

Greening the Supply Chain for Marine Food Products: Emerging Issues and Policy Options

Ashutosh Singh* & S.K. Dubey**

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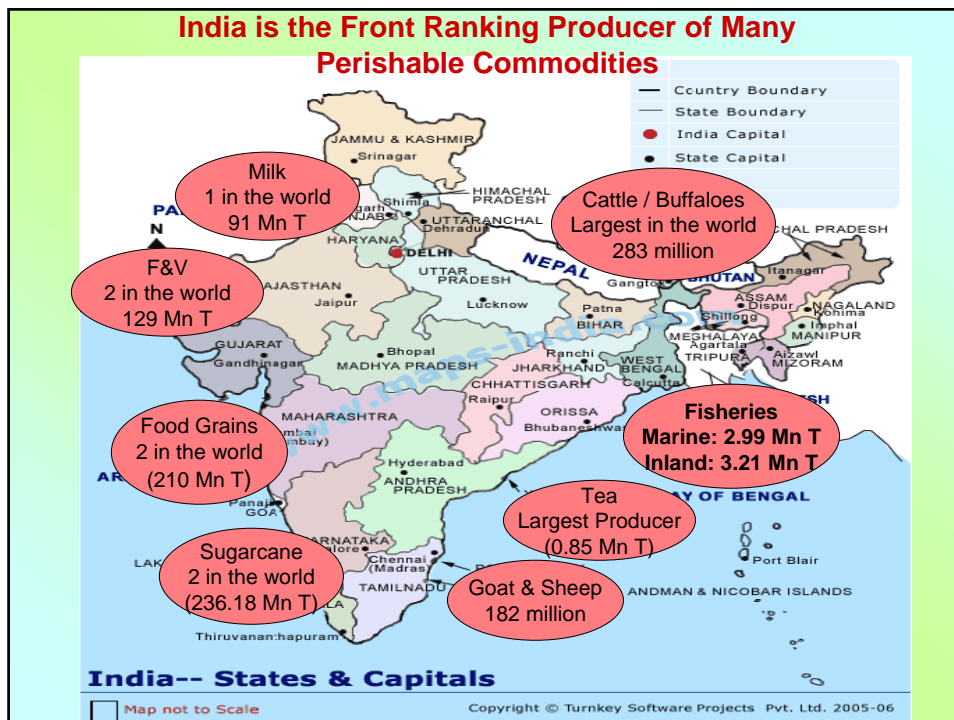
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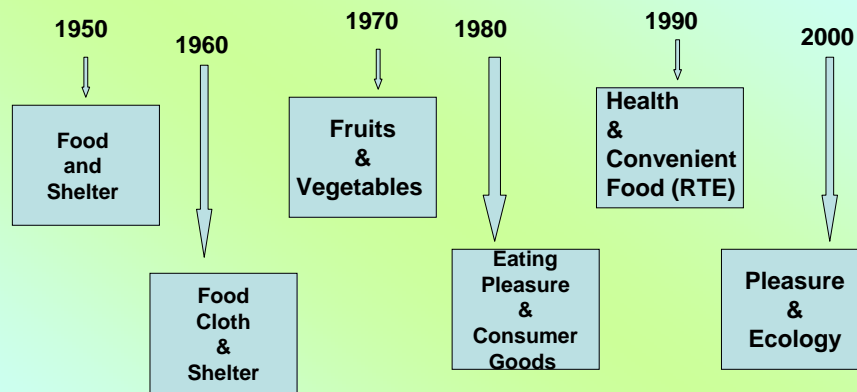
*Associate Professor
CABM
G.B. Pant University of Agriculture
& Technology Pantnagar, India



**Reader
Faculty of Management Studies
BHU, Varanasi, India



Changes in Consumer Preferences Since 1950

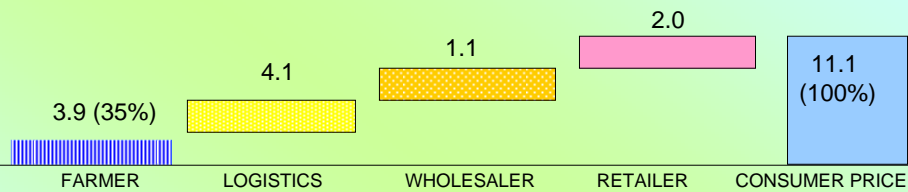


Managing Agricultural Change

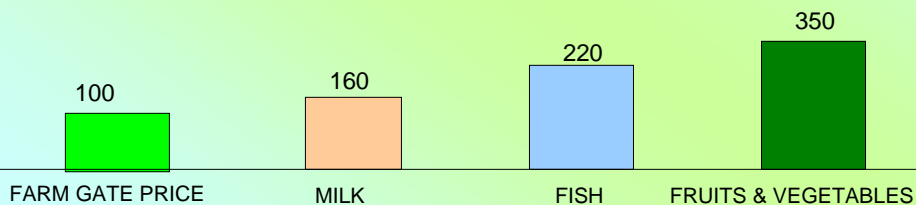
- Era of Nationalisation: 1960's
 - ✓ Nationalisation of Banks, industries etc.
 - ✓ Sawadesi movement
 - ✓ Consolidation
- Era of Liberalization : 1990's
 - ✓ Liberlisation and privatisation of economy
 - FDI & FIIs.
 - ✓ Opening of world trade – WTO

