

# Market structure analysis of fish markets in coastal districts of West Bengal

Subal Kumar Roul<sup>1</sup>, S. S. Raju<sup>2\*</sup>, J. Charles Jeeva<sup>2</sup>, Shyam S. Salim<sup>3</sup>, Indranil Mukharjee<sup>1</sup> and Phalguni Pattnaik<sup>2</sup>

<sup>1</sup>Digha Regional Station of ICAR-Central Marine Fisheries Research Institute, Ramnagar- 721 441, West Bengal

<sup>2</sup>Visakhapatnam Regional Centre of ICAR-Central Marine Fisheries Research Institute, Visakhapatnam -530 003, Andhra Pradesh

<sup>3</sup>ICAR-Central Marine Fisheries Research Institute, Kochi-682 018, Kerala

\*e-mail: ss.raju@icar.gov.in

West Bengal with three coastal viz., North 24-Parganas, South 24-Parganas and East Medinipur with 49 marine fish landing centres (3.9% of total marine fish landing centers of India), with about 81,067 fishermen families comprising of 3.69 lakh fisher folks (9.5% of the total fisher folk population of India) residing in 171 marine fishing villages (5.7% of the total marine fishing villages of India). Most of the fisher folk (about 70%) are traditional fishermen (Marine Fisheries Census, 2016). A major chunk (about 55,301 families) of the fisher population is socio-economically vulnerable as they are below poverty level and about 81% of the fishermen houses are *Kutch* houses and 19% are *Pucca* houses. Despite Covid 19 lockdowns and the devastating *Amphan* cyclone, in the year 2020, the estimated marine fish landings was 2.60 lakh tonnes compared to 2.49 lakh tonnes in 2019 (CMFRI-Marine Fish Landings in India, 2020). The coastal districts South 24 Parganas and East Medinipur respectively contributed 49% and 51% of the total

marine fish landings, with contribution of pelagic (49%), demersal (32%), crustacean (16%) and molluscan (3%) resources. About 4,014 mechanized crafts and 6,564 motorized and 476 non-motorized crafts are engaged in marine fishing activities in the state (Table 1). The mechanized and motorized sectors contributed 89.7% and 10.1% of the total landings respectively, while the non-motorized sector contributed only 0.2%. Although gill netters form 33% of the total fishing crafts in the state, major portion (about 60%) of the marine resources are landed by trawlers in West Bengal, mainly consisting of anchovies, penaeid shrimps, croakers, Bombay duck, pomfrets and Hilsa.

## Fish market structure analysis

The marine fish market structure of West Bengal was studied using pre-tested schedule from the various stakeholders for the year 2021-22. The marine fish

Table 1. Marine fisheries profile of West Bengal coast

Particulars	West Bengal	East Medinipur	South 24 Parganas
Length of the coastline (km)	158	65.5	92.5
Number of landing centres	49	29	20
Number of fishing villages	171	70	84
Number of fishermen families	81067	23149	55138
Total fisher folk population	368816	107582	251111
Total fishing craft	11054	2518	8536
Mechanized fishing crafts	4014	1581	2433
Motorized fishing crafts	6564	481	6083
Non mechanized fishing crafts	476	456	20
Point of first sales (₹ Crores)	4148	2115	2033
Point of last sales (₹ Crores)	5822	2969	2853

\* Sources: Department of Fisheries, Government of West Bengal  
West Bengal Marine Fisheries Census, 2016, ICAR-CMFRI  
Marine Fish Landings in India, 2020, ICAR-CMFRI

marketing operations were performed/controlled by a large number of intermediaries who were well organized locals with good network on fish trade and other facilitating functions. The fish market channels were in operation with the wholesalers buying fish in bulk quantities from auctioneers and selling it to retailers or other traders. The wholesalers imparted value addition in terms of sorting, grading, cleaning, icing and packing fish prior to sale. Subsequently the retailers sold the fish directly to consumers over the counters or with the help of vendors. In several cases, groups of retailers were found participating in the auction process for buying fish directly from the auctioneer.

