maritech Ltd. 6-122A North Rajupalem Kodavular Mandal 524 366 Nellore Dist, Andhra Pradesh</p> <p>Dr N P V S Raju, Chief Executive Ph++ 91 8622 75254, Fax++ 91 8622 75254</p>	<p>Nellore Andhra Pradesh</p> <p>June 99</p>	PP
13	935	<p>Hindustan Lever Ltd (Amalgam Enterprises), Pamaru, Krishna District, Andhra Pradesh 521 115</p> <p>Mr A.J. Tharakan, Chief Executive Ph:++91 864 53001, Fax:++91 864 53302</p>	<p>Pamaru Andhra Pradesh</p> <p>Dec 97</p>	PP
14	937	<p>The Waterbase Ltd Ananthapuram Village, Nellore District Andhra Pradesh 524 344</p> <p>Mr. P Ravi, General Manager Ph++91 861 331539, Fax++91 861 331614</p>	<p>Nellore Andhra Pradesh</p> <p>April 2001</p>	PP
15	988	<p>MFV Nekkanti-II Nekkanti Seafoods Ltd., Flat No 1 Jayaprada Apartment, Maharani-peta, Vizag, A P</p> <p>Mr A Sreeram, Chief Executive Ph++91 891 567767, Fax++91 891 567504 E-mail: asreeram@vsnl.com</p>	<p>Vizag Andhra Pradesh</p> <p>June 99</p>	ZV
16	999	<p>Jagadeesh Marine Exports 19-22-6/2, Bank Colony Bhimavaram 534 201, AP.</p> <p>Mr. Trinada Rao, Chief Executive Ph. ++91 8816 33122, Fax ++91 8816 35559 E-mail: jmexport@md4.vsnl.net.in</p>	<p>Bhimavaram Andhra Pradesh</p> <p>July 2000</p>	PP

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Annex IV: Infrastructure facilities available for fish processing in Andhra Pradesh as on 31st March 1998 (MPEDA, Internal Document)

S.No.	Name of the Plant	Freezing Capacity (Plate)	IQF Capacity	Blast freezing capacity	Total Capacity	Cold St Nos.	Individual Capacities	Cold store total capacity	Ice plant Capacity		Gen set Capacity
									Flake	Block	
Visakhapatnam Dist.											
1	M/s. George Maijo	10.0			10.0	2	80+60	140	20		250
2	M/s. Sujatha Sea Foods	8.5			8.5	2	125+50	175	4		63
3	M/s. Chowhan Exports	28.0		10.0	38.0	2	200	400	20		360
4	M/s. Sreenivasa Sea Foods	3.0			3.0						
5	M/s. ECMP	12.5			12.5	3	50+50+50	150	15		165
6	M/s. Sri Vijaya Ice and Cold (Pendurti)	15.0			15.0	1		100	35		125
7	M/s. V B C Industries (Ind. Estate)	11.0	2	5.0	18.0	4	70+70+70+70	280	15		500
8	M/s. Universal Cold Storage	15.0			15.0			85	35		188
9	M/s. Vizag Ice Industries	10.0			10.0			80	15		125
10	M/s. Nava Bharat Ferro Alloys Ltd.	6.0			6.0	2	100+50	150	30		125
11	M/s. V B C Exprots (Fishing Harbour)	7.0			7.0	1	80.0	80	30.0		125
12	M/s. Coastal Trawlers	15.0		5.0	20.0	2	100+100	200	10	20	180
13	M/s. Nekkanti Sea Foods	20.8		3.0	23.8	3	40+40+55	135	20		125
14	M/s. Parwaz Food Packers	14.0			14.0	2	100+80	180	20		160
15	M/s. G P Marine Products	12.5			12.5	3	50+30+30	110	20		125
16	M/s. Sunny Exports	4.3			4.3	2	45+45	90	6		82.5
17	M/s. Lalitha Sea Foods	14.5		5.0	19.5	3	50+50+50	150	40		250
18	M/s. Crescent Marine Ventures	9.0		5.0	14.0	3	150+150+50	350			180
19	M/s. Minota Aqua	12.0	6	3.0	21.0			100	20		575
20	M/s. Gautham Constructions and	5.0	4	10.0	19.0	2	100+70	170	3	3	375
21	M/s. Keral Food Packers	6.7			6.7	1	50.0				
22	M/s. Alsa Marine	12.0	9	3.0	24.0	4	75+75+75+75	300	10		380
23	M/s. S K Big Star	30.0			30.0	2	100+100	200			570
24	M/s. N C C Blue water	8.0			8.0	3	50+50+50	150	20		250
25	M/s. A P F C Corp. Ltd.,	8.0			8.0	2	50+50	100	15		60
26	M/s. Sreenivasa Enterprises	10.4			10.4	2	75+75	150	20		125
East Godavari Dt											
27	M/s. Usha Sea Foods	7.5			7.5	2	50+50	100	20		125
28	M/s. Visakha Aqua Foods	8.0			8.0	2	40+60	100			125