Present Scenario in Value Chain

Cost Build Up For One Kg. Basket Of Fruits & Vegetables (Rs.)



Retail Markets



Focus Issues

- Marine food supply Chain scenario in India and the role of supply chain actors
- Market structure, Marketing intermediaries and institutional support mechanism for fish marketing in selected states in India
- Policy options and implications for suitable marketing strategies to maximize *RoI* and meeting the nutritional requirements
- Government initiatives to address marine food safety and quality concerns

World Fisheries Production and Utilization (Million tonnes)

Content	1998	1999	2000	2001	2002	2003
PRODUCTION						
INLAND						
Capture	8.1	8.5	8.7	8.7	8.7	9.0
Aquaculture	18.5	20.2	21.3	22.5	23.9	25.2
Total Inland	26.6	28.7	30.0	31.2	32.6	34.2
MARINE						
Capture	79.6	85.2	86.8	84.2	84.5	81.3
Aquaculture	12.0	13.3	14.2	15.2	15.9	16.7

Cont...

Total Marine	91.6	98.5	101.0	99.4	100.4	98.0
TOTAL CAPTURE	87.7	93.8	95.5	92.9	93.2	90.3
TOTAL CULTURE	30.6	33.4	35.5	37.8	39.8	41.9
TOTAL WORLD FISHERIES	118.3	127.2	131.0	130.7	133.0	132.2
UTILISATION						
Human Consumption	93.6	95.4	96.8	99.5	100.7	103.0
Non Food Uses	24.6	31.8	34.2	31.1	32.2	29.2
Population (Billions)	5.9	6.0	6.1	6.1	6.2	6.3
Per capita food fish supply (Kgs)	15.8	15.9	15.9	16.2	16.2	16.3

Source: FAO, 2004

Indian Fisheries Scenario

- India is blessed with a coast line of 8118 km
- Exclusive Economic Zone (EEZ) of 2.02 million square km
- Continental shelf of 0.506 million sq. km.
- Inland water resources includes 191024 km of rivers and canals
- 2.05 million ha of reservoirs; 2.254 million ha of ponds and tanks; 1.3 million ha of oxbow lakes and derelict waters; and 1.24 million ha brackish waters

Indian Fisheries Scenario

- Employment to about 5.96 million part time and full time fishermen in India
- The contribution of fisheries sector to Gross Domestic Production (GDP) is 1.5% and 5.0% to agricultural GDP
- The per capita fish availability in India is 4.7 kg/year (Laurenti, 2002)
- 4.7 percent of the national export turnover

Production and Exports of Fish and Marine Products from India

Year	Fish Production (Million Tonnes)			Export of Marine Products	
				Quantity	Value
	Marine	Inland	Total	(000 tonnes)	(Rs. Crores)
1950-51	0.5	0.2	0.7	20	2
1960-61	0.9	0.3	1.2	20	4
1970-71	1.1	0.7	1.8	40	35
1980-81	1.5	0.9	2.4	80	235
1990-91	2.3	1.5	3.8	140	873
2000-01	2.8	2.8	5.6	503	6296
2001-02	2.9	3.1	5.9	468	5898
2002-03	3.0	3.2	6.2	502	6683

Source: Department of Animal Husbandry and Dairying
<http://indiabudget.nic.in/es2003-04/chapt2004/chap88.pdf>.

The Marine Food Supply Chain Scenario in India

- Fisher -> Auctioneer-> Agents of freezing plants -> exporters
- Fisher -> Auctioneer -> Processor (Dry fish) -> Wholesaler -> Retailer -> Consumer
- Fisher-> Auctioneer-> Wholesaler (Primary market) -> Wholesaler (Retail market) -> Retailer -> Consumer
- Fisher -> Auctioneer -> Commission Agent -> Wholesaler -> Retailer -> Consumer
- Fisher -> Auctioneer -> Retailer -> Consumer
- Fisher -> Auctioneer -> Consumer