Under the study, 15 fish markets, seven wholesale cum retail, six retail and two terminal fish markets were surveyed in Coastal districts of West Bengal. The market

structure analysis was based on the major dimensions namely, location, type of market, timing, access, arrival and disposal sources, conduct, infrastructure amenities, market union and regulation. The market structure of these markets was analyzed and the details are given in Table 2. The market access indicated that the distance from the landing center to the nearest railway station for these markets are almost 40 m to 28 km and bus station is about 40 m to 12 km. Dumdum airport and Haldia/Shyama Prasad Mookherjee seaport is the nearest airport and seaport to these markets. Due to good connectivity by highway roads and rail, transportation of fishes from one place to another is done in a very short span of time.

The observations on market arrivals and disposals indicated that fish arrive mainly from Digha Mohana, Udaypur,

Table 2. Market structure analysis of major fish markets in West Bengal

	Market (1)	Market (2)	Market (3)	Market (4)	Market (5)
Market Dimension	Old Digha Nehru Market	New Digha Sabuj Market	Ramnagar Mecho Bazar	Deulihat Bazar	Balisai Market
<b>A. Location</b>					
Year of establishment	1986	1996	1970	1973	1979
Type of market	Retail and Wholesale	Retail and Wholesale	Retail and Wholesale	Terminal & Retail	Terminal
Area of the market (acres)	110 Decimal	80 Decimal	40 Decimal	30 Decimal	20 Decimal
Lat/Long position	21°37'22.3464"N, 87°31'26.9796"E	21°37'16.752"N, 87°30'14.454"E	21° 40' 40.764"N, 87° 33' 53.01"E	21°41'07.878"N, 87°29'40.02"E	21°40'39.5436"N, 87°35'30.2208"E
Market control	Market Association	Market Association/ Local Body	Local bodies/ Market Association	Market Association	Local Body (Land owner)
<b>B. Market access</b>					
Nearest landing centre (km)	Digha Mohana 3km	Digha Mohana 4km	Digha Mohana 9km	Digha Mohana 18km	Sankarpur 6km
Nearest railway station (km)	New Digha 2km	New Digha 400m	Ramnagar 300m	Ramnagar 12km	Ramnagar 5km
Nearest bus station (km)	Old Digha 100m	New Digha 100m	Ramnagar 100m	Ramnagar 12km	Balisai 100m
Nearest airport (km)	Dumdum 220km	Dumdum 225km	Dumdum 210km	Dumdum 215km	Dumdum 213km
Nearest seaport (km)	Haldia 90km	Haldia 90km	Haldia 87km	Haldia 90km	Haldia 87km
<b>C. Market timing</b>					
	6:00 AM-1:00 PM & 4:00PM -9:00 PM	6:00 AM-12:00AM & 4:00PM -10:00 PM	6:00 AM-12:00AM & 4:00PM -9:30 PM	6:00 AM-12:00AM	6:00 AM-12:00AM
<b>D. Market conduct</b>					
Wholesalers	4	2	3	0	7
Retailers	31	38	33	27	65
Middlemen	0	0	0	0	0
Commission agents	2	3	2	0	0
Brokers	0	0	0	0	0

