

**The Project for Conservation and Wise Use of
Natural Resources of the Chilika Lagoon
through Community Participation
in India**

**Socio-Economic Condition of
Fishers in and around Chilika**

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2 Survey Schedule & Methods

2.1 Survey Schedule

The study was conducted in two phases with following targets respectively:

Table 1 Schedule of Field Survey

Phase	Commencement	Completion	No. of villages
Phase I	25 th January 2007	26 th March 2007	91
Phase II	26 th April 2007	15 th June 2007	36

Note: The final completion has been extended till 30 June on mutual understanding in view of time taken for computerized data entry and preliminary analysis.

2.2 Survey Method

2.2.1 Sampling Principle

Random selection skipping fixed number of houses from starting point depending on the target to be covered.

2.2.2 Components of the survey

Baseline survey consisted of three parts, i.e. Key informant survey, Fishers survey and Fisher's wife survey.

Basic information of fishers villages such as population and available infrastructure were collected through the interview to key informants in the village such as village president, president of PFCS and SHGs, Anganwadi workers, etc.

Working situation of fishers (fishing operation frequency, average income from fishing, total average income of the household, etc) were studied through the interview to individual fishers. The fishers survey covered only fisher's settlements¹ and not included non-fisher's community. Interviewees were selected from fishers who sell their catch.

Working situation of fisher's wife (fetching water, fire-leaf collection, etc) were studied through the interview to individual fisher's wives.

2.2.3 Sample numbers

The questionnaire survey consisted of 3 components. Required number of samples in each component are as follows:

Key informant survey	1 questionnaire/village (interview to representative of village such as anganwade, village president, president of PFCS, leader of fishers)
Fishers survey	30% of fishers households in the village
Fisher's wife survey	30% of the sample of fisher survey (interview to wives/representative woman in the fishers household).

¹ Fisher's community is community that fisher's caste fishers live in, and non-fisher's community is community that fishers who are not fisher's caste live in.

2.2.4 Process of the Survey

(1) Preparation works

- i Under the consultation of the Client, the Contractor prepared the questionnaire of baseline survey based on the draft of questionnaire that the client prepared (see Annex 2). The Contractor confirmed the appropriateness of each question through the implementation of pre-survey using the draft of questionnaire, and revises the questionnaire based on the result of pre-survey in consultation of the Client.
- ii The Contractor also trained surveyors through the training workshop and implementation of the pre-survey for establishing solid understanding of surveyors.
- iii The Contractor finalized the schedule of the field survey which would be proposed in the technical proposal prepared by the Contractor. The Contractor also prepares necessary number of questionnaire, other documents, and arranged transportation means for the surveyors.
- iv The Contractor started the field survey with the approval of the Client for completion of the presentation works.

(2) Field survey

- i The Contractor conducted field survey in accordance with the schedule approved.
- ii Validity of the answers of questionnaire were examined by team leaders in same day of the questionnaire survey. Any invalid answers in the questionnaire were corrected through the additional interview in next day.

(3) Data entry/analysis

- i All data collected was inputted into ACCESS using data entry format prepared by the Client.
- ii Primary analysis was conducted by the Contractor using inputted data aforementioned.

3 Challenges

3.1 Number of target villages

As mentioned on “1.2”, CDA listed up 127 fishers villages as target of the baseline survey. However, place-name in the list were not name of Revenue Village nor administrative area but fishers settlements where fishers live together. In addition, that data source was little bit old and it was confirmed that there were no fishers in 14 villages out of 127. There are also some villages were divided or unified.

As the results, 136 fishers settlements within 103 Revenue Villages were covered in the baseline survey.

Table 2 Number of Surveyed Settlements

Sector	No. of villages	No. of Settlements
Northern	38	58
Central	30	31
Southern	21	28
Outer channel	14	19
Total	103	136

3.2 Village Population

Population of fishers village was collected in the Key informant survey. This population data was different from village population in census survey implemented by the Government. While “village population” in the census means total population in revenue village, fishers village population means population in community/area where fishers live in including a part of revenue village and Hamlet. For instance, Alandapatna is a fishers hamlet located in farmers village namely Alanda village, Krushnaprasad block. Since our target was fishers, population and other data collected by the baseline survey was the data of Alandapatna, but not the data of Alanda.

Although, it was planned to collect population data from Anganwadi workers in the village in the key informant survey, there were some cases that the data was collected from other representatives of the village due to absence of Anganwadi workers during survey period. However, it seems that there are some contradictions between the population data in baseline survey and other population survey such as “National Population Census 2000” and “National Habitation Survey 2003”. Therefore, population data collected by the baseline survey was cross checked with population data of Child Development Program Offices (CDPOs). And the population data was finalized through the meeting with Block Development Offices concerned at Wetland Research Centre in Chandraput on 25th June 2008. Additional survey for selected villages were also implemented for collecting village population data which was not available by CDPOs.

3.3 Number of Fishing Boats in the Village

Number of fishing boats in the village was also surveyed in the key informant survey.

According to the Fisheries Department, there are 7,370 fishing boats (2,364 motorized boats and 5,006 non-motorized boats) in Chilika. On the other hand, baseline survey counted 7,348 fishing boats (2,259 motorized boats and 5,089 non-motorized boats) in the survey area.

The Project held meetings with the officers of Department of Fisheries on 25th June and 12th September 2008 for refining the data. Through the discussion with Department of Fisheries, it was confirmed that the disparity is occurred due to following reasons:

- Data of Fisheries Department includes some non-fisher's villages which are not covered by the Baseline survey.
- Baseline survey covers some villages which are engaged in marine and/or river fishing although these villages are located in and around Chilika.

Although there is disparity in the number of fishing boats between baseline survey and data of Fisheries Department due to the reasons aforementioned, the number of fishing boats in individual villages which are covered both the baseline survey and Fisheries Department's survey are incorporated.

The baseline survey of fishers villages situated in and around the Chilika lagoon was conducted for the first time by the JICA-CDA project. The survey generated a lot of important information with reference to the accessibility to the resources, drinking water, health and education etc. It also focused on the availability and use of different fishing nets and gears deployed in Chilika lagoon. The valuable information gathered during the survey will help the planners, researchers and development administrators for formulating effective plans for rural development, fishery management and other socio-economic development.

4 Socio-economic Condition of Fishers in and around Chilika Lagoon

4.1 Basic Infrastructure of Fishers Villages

(1) Population of Fishers

There are 241,482 people live in the surveyed villages, and 43% (103,454 out of 241,482) are fishers and their family members. Most of the people in fishers village/hamlet are fishers. Fishers also live in with other castes people in some cases. Since many general caste hamlets are in these villages, 67% of people are categorized as non-fishers in these villages.

There is 41% (42,762 out of 103,454) of fishers live in the Northern sector, and 23% in Southern sector, 22% in Central sector and 14% in Outer channel.

Table 3 Population of Fishing Villages in Chilika

Sector	Block	Total		Fishers		Farmers		Employee	
		Pop	HH	Pop	HH	Pop	HH	Pop	HH
Northern	Brahmagiri	6,625	949	3,357	480	2,520	423	142	23
	Chilika	15,139	1,863	8,540	1,038	8,191	1,144	1,461	207
	Kanas	23,135	3,194	9,603	1,437	12,939	1,609	604	148
	Tangi	55,131	8,189	21,262	2,913	27,190	3,996	7,104	1,065
	Sub-total	100,030	14,195	42,762	5,868	50,840	7,172	9,311	1,443
Central	Banpur	27,232	4,290	1,011	167	23,865	3,752	2,356	371
	Chilika	45,547	7,750	15,794	2,760	26,197	4,349	3,556	616
	Krushnaprasad	14,965	2,386	6,055	1,098	4,831	739	585	130
	Sub-total	87,744	14,426	22,860	4,025	54,893	8,840	6,497	1,117
Southern	Ganjam	11,230	2,148	7,837	1,494	2,290	385	1,273	270
	Khalikote	18,735	3,203	11,762	2,042	3,992	599	1,581	252
	Krushnaprasad	7,425	1,343	3,995	734	2,965	531	465	79
	Sub-total	37,390	6,694	23,594	4,270	9,247	1,515	3,319	601
Outer channel	Krushnaprasad	16,318	2,881	14,238	2,547	1,300	232	361	61
	Sub-total	16,318	2,881	14,238	2,547	1,300	232	361	61
Total		241,482	38,196	103,454	16,710	116,280	17,759	19,488	3,222

Note: Pop: Population, HH: Households

(2) Fisheries Infrastructures

There are 7,348 fishing boats in surveyed villages, and only 2,259 (31%) is motorized boats. Motorization of boats were delay in Ganjam in Southern sector, Brahmagiri in Northern sector and Krushnaprasad in Central sector.

These fishing villages have fishing facilities such as jetty, landing center and godowns (storage of fish merchants).

There are around 18 landing centers registered by CDA, and other unregistered landing centers also scattered in and around Chilika lagoon.

Table 4 No. of Fishing Boats and Available Fisheries Facilities in the Villages

Sector	Block	Fishers		Fishing boats in the village		No. of villages having access to				
		Pop	HH	Motor	Non-Motor	Jetty	Landing center	Fish market	God-owns	Ice plant
Northern	Brahmagiri	3,357	480	21	198	1	4	0	0	0
	Chilika	8,540	1,038	397	477	0	0	0	0	0
	Kanas	9,603	1,437	150	325	0	0	1	1	0
	Tangi	21,262	2,913	428	844	7	7	6	6	6
	Sub-total	42,762	5,868	996	1,844	8	11	7	7	6
Central	Banpur	1,011	167	29	111	0	0	1	1	1
	Chilika	15,794	2,760	427	1,277	3	5	3	44	5
	Krushnaprasad	6,055	1,098	108	255	2	4	2	4	0
	Sub-total	22,860	4,025	564	1,643	5	9	6	49	6
Southern	Ganjam	7,837	1,494	9	435	1	4	1	11	3
	Khalikote	11,762	2,042	307	363	2	2	1	5	0
	Krushnaprasad	3,995	734	86	309	0	3	0	0	0
	Sub-total	23,594	4,270	402	1,107	3	9	2	16	3
Outer channel	Krushnaprasad	14,238	2,547	297	495	4	5	0	2	1
	Sub-total	14,238	2,547	297	495	4	5	0	2	1
All sectors		103,454	16,710	2,259	5,089	20	34	15	74	16

Although a village said that According to Department of Fisheries, there are 24 ice plants operated in and around Chilika (6 in Northern sector, 17 in Central sector and 1 in Southern sector).

4.2 Work Condition of Fishers

4.2.1 Outline of Samples Surveyed

(1) Number of Samples

Fishers settlements were selected based on the information from CDA. However, the data was consisted of community bases but not revenue village bases, i.e. Kalupadagat in Northern sector is one of the major landing site in Chilika but there is no village/hamlet named “Kalupadagat” in this area. Therefore, contractor selected villages/hamlets at the field based on the community list prepared by CDA.

The fishers settlements that the Project surveyed are consisted revenue villages and hamlets. As the results, 140 of fishers settlements were surveyed.

Table 5 Number of Fishers Settlements Surveyed

	No. of settlements surveyed	No. of fishers live in the settlements	
		Population	Households
Northern	61	42,762	5,868
Central	32	22,860	4,025
Southern	28	23,594	4,270
Outer channel	19	14,238	2,547
Total	140	103,454	16,710

The Project interviewed fishers and fishers wives for collecting socio-economic information of fishers. Number of respondents in the survey are shown in following table.

Table 6 Number of Interviewed Fishers and Fisher's Wives

	Fishers	Wives
Northern	2,043	650
Central	1,280	439
Southern	1,385	444
Outer channel	904	293
Total	5,612	1,826

(2) Outline of Responded Fishers

1) Category of Fishers

Regarding the respondents of fishers survey, about 66% of respondents were boat owners who have own boats, and 27% of respondents were hired crews. There were only few respondents (about 4%) who keep boat on partnership basis.

Table 7 Category of Respondent

	Boat owner		Crew		Others	Total
	Self	Partner-ship	Family	Hired		
Northern	1,334	66	6	634	3	2,043
Central	772	28	8	358	114	1,280
Southern	918	87	2	321	57	1,385
Outer channel	662	45	0	185	12	904
Total	3,686	226	16	1,498	186	5,612

2) Caste of Fishers

Most of fishers in Chilika belonging to fishers caste, and fishers caste divided into several sub-caste. "Keuta" is major sub-caste of fishers in Chilika and more than 60% of fishers belonging to "Keuta". "Keuta" people spreads whole area of Chilika.

About 14% of respondents are "Kandara" which is the lower sub-caste among fishers sub-caste, and most of them live in Southern sector. "Bengali refugee" is a not caste. It means refugee fishers who escaped from Bangladesh to Northern sector of Chilika. They are also engaged in fisheries too.

Table 8 Caste of Respondent

Sector	Block	Keuta	Kandara	Nolia	Tiara	Bengali refugee	Khatia	Others	Total
Northern Sector	Brahmagiri	171			43			10	224
	Chilika	351	1		73		16	97	538
	Kanas	465						30	495
	Tangi	483		1	1	215	52	34	786
Central Sector	Banpur	3			70			0	73
	Chilika	740	4		39			29	812
	Krushnaprasad	179	31	65			67	53	395
Southern Sector	Ganjam	117	269	33				0	419
	Khalikote	449	205					0	654
	Krushnaprasad	27	223	60				2	312
Outer Channel	Krushnaprasad	553	64	185	52	1	30	19	904
Total		3,538	797	344	278	216	165	274	5,612

3) Boat Ownership

Some 3,912 fishers (70%) out of 5,612 fishers have boats, and 26% out of 70% have motorized boat and 46% have non-mechanized boats.

Table 9 Boat Ownership

	Boat owner	Not owner	Total
Northern	1,400	643	2,043
Central	800	480	1,280
Southern	1,005	380	1,385
Outer channel	707	197	904
Total	3,912	1,700	5,612

Table 10 Number of Boat Owners (Motorized Boat)

	Individual		Partnership		Total
	1 boat	2 boats	1 boat	2 boats	
Northern	563	10	21	1	595
Central	303	2	4	0	309
Southern	309	0	7	0	316
Outer channel	208	1	4	0	213
Total	1,383	13	36	1	1,433

Table 11 Number of Boat Owners (Non-motorized Boat)

	Individual		Partnership		Total
	1 boat	2 boats	1 boat	2 boats	
Northern	761	15	42	2	820
Central	457	7	24	0	488
Southern	608	2	80	0	690
Outer channel	453	3	40	0	496
Total	2,279	27	186	2	2,494

Since there were some fishers who have both mechanized and non- mechanized boats, total number of respondents of both mechanized and non- mechanized boat in the table aforementioned become more than 3,912 fishers.

4.2.2 Fishing Activity

(1) Number of Fishing Boats

There are 103,454 fishers family members (16,710 households) live in the surveyed villages, and about 40% of these fishers live in Northern sector (42,762 people). It was reported that 7,348 fishing boats were in these villages, and about 70% of these boats were non-motorized boats.

Table 12 Number of Fishers and Fishing Boats

Sector	Block	Fishers		Fishing boats	
		Pop	HH	Motor	Non-Motor
Northern Sector	Brahmagiri	3,357	480	21	198
	Chilika	8,540	1,038	397	477
	Kanas	9,603	1,437	150	325
	Tangi	21,262	2,913	428	844
	Sub-total	42,762	5,868	996	1,844
Central Sector	Banpur	1,011	167	29	111
	Chilika	15,794	2,760	427	1,277
	Krushnaprasad	6,055	1,098	108	255
	Sub-total	22,860	4,025	564	1,643
Southern Sector	Ganjam	7,837	1,494	9	435
	Khalikote	11,762	2,042	307	363
	Krushnaprasad	3,995	734	86	309
	Sub-total	23,594	4,270	402	1,107
Outer channel	Krushnaprasad	14,238	2,547	297	495
	Sub-total	14,238	2,547	297	495
Total		103,454	16,710	2,259	5,089

(2) Major Fishing Gears Used by Respondents

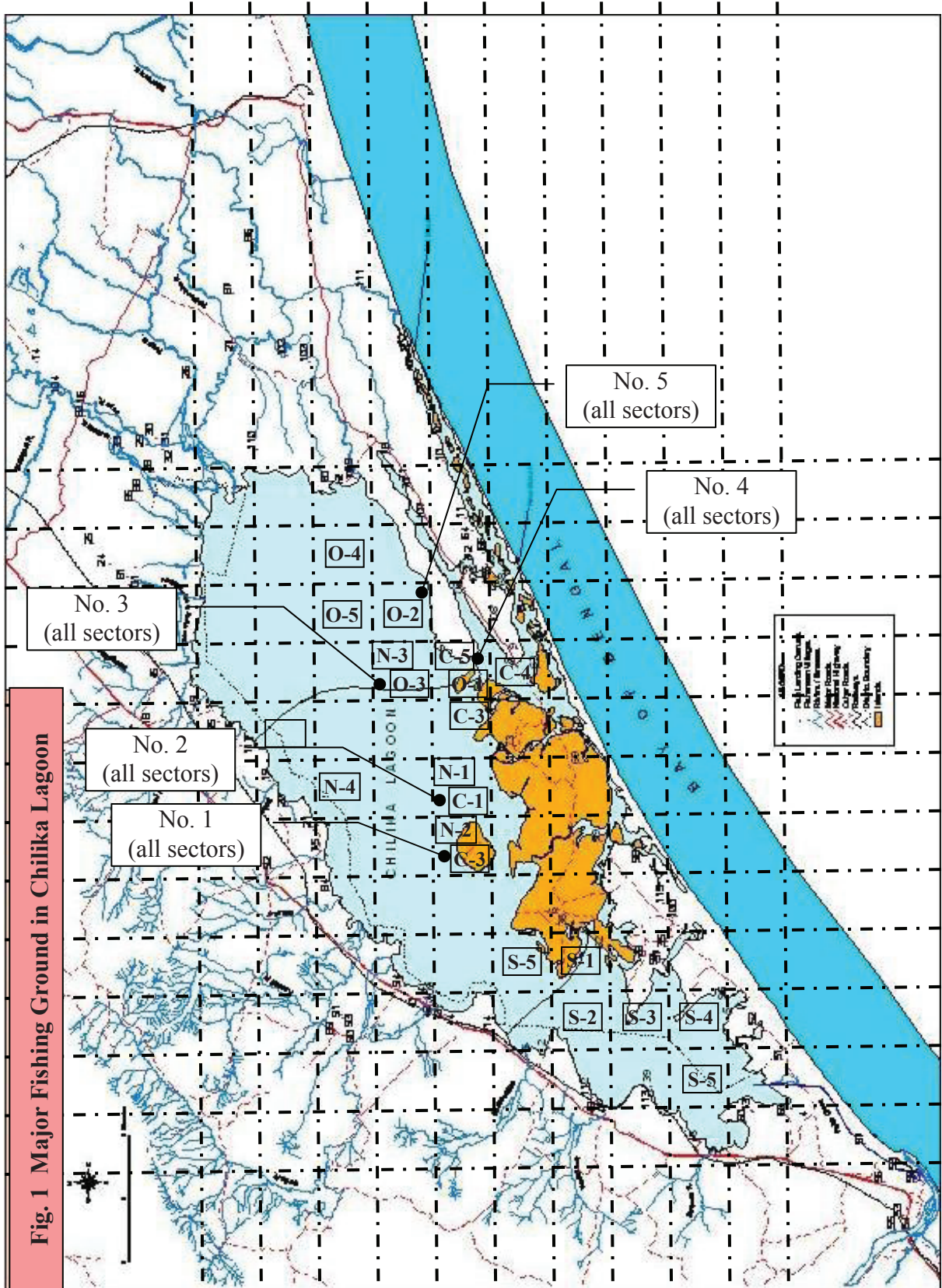
Khanda (traditional fixed net) is the most popular fishing gear in Chilika lagoon and it is used by more than 80% of respondents in Central and Outer channel sectors. Other major fishing gears are Dubi jal, Menjia jal (both are kinds of gill net) and Zero net (sieve net), but Khanda is only fishing gear that more than 50% of respondents use it. These gears are used in Chilika year-around (see Table 13).

Table 13 Top 5 Major Fishing Gears by Sector (multiple answers)

Fishing gear	Total			Northern			Central			Southern			Outer Channel		
	Order	No. of respondents	%	Order	No. of respondents	%	Order	No. of respondents	%	Order	No. of respondents	%	Order	No. of respondents	%
Khanda	1	3,539	72	1	1,069	60	1	822	83	1	910	73	1	738	83
Dubi jal	2	1,416	29	3	330	18	2	286	29	2	543	43	2	257	29
Zero net	3	858	17	2	420	23	4	148	15	4	161	13	4	129	15
Menjia jal	4	813	17	5	253	14	3	167	17	3	245	20	3	148	17
Khepa jal	5	409	8										5	101	11
Patua jal				4	254	14	5	68	7						
Dosti jal										5	120	10			
No.of respondents		4,924			1,795			988			1,253			888	

(3) Major Fishing Ground

As shown in Fig.1, major fishing grounds for fishers in Northern, Central and Outer Channel were concentrated to New Mouth area and around Nalabana Island. In contrast, major fishing grounds for Southern sector fishers are scattered along coastal area in Southern sector.



(4) Fishing Operation Days

1) Fishing Operation Days per Month

As shown in Table 14, fishers go to fish on about 21 days per month in summer (March to June), 18 days in rainy season (July to September) and 20 days in winter (October to February).

Table 14 Fishing Operation Days per Month by Sector

Unit: Days

Sector	Block	Summer (Mar-Jun)	Rainy (Jul-Sep)	Winter (Oct-Feb)
Northern	Brahmagiri	22	18	20
	Chilika	23	16	18
	Kanas	21	19	20
	Tangi	21	16	20
Central	Banpur	22	19	21
	Chilika	22	17	20
	Krushnaprasad	23	20	21
Southern	Ganjam	20	21	21
	Khalikote	20	23	20
	Krushnaprasad	19	21	19
Outer Channel	Krushnaprasad	22	18	20
All Sectors		21	18	20

2) Operation Days per Fishing Trip

Only traditional wooden fishing boats are operated in Chilika lagoon. Since no ice box is kept on the boat, fishing boat can not keep catch long time. Therefore, fishers land their catch every day. There are 76% of respondents answered that they do one day fishing. On the other hand, there are many fish collection boats operated by whole sellers in Chilika who collect the catch from the fishing boats inside the lagoon. These collection boats purchase fish from contracted fishing boats on the lagoon and they also supply provide water and food to the fishers. These contract fishers who sell catch to collection boat operate longer period. Some fishers operate 2 to 3 weeks per fishing trip voyage (see Table 15).

Table 15 Operation Days per Fishing Trip

Sector	Operation days/trip						Total
	1	2	3-10	11-20	>21	N.A.	
Northern	1,346	30	248	323	93	3	2,043
Central	1,021	56	45	28	9	121	1,280
Southern	1,308	6	31	18	10	10	1,383
Outer Channel	606	79	78	111	27	3	904
Total	4,281	171	402	480	139	137	5,610

(5) Landing Sites and Fish Buyer

There are some large scale landing stations in Chilika such as Kalupadaghat and Sorana in Northern sector and Balugaon in Central sector. Some fishers in each sector land their catch to these larger centers. However, many (about 25%) of fishers land their catch in their own village. They sell catch at the collection center in their villages. Some villages send their catch to major landing centers such as Balugaon after collection of their catch at the village. As mentioned above, about 25% of respondents sell their catch to the collection boats inside the lagoon (see Table 16).

About 60% of respondents sell their catch to middleman (money lender) whom fishers rent money from at a predetermined price. It is very rare that fishers sell their catch by themselves or by their family members (see Table 17).

Table 16 Major Landing Sites in Each Block

Unit: Respondents

Landing site	Northern				Central			Southern			Outer Channel	Total
	Brahmagiri	Chilika	Kanas	Tangi	Banpur	Chilika	Krushna prasad	Ganjam	Khali kote	Krushna prasad	Krushna prasad	
Bhusandapur	0	1	9	80	0	0	0	0	0	0	2	92
Mangalajodi	0	3	2	40	0	1	0	0	0	0	0	46
Kalupadaghat	1	157	13	15	0	4	0	0	0	0	0	190
Sorana	0	224	1	41	0	29	0	0	0	0	0	295
Baulabandha	0	4	1	1	0	92	3	2	0	0	1	104
Boradi	0	0	0	1	0	20	0	0	0	0	0	21
Nairi	0	5	0	1	0	63	0	0	0	0	0	69
Balugaon	0	23	19	22	20	160	7	1	30	1	2	285
Chandraput	0	0	1	0	0	21	0	0	0	0	0	22
Pathara	0	0	0	1	0	0	0	0	64	0	0	65
Keshpur	0	0	0	2	0	0	0	0	44	3	0	49
Sabulia	0	0	0	3	0	0	0	2	18	1	0	24
Rambha	0	0	0	5	0	0	0	45	10	0	0	60
Gajapatnagar	0	0	0	1	0	0	0	33	0	0	0	34
Arakhakuda	0	0	0	0	0	0	0	1	0	0	96	97
Gangadharpur	0	0	0	0	0	0	0	1	0	0	4	5
Gourangpatna	0	0	0	0	0	1	0	18	0	0	0	19
Alupatana	0	0	0	0	0	0	0	0	0	0	48	48
Godown in other sites	1	1	10	19	0	15	6	4	2	2	27	87
Collection boats	139	184	420	64	55	236	61	25	81	37	179	1,481
Own village	42	13	26	46	0	20	186	197	239	216	365	1,350
No answer	46	103	46	533	17	342	153	133	271	74	217	1,935
Total	224	345	480	786	73	1,005	395	419	654	312	904	5,597

Table 17 Type of Buyer (multiple answers by boat owners)

Unit: Respondents

Type of buyer	Northern				Central			Southern			Outer Channel	Total
	Brahmagiri	Chilika	Kanas	Tangi	Banpur	Chilika	Krushnaprasad	Ganjam	Khali kote	Krushnaprasad	Krushnaprasad	
Money lender	155	358	405	207	55	409	172	201	335	181	444	2,922
Other middlemen	21	142	31	178	2	126	58	137	114	71	216	1,096
Godowns	18	86	38	54	1	60	42	15	20	4	94	432
You/ family sale	4	17	7	17	5	17	25	58	101	52	43	346
Others	0	15	1	2	0	6	1	1	3	1	9	39
Total	198	618	482	458	63	618	298	412	573	309	806	4,835

4.2.3 Economic Situation of Fishers Households

(1) Operation Cost

Operation cost of one day fishing by motorized boat is in the range of Rs. 185 to 345 per time, and operation cost of non-motorized boat is in the range of Rs. 31 to Rs. 65.

The highest item for operation cost of motorized boat is fuel. In contrast, the highest cost for non-motorized boat is wages for crews.

Table 18 Operation Cost of 1 day Fishing Trip by Motorized Boats

Unit: Rs.

Sector	Block	Maintenance	Transport	Fuel	Oil	Bait	Food items	Ice	Wage	Others	Total
Northern	Brahmagiri	20		118	14		40			25	235
	Chilika	17	19	153	18	35	66	35	115	2	264
	Kanas	21		124	8		33				185
	Tangi	10	9	125	15	13	44	26	135	5	261
Central	Banpur	15		200	10				110		345
	Chilika	16	5	142	13	40	49	34	141	12	253
	Krushnaprasad	16	16	88	11	10	39		300	13	206
Southern	Ganjam	16	20	87	20		43	70		43	208
	Khalikote	11		105	12		45		93	10	214
	Krushnaprasad	15		89	11		36		65	13	188
Outer Channel	Krushnaprasad	16	2	71	11		42		110	10	190

Table 19 Operation Cost of 1 day Fishing Trip by Non-motorized Boats

Unit: Rs.

Sector	Block	Maint- enance	Trans- port	Fuel	Oil	Bait	Food items	Ice	Wage	Others	Total
Northern	Brahmagiri	14					37	10		18	51
	Chilika	13	15			49	50	33	95	22	58
	Kanas	17					39			10	65
	Tangi	7				19	35	15	88	45	41
Central	Banpur	16	30				27				33
	Chilika	13	5			49	45	30	123	13	51
	Krushnaprasad	10	10			40	37	80	108	11	49
Southern	Ganjam	8	13				33	42	123	31	31
	Khalikote	9	2			23	44	17	101	11	48
	Krushnaprasad	7					38		90	15	39
Outer Channel	Krushnaprasad	10	10				44	8	80	16	56

There were 37 non-motorized boats out of 1,714 and 53 motorized boat out of 924 answered that they bring ice when they go to fish. However, this answer is suspected since 1 day trip fishers, particularly non-motorized boat fishers does not bring ice for fishing. Only some fishers bring ice when they spend several days on lagoon.

(2) Fishery Income

Based on the baseline survey, average fishery income of fishers by type of fishers and by sector is calculated as follows.

Table 20 Monthly Fishery Income of Motorized Boat Owner

Unit: Rs.

Sector	Summer (Mar-Jun)	Rainy (Jul-Sep)	Winter (Oct-Feb)	Annual
Northern	3,967	2,425	2,341	34,473
Central	3,334	2,118	2,197	30,320
Southern	2,755	6,259	3,159	45,246
Outer Channel	2,897	3,007	1,843	29,236

Table 21 Monthly Fishery Income of Non-motorized Boat Owner

Unit: Rs.

Sector	Summer (Mar-Jun)	Rainy (Jul-Sep)	Winter (Oct-Feb)	Annual
Northern	3,507	1,903	2,097	29,481
Central	3,513	2,956	2,269	33,955
Southern	2,546	5,000	3,130	40,231
Outer Channel	3,669	4,323	2,782	39,879

Table 22 Monthly Fishery Income of Boat Crew

Unit: Rs.

Sector	Summer (Mar-Jun)	Rainy (Jul-Sep)	Winter (Oct-Feb)	Annual
Northern	996	747	856	10,506
Central	991	949	831	10,964
Southern	817	1,005	811	10,336
Outer Channel	1,069	847	777	10,702

Results of the questionnaire survey shows that there is not big difference between motorized boat owner and non-motorized boat owner. Particularly, income level of non-motorized boat owner is higher than motorized boat owner in Central and Outer channel sector. And income of boat owner in Southern sector is higher than other three sectors. In contrast, there is not much difference of the crew's income among four sectors.

(3) Average Income of Fishers Households

Annual family income was estimated for both motorized and non-motorized boat owners. Boat owners in Southern sector both motorized and non-motorized have the highest annual income among 4 sectors.

Income of other family members of motorized boat owner is higher than non-motorized boat owner's family members except the case of outer channel. Most of income is from fishing activities of head of the family and only 20 to 30 % of total family income is from other family members.

In case of boat crews, they earn around Rs. 17,000 annually. In contrast to the boat owners, about 30 to 40% of total income is depends upon income of other family members (see Table 23).

Table 23 Annual Family Income of Fishers

Unit: Rs.

Sectors	Motorized Boat Owner			Non-motorized Boat Owner			Crew		
	Income from		Total	Income from		Total	Income from		Total
	Fishing	Other family members		Fishing	Other family members		Crew's salary	Other family members	
Northern	34,473	10,087	44,560	29,481	7,398	36,880	10,547	7,352	17,899
Central	30,320	11,467	41,787	33,955	7,803	41,758	11,074	5,429	16,503
Southern	45,733	9,867	55,600	40,374	9,640	50,014	10,266	7,151	17,417
Outer Channel	29,168	7,422	36,590	39,735	8,143	47,879	11,207	5,621	16,828

(4) Other Income Sources

Total family income aforementioned is including additional income of respondents if he has other income sources except fishing. About 30% of boat owner's work as labourer, and less than 10% of boat owners operate non-fishery related business. About 60% of boat owners do not have other income source and they depend on only fishing. Same tendency is shown in case of crews too. About 30% of crews work as labor or non fishery employee, and about 60% of crews do not have other income source and they depend on only fishing (see Table 24).

Table 24 Other Income Sources of Fishers (multiple answers)

Unit: Respondents

Sector/Block	Boat Owners					Crews					
	Type of income sources				Total	Income Sources				Total	
	Operating fish/prawn culture	Running non-fishery related business	Labor works	No other income source		Fishing	Fish seller	Labor/non-fishery employee	No other source		
Northern											
	Brahmagiri	1	39	61	84	185	2	1	11	29	43
	Chilika	3	12	59	367	441		4	15	73	92
	Kanas	22	85	220	150	477		3	25	12	40
	Tangi	8	21	43	242	314	4	8	126	324	462
Central											
	Banpur	0	1	4	56	61			1	2	3
	Chilika	11	8	62	403	484		20	48	144	212
	Krushna prasad	1	27	79	146	253	8	6	52	67	133
Southern											
	Ganjam	51	14	95	129	289	2	7	26	60	95
	Khali-kote	43	14	82	304	443	21		70	66	157
	Krushna prasad	1	6	58	188	253		1	14	38	53
Outer Channel											
	Krushna prasad	11	124	359	222	716	1	32	101	53	187
	Total	152	351	1,122	2,291	3,916	38	82	489	868	1,477

Note: 1,728 respondents out of 5,612 did not reply this question.

There were only 34 respondents who have more than two kinds of other income sources. Most of fishers who have other income sources work as unskilled labor. They work at neighboring villages or urban areas like Calcutta through the agents. Some fishers explained that youth are going to migrate as unskilled labor, and elder people work at villages since labor work is too hard to elder people. Non-fishery related business basically means agriculture business such as paddy cultivation and vegetable cultivation.

As shown in following table, there is no significant different of annual income level of fishers household by having/not having other income sources.

Table 25 Average Annual Income by Category of Fishers and by Other Income Sources

Unit: Rs/year

	Having other income sources			Having NO other income sources		
	Motorized boat owner	Non-motorized boat owner	Crew	Motorized boat owner	Non-motorized boat owner	Crew
Northern	36,426	33,199	15,441	39,272	39,076	18,917
Central	51,747	47,664	15,661	39,928	40,088	16,851
Southern	55,336	44,996	17,370	53,110	52,739	17,450
Outer Channel	35,345	44,883	14,936	48,514	48,737	21,953

(5) Assets

It seems that boat owner's households have much assets as both land and other movable properties such as livestock and ornaments, etc.

Table 26 Assets of Fishers by Category

Sector	Block	Boat owner's households		Crew's households	
		Land area (acres)	Movable Property (Rs.)	Land area (acres)	Movable Property (Rs.)
Northern	Brahmagiri	0.78	8,498	0.78	8,498
	Chilika	0.51	8,772	0.51	8,772
	Kanas	0.67	9,049	0.67	9,049
	Tangi	0.55	5,572	0.55	5,572
Central	Banpur	0.38	8,171	0.38	8,171
	Chilika	0.45	8,090	0.45	8,090
	Krushnaprasad	0.49	9,353	0.49	9,353
Southern	Ganjam	0.51	8,023	0.51	8,023
	Khalikote	0.27	10,353	0.27	10,353
	Krushnaprasad	0.59	9,130	0.59	9,130
Outer Channel	Krushnaprasad	0.47	8,806	0.47	8,806
All Sectors		0.50	8,640	0.50	8,640

There were 27% of boat owners (1,057 out of 3,912) have land for cultivation, fish & prawn farming and other purposes. In contrast, only 14% (239 out of 1,700) of crew have the land. No significant different of land area is shown between boat owners and crews. High rate of land ownership is shown at Brahmagiri and Kanas Blocks in Northern sector in both boat owners and crews. Boat owners in Krushnaprasad block, Central sector also shows high rate of ownership too.

Table 27 Land Ownership of Fishers by Category

Sector	Block	Boat owners			Crews		
		No. of total respondents	No. of respondents having lands for works	Average area of land (acres)	No. of total respondents	No. of respondents having lands for works	Average area of land (acres)
Northern	Brahmagiri	183	94	1.0	41	12	0.8
	Chilika	443	62	1.8	95	5	1.2
	Kanas	458	259	0.8	37	15	1.1
	Tangi	316	82	1.7	470	96	1.4
Central	Banpur	64	7	1.1	9	1	0.5
	Chilika	486	90	1.3	326	30	1.0
	Krushnaprasad	250	88	1.0	145	27	1.8
Southern	Ganjam	292	77	1.3	127	17	1.4
	Khalikote	475	43	1.3	179	15	1.6
	Krushnaprasad	238	39	2.7	74	5	0.4
Outer Channel	Krushnaprasad	707	216	0.9	197	16	1.9
All Sectors		3,912	1,057	1.2	1,700	239	1.4

There is 29% of boat owners (1,122 out of 3,912) keep domestic animals or poultry while only 15% of crews (258 out of 1,700) keep it.

As same as land ownership rate, high rate of livestock ownership is shown at Brahmagiri and Kanas Blocks in Northern sector, Krushnaprasad block, Central sector and Krushnaprasad block Outer channel too.

Table 28 Livestock Ownership of Fishers

Sector	Block	No. of total respondents	No. of respondents having livestock	Average value (Rs.)	No. of total respondents	No. of respondents having 1 livestock	Average value (Rs.)
Northern	Brahmagiri	183	89	3,133	41	8	2,044
	Chilika	443	81	4,216	95	12	1,125
	Kanas	458	289	3,218	37	19	2,900
	Tangi	316	51	2,775	470	58	1,967
Central	Banpur	64	8	2,013	9	1	4,000
	Chilika	486	98	2,437	326	32	1,408
	Krushnaprasad	250	83	2,486	145	50	2,318
Southern	Ganjam	292	48	2,051	127	9	961
	Khalikote	475	64	2,437	179	17	1,394
	Krushnaprasad	238	34	2,076	74	3	600
Outer Channel	Krushnaprasad	707	277	2,280	197	49	2,269
All sectors		3,912	1,122	2,772	1,700	258	1,974

(6) Debt

About 4,337 fishers out of 5,612 received loan from various sources. About 70% of these fishers got loan from money lenders, and 26% of them got loan from Banks (multiple answers, see Table 29).

Table 29 Number of Fishers in Debts and Its Sources (multiple answers)

Unit: Respondents

Sector	Debts from						Total No. of respondents
	Bank	SHG	Money lender	Relatives	Friends	Others	
Northern	478	83	970	169	97	46	1,473
Central	288	88	717	146	78	10	1,016
Southern	144	37	860	109	135	11	1,057
Outer Channel	233	50	614	88	163	8	791
Total	1,143	258	3,161	512	473	75	4,337

Average amount of total debt per fisher is around Rs. 31,000, and their loan balance is around Rs. 28,000 per person. Money lender gives highest amount of loan to fishers (Rs. 28 to 30,000), and second highest loan providers is are relatives (Rs 20 to 22,800) (see Table 30).

Table 30 Average amount of Loan

Unit: Rs.

Sector	Debts from						Total loan/person	Loan balance/person
	Bank	SHG	Money lender	Relatives	Friends	Others		
Northern	14,805	9,048	30,783	21,541	18,160	10,435	29,579	28,438
Central	19,674	9,144	28,119	22,606	14,817	8,850	30,686	28,129
Southern	18,978	16,703	28,529	22,812	18,276	9,727	31,170	25,206
Outer Channel	20,523	7,670	28,893	20,568	18,497	11,875	35,178	29,533
Total	17,723	9,912	29,198	21,948	17,758	10,273	31,247	27,778

Major reason for the loan is purchase of fishing gears/nets (about 80% or 3,547 fishers out of 4,337) and purchase of fishing boat (35% or 1,482 fishers out of 4,337) (see Table 31).

Table 31 Purpose of Loans (multiple answers)

Unit: Respondents

Sector	Purchasing				Purchasing/lent for		Purchasing livestock	Education for Children	Marriage	Others
	Fishing boats	Fishing gear/net	Engine	Other fishing materials	Fish/prawn pond	Farming land				
Northern	505	1,142	20	100	25	38	34	14	136	158
Central	380	829	11	25	8	9	2	8	92	341
Southern	407	870	4	18	10	3	13	18	97	126
Outer Channel	190	707	11	72	33	1	33	12	94	85
Total	1,482	3,548	46	215	76	51	82	52	419	710

4.2.4 Attitudes toward Illegal Fishing

(1) Knowledge for Illegal Fishing

Only about 30% of fishers in Northern and Central sectors answered that they know fishing gears banned by the Government. In contrast, about 60% of fishers in Outer channel and 89% in Southern sector said that they know that fishing gears are banned by the Government. Major information source of the banned fishing gears are colleagues (about 80%) and PFCSs (20%). The respondents answered that they did not get this kind of information from government officers including CDA staffs (see Table 32 & 33).

Table 32 Knowledge of Banned Fishing Gears

Unit: Respondents

Sector	Having knowledge of banned fishing gears	Not having	N.A.	Total
Northern	423	857		1,280
Central	625	1,418		2,043
Southern	748	156		904
Outer Channel	811	571	3	1,385
Total	2,607	3,002	3	5,612

Table 33 Information Source of Banned Fishing Gears (multiple answers)

Unit: Respondents

Sector	Colleagues	Village meeting	PFCS	Government officers	CDA staffs	Local NGOs/CBOs	Others	Total
Northern	345	117	147	16	22	4	36	625
Central	280	73	51	12	23	0	6	423
Southern	355	169	289	1	30	1	19	811
Outer Channel	613	52	32	15	32	0	6	748
Total	1,593	411	519	44	107	5	67	2,607

(2) Fishers Using Illegal Gears in the Village

About 70% of respondents answered that there are fishers who are using illegal fishing gears in their village. Although about 80% of fishers think that use of the illegal fishing gears should be stopped, 35% of them said that these fishers have no alternative (see Table 34 & 35).

Table 34 Fishers Using Illegal Gears in the Village

Unit: Respondents

Sector	Many fishers use illegal gears	Only some fishers use illegal gears	No. fishers using illegal gears	Total
Northern	283	129	213	625
Central	267	109	47	423
Southern	430	171	210	811
Outer Channel	280	187	281	748
Total	1,260	596	751	2,607

Table 35 Opinions against Illegal Gears

Unit: Respondents

Sector	Should be stopped immediately	Should be stopped, but no option for them	It is their choice	Total
Northern	385	158	82	625
Central	214	178	31	423
Southern	248	320	240	808
Outer Channel	386	220	142	748
Total	1,233	876	495	2,604

4.2.5 Non-fisher Caste Fishers

(1) Population of non-fisher caste fishers

There are some farmers and general caste people (who are not in fisher's caste) go to fish in Chilika. These non-fisher caste fishers were not covered in the baseline survey. Department of Fisheries also does not have information about number of such non-fisher caste fishers too.

The Project surveyed population