Source: Consumer Unity and Trust Society (CUTS) December 2005

Alarming issues in Marine Food Products Marketing

- Limited information on market mechanisms
- Market information available on fisheries focuses on fisheries exports
- Limited research studies conducted on consumption pattern, marketing, consumer behaviour and marketing channels

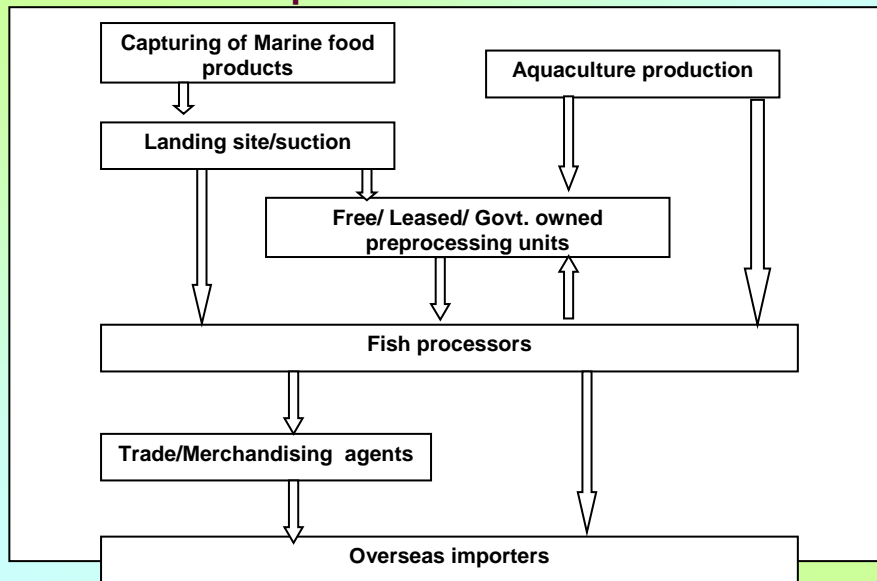


Role of Supply Chain Actors

S No.	Fishermen	Commission Agent	Supplier	Exporter
1.	Input procurement diesel, ice, food, nets, boat, 6-12 helpers	Receive fish from boat	Receive fish from agent	Receive fish as raw material
2.	Undertake 4-8 days fishing trip	Weigh fish	Stock fish in crates filled with ice	Wash with potable water
3.	Classify caught fish as per fish category	Grade fish as per defective and non defective	Sort fish in four grades as per quality standards of exporter	Process using Hazard Analysis and Critical Control Point (HACCP) procedures
4.	Store fish in ice	Negotiate price with fishermen and supplier	Transfer fish to pre-processing unit	Pack processed fish
5.	Unload fish on docks after preliminary wash		Clean Fish	Perform export procedures and dispatch
6.	Negotiate with agent and receive money		Negotiate price with exporter and agent	Negotiate price with importer and with supplier

Source: Field Survey Consumer Unity and Trust Society (CUTS) December 2005

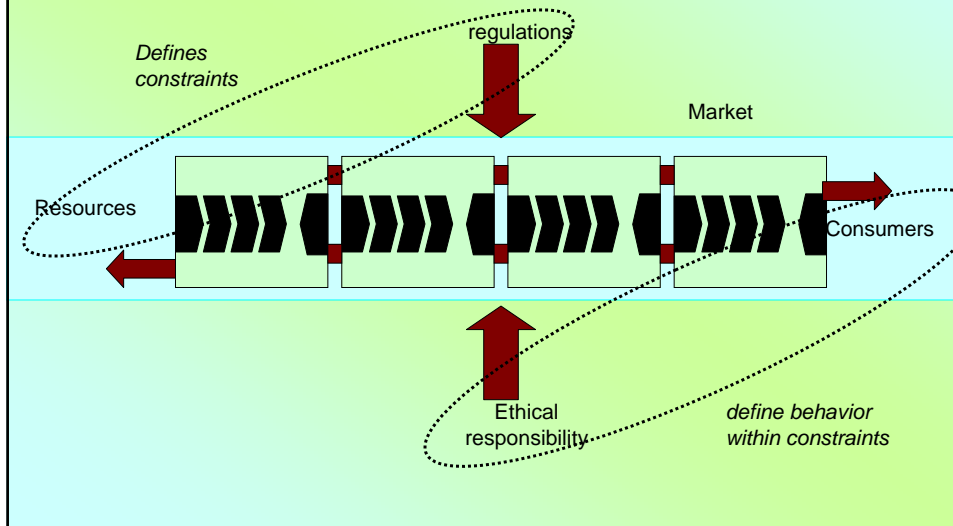
Export supply chain for fish and fishery products in India



Vulnerability Issues in SCM

- Uncertainty in supply and demand
- Price fluctuations
- HACCP and Quality issues
- Changing International Trade Regulations
- Perishable nature of the products
- Too many varieties and too many demand patterns
- Assembling the products from too many distant and remote centres
- Too many intermediaries in the marketing channel
- Inadequate storage facilities
- Lack of refrigerated transporting system
- Lack of vertical and horizontal integration of markets

GOVERNMENT INITIATIVES TO ADDRESS FOOD SAFETY AND QUALITY CONCERNS



Proposed Strategies and Management models for ensuring the greening of Supply Chain

- Since India has a higher fish processing capacity than the total catch capacity, the idle workforce could be effectively engaged in making products
- Sea weed farming should be commercialized and sea weeds may be used for preparation of nutritive foods and feed items.
- Post-harvest handling of fish and prawn catches must be done as per international standards of sanitation with extensive cold-chain and appropriate storage infrastructure
- Fisheries waste generated by the processing industry should be used for developing usable co-products

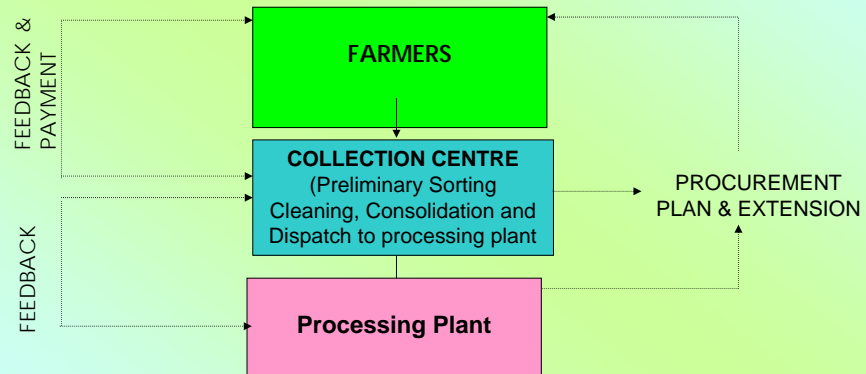
Management models

- Processing units adding value to marine produce should lay emphasis on developing **effective backward linkages** with farmers, to procure quality raw material.
- **Contract farming** should be promoted in a manner that processing firms are not able to exploit an un-equal relationship with growers. Most contracts in the past have been tilted against farmers and also some farmers have diverted the produce in open markets.
- The **New Generation Cooperatives (NGC) model** is ideal since it binds both farmers and processors to honour commitments and agreements. This should be applied in cooperative enterprises. Contract farming involving small farmers should be promoted rather than involving a few big farmers

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- **Small cooperative processing units** should be promoted in rural areas. These could undertake primary processing, grading and cleaning of produce for adding value. The pattern of Town and Village Enterprises (TVEs) of China, could be used, with necessary modifications
- **Rural processing and value addition groups** should be promoted. This will allow small and marginal farmers to be part-time farmers and work in rural enterprises for enhanced income and returns on their produce

Proposed Structure



IMPORTANT COLD WATER FISHES



SNOW TROUT

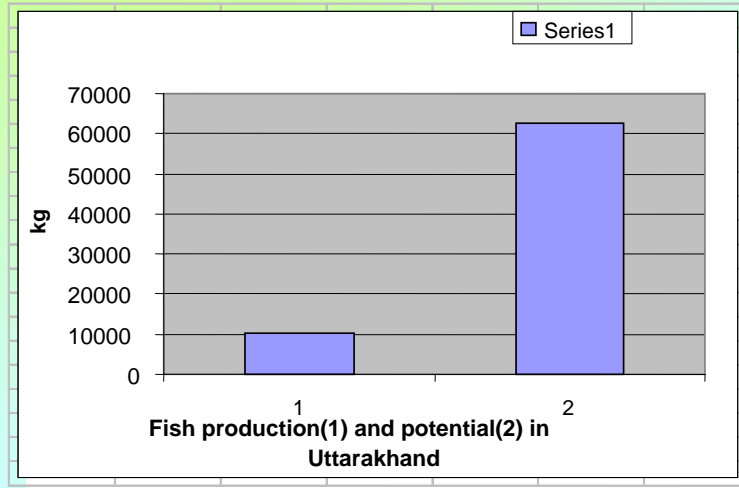


RAINBOW TROUT



COMMON CARP

Case of Uttarakhand



Value added Battered and breaded products from Fish mince



FISH FINGERS



FISH BALLS



FISH PATTIES



FISH SAUSAGES

IMPORTANT FISH BY-PRODUCTS



FISH ENSILAGE



CHITIN & CHITOSAN



SEAWEED AGAR



ISINGLASS

OTHER VALUE ADDED PRODUCTS



FISH WAFERS



FISH PICKLE



FISH SOUP POWDER

Thank you