	Market (6)	Market (7)	Market (8)	Market (9)	Market (10)
Market Dimension	Kathi Nona Bazar	Kathi Super Market	Mukundapur Bazar (Basantia market)	Hirapur Market	Gobra Market
<b>A. Location</b>					
Year of establishment	1984	1991	1950	1970	1972
Type of market	Wholesale and Retail	Retail	Retail	Terminal	Terminal
Area of the market (acres)	32 Decimal	25 Decimal	140 Decimal	12 Decimal	10 Decimal
Lat/Long position	21°46'30.9072"N, 87°44'46.2912"E	21°46'41.1924"N, 87°45'06.7748"E	21°48'13.7196"N, 87°48'33.822"E	21°40'21.396"N, 87°32'12.8256"E	21°39'49.9752"N,87°30'5 1.5088"E
Market control	Market Association/ Commission agents / Local bodies	Market Association / Local bodies	Local bodies/ Market Association	Local bodies	Local bodies/ Market Association
<b>B. Market access</b>					
Nearest landing centre (km)	Purusattampur 8km	Purusattampur 9km	Patuaghat 9km	Digha Mohana 11km	Digha Mohana 10km
Nearest railway station (km)	Kathi 7km	Kathi 6km	Kathi 12km	Ramnagar 4km	Ramnagar 8km
Nearest bus station (km)	Contai 4km	Contai 5km	Contai 12km	Thikra 3km	Fatehpur 5km
Nearest airport (km)	Dumdum 155km	Dumdum 155km	Dumdum 140km	Dumdum 220km	Dumdum 220km
Nearest seaport (km)	Haldia 77km	Haldia 75km	Haldia 72km	Haldia 90km	Haldia 90km
C. Market timing	6:30 AM – 2.00 PM & 4:30 PM – 9:00 PM	6:00 AM – 11.00 AM	6:00 AM – 12.30 PM & 5:00 PM– 9:00 PM	6:00 AM – 12.00 AM	6:00 AM – 12.00 AM
<b>D. Market conduct</b>					
Wholesalers	22	2	0	0	0
Retailers	135	19	39	27	18
Middlemen	0	0	0	0	0
Commission agents	1	0	0	0	0
Brokers	0	0	0	0	0

	Market (11)	Market (12)	Market (13)	Market (14)	Market (15)
Market Dimension	Raidighi Market	Diamond Harbour Market	Kakdwip Pal Bazar	Namkhana Bazar	Freserganj Market
<b>A. Location</b>					
Year of establishment	1975	1975	1972	1977	1980
Type of market	Retail and Wholesale	Retail	Retail and Wholesale	Retail and Wholesale	Retail
Area of the market (acres)	1 acre	33 Decimal	20 Decimal	15 Decimal	10 Decimal
Lat/Long position	21°59'39.4368"N, 88°26'36.384"E	22°11'35.2068"N, 88°11'28.2768"E	21°05'2'09.966"N, 88°11'07.8"E	21°45'56.2212"N, 88°14'18.2256"E	21°34'56.658"N, 88°15'42.4152"E
Market control	Local Body	Local Body	Local Body	Local Body	Local Body
<b>B. Market access</b>					
Nearest landing centre (km)	Raidighi 100m	Sultanpur fish harbour 4km	Kakdwip Akshynagar 2km	Namkhana 300m	Freserganj 2km
Nearest railway station (km)	Mathurapur 22km	Diamond Harbour 40 m	Kakdwip 3km	Namkhana 1.5km	Namkhana 28km
Nearest bus station (km)	Raidighi 200m	Diamond Harbour 40m	Kakdwip 150m	Namkhana 1km	Jettyghat 200m
Nearest airport (km)	Dumdum 110km	Dumdum 85km	Dumdum 120km	Dumdum 135km	Dumdum 157km

Nearest seaport (km)	Shyama Prasad Mookherjee 75km	Shyama Prasad Mookherjee 60km	Shyama Prasad Mookherjee 100km	Shyama Prasad Mookherjee 115km	Shyama Prasad Mookherjee 135km
C. Market timing	6:00 AM-12:30 PM & 5:00PM -9:00 PM	6:00 AM-12:00AM & 5:00PM -9:00 PM	6:00 AM-12:00AM & 5:00PM -9:00PM	6:00 AM-12:00AM & 5:00PM -9:00PM	6:00 AM-12:00AM & 5:00PM -8:00PM
D. Market conduct					
Wholesalers	15	0	2	12	0
Retailers	55	30	22	26	20
Middlemen	0	0	0	0	0
Commission agents	15	0	0	12	0

Table 3. Market arrivals and disposal of various fish species in selected markets of West Bengal

Market	Arrival	Disposal
Old Digha Nehru Market	Digha Mohana (70%), Talsari (10%), Udaypur (10%) & Odisha (10%)	Old Digha & New Digha
New Digha Sabuj Market	Digha Mohana (65%), Talsari (10%), Udaypur (15%), New Digha (5%) & Odisha (5%)	New Digha
Ramnagar Mecho Bazar	Digha Mohana (65%), Udaypur (10%), Jaldha (5%) & Odisha (20%)	Old Digha, New Digha, Ramnagar, Deulihat, Paniparul, Gobra, Mangalpur, Hirapur & Contai
Deulihat Bazar	Digha Mohan (50%), Talsari (25%), Udaypur (15%) & Others (10%)	Deulihat
Balisai Market	Digha Mohana (45%), Sankarpur (10%), Jaldha (35%) & Chandpur (10%)	Balisai, Ramnagar, Deulihat, Paniparul, Old Digha, Sapuya & Depal
Kanthi Nona Bazar	Digha Mohana (60%), Purusattampur (10%), Junput (10%) & Patuaghat (20%)	Kanthi, Kolkata, Bajkul, Henria, Egra & Marishda
Kanthi Super Market	Digha Mohana (40%), Purusattampur (25%) & Junput (35%)	Kanthi, Ramnagar, Balisahi, Satmile, Junput, Soula, Kanthi Nona Bazar, Pichhabani, Kalindi, Old Digha, New Digha & Majna Tajpur market
Mukundapur (Basantia) Bazar	Digha Mohana (65%), Patuaghat (30%) & Junput (5%)	Mukundapur, Kanthi Super Market & Kanthi Nona Bazar
Hirapur Market	Digha Mohana (70%), Talsari (15%), Udaypur (10%) & Others (5%)	Hirapur
Gobra Market	Digha Mohana (70%) & Udaypur (30%)	Gobra
Raidighi Market	Patharpratima (50%), Maipith (10%), Kultali (10%), Basanti (10%), Gosaba (10%) & Mothurapur (10%)	Kolkata, Sealdaha & Howrah
Diamond Harbour Market.	Freserganj (40%), Namkhana (20%), Kakdwip (20%), Sultanpur (10%) & Sagardeep (10%)	Jaynagar, Magrahat, Falta & Geokhali
Kakdwip Pal Bazar	Kakdwip (50%), Freserganj (40%) & Namkhana (10%)	Gangadharpur, Durbachati, 5 no Hat & Nischintapur
Namkhana Bazar	Namkhana (40%), Freserganj (20%), Sagardeep (20%) & Pathar Pratima (20%)	Howrah, Basirhat, Kolkata & Pathar Pratima
Freserganj Market	Freserganj (70%), Baliyara (20%), Mousuni (5%) & Gangasagar (5%)	Namkhana, Kakdwip & Diamond Harbour

Freserganj and Purusattampur and goes for sale to the Old Digha, New Digha, Kolkata, Howrah and Ramnagar etc. (Table 3).

Around 35-40 marine species were marketed in these 15 selected markets. The most common species/groups traded were anchovies, penaeid shrimp, croakers, Bombay duck, pomfrets and Hilsa. Price discrimination exists for the different fish species. The Kathi Nona Bazar wholesale

cum retail market trades to an average of 12.93 tonnes (t) followed by Old Digha Nehru Market (4.47 t), Raidighi Market (4.19 t), Mukundapur (2.99 t), Diga Sabuj (2.67 t) and Ramnagar Mecho Bazar (2.73 t). The average daily market capitalization of the fish trade was found to be ₹13.5 lakhs in wholesale market of Kathi Nona Bazar, ₹5.5, ₹3.6, ₹1.45, ₹2.8 and ₹2.4 lakhs in other retail and wholesale markets respectively (Table 4).

Table 4. Species traded in different fish markets of West Bengal

Name of the Market	Major Marine fish species traded	Quantity traded /day (kg)	Daily market capitalization value (₹)
Old Digha Nehru Market	<i>Rastrelliger kanagurta</i> , <i>Harpadon nehereus</i> , <i>Pampus griseus</i> , <i>Johnius</i> spp., <i>Hilsa kelee</i> , <i>Tenualosa ilisha</i>	4470	360,000
Digha Sabuj Market (New Digha)	<i>Johnius</i> spp., <i>Parastromateus niger</i> , <i>H. nehereus</i> , <i>P. griseus</i> , <i>T. ilisha</i>	2665	280,000
Ramnagar Mecho Bazar	<i>P. niger</i> , <i>R. kanagurta</i> , <i>Coilia dussumieri</i> , <i>Sardinella fimbriata</i> , <i>T. ilisha</i>	2732	240,000
Deulihat Fish Market	<i>R. kanagurta</i> , <i>Trichiurus lepturus</i> , <i>H. nehereus</i> , <i>C. dussumieri</i> , <i>Thryssa</i> spp.	1355	54,000
Balisai Market	<i>H. nehereus</i> , <i>C. dussumieri</i> , <i>Thryssa</i> spp., <i>Stolephorus</i> spp., <i>Solenocera crassicornis</i> , <i>S. fimbriata</i>	1735	260,000
Kathi Nona Bazar	<i>C. dussumieri</i> , <i>R. kanagurta</i> , <i>H. nehereus</i> , <i>Thryssa</i> spp., <i>P. griseus</i>	12925	1,350,000
Kathi Super Market	<i>P. niger</i> , <i>R. kanagurta</i> , <i>T. ilisha</i> , <i>P. griseus</i> , <i>C. dussumieri</i>	1690	130,000
Mkundapur Market	<i>Thryssa</i> spp., <i>S. fimbriata</i> , <i>C. dussumieri</i> , <i>R. kanagurta</i> , <i>Johnius dussumieri</i> , <i>Lepturacanthus savala</i>	2985	145,000
Hirapur Market	<i>Sardinella</i> spp., <i>R. kanagurta</i> , <i>Trichiurus</i> spp., <i>Johnius</i> spp., <i>Arius</i> spp.	965	54,000
Gobra Market	<i>L. savala</i> , <i>S. fimbriata</i> , <i>Johnius</i> spp., <i>C. dussumieri</i> , <i>R. kanagurta</i>	1255	32,400
Raidighi Market	<i>T. ilisha</i> , <i>H. nehereus</i> , <i>Johnius</i> spp., <i>Ilisha filigera</i> , <i>Anodontostoma chacunda</i> , <i>Escualosa thoracata</i>	4188	550,000
Diamond Harbour Market	<i>H. nehereus</i> , <i>P. griseus</i> , <i>P. niger</i> , <i>Plicofollis dussumieri</i> , <i>Johnius</i> spp.	450	112,500
Kakdwip Pal Bazar	<i>T. ilisha</i> , <i>C. dussumieri</i> , <i>Johnius</i> spp., <i>R. kanagurta</i> , <i>P. griseus</i>	357	87,500
Namkhana Bazar	<i>T. ilisha</i> , <i>H. nehereus</i> , <i>C. dussumieri</i> , <i>Ilisha filigera</i> , <i>Setipinna</i> spp.	447	100,000
Freserganj Market	<i>T. ilisha</i> , <i>Johnius</i> spp., <i>H. nehereus</i> , <i>P. dussumieri</i> , <i>P. griseus</i> , <i>Sillaginopsis panijus</i>	205	50,000

In conclusion, coastal districts of West Bengal are the major zones where fish markets and trading operations are widely distributed covering different parts of the state and other distribution and consumption destinations. Among these markets Kathi Nona Bazar which is one of the largest wholesales cum retail markets in the zone offers significant marketing functionalities and trade and caters to the fish demand of the nearby towns and cities as well as the neighboring states. However, lack of appropriate infrastructure and adequate amenities and

low product diversity act as limiting factors in fish trade in majority of the markets studied. Hence, appropriate government interventions in terms of strengthening infrastructure and imparting value addition may be created to facilitate better functioning of these markets, thereby augmenting revenue and catering to the increase demand for marine fish from nearby states.