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29	3	M/s. S G Engineering	10.0			10.0	2	60+60	120			
30	4	M/s. Fish Products Ltd	16.5		1.5	18.0	1		200	10	263	
31	5	M/s. A P F C Ltd	6.0		5.0	11.0	1		50	20	135	
32	6	M/s. Stork Fisheries	1.5			1.5	1		20	4	60	
33	7	M/s. Avanti Feeds	20.0			20.0	2	90+80		15		
34	8	M/s. O F I L	6.5			6.5	1		75		125	
		West Godavari Dt										
35	1	M/s. Sandhya Marine	16.0			16.0	2	70+70	140	15	250	
36	2	M.s Everest Cold Storage	20.0			20.0	2	60+60	120	20	200	
37	3	M/s Ananda Sea Foods	17.5		5.0	22.5	1	60.0	60		200	
38	4	M/s Welcome Fisheries	15.0			15.0	1		100	15	235	
39	5	M/s. Universal Cold Storage	19.0	4.0		23.0	2	100+50	150	5	10	500
40	6	M/s. Acquaint Exports	30.0			30.0	2	100+100	200		125	
41	7	M/s. Sudarshan Sea Foods	13.5		5.0	18.5		30+40+50	120		320	
42	8	M/s. Amalgam Foods	12.5	4.0	8.0	24.5	1		100	15	180	
43	9	M/s. K R M Marine	12.0		3.0	15.0	2	80+70	150	15.0		
		Krishna Dt										
44	1	M/s. I M F	9.6	8.0	9.6	27.2	2	200+200	400	30.0	320	
45	2	M/s. Indus Sea Food	15.0			15.0	2	50+50	100	10	125	
		Guntur Dt										
46	1	M/s. O F I L	5.0	4.0		9.0	1	50.0	50	10.0	125	
		Prakasam Dt										
47	1	M/s. Suvarna Sea Foods	15.0	9.0	6.0	30.0	3	100+50+50	200	15.0	730	
48	2	M/s. Devi Sea Foods	10.0			10.0	1		100	15		
49	3	M/s. Patil Aqua	10.0			10.0	2	50+50	100	15		
		Nellore Dt										
50	1	M/s. Balaji Bio Tech	20.0	10.0		30.0	3	110+110+110	330	36.0	2040	
51	2	M/s. D C L Marine Tech	9.3	9.3	9.3	27.9	3	200+175+50		15	750	
52	3	M/s. Rank Aqua	12.0	8.0		20.0	2	80+100	180	10.0	680	
53	4	M/s. Choice Canning		8.0		8.0	1		100	10.0	320	
54	5	M/s. Water Base	21.0	8.0		29.0			300		1600	
55	6	M/s. Alsa Marine	5.0		5.0	10.0					125	
		Total	671.5	93.3	106.4	871.2	96		7690	99.0	662	15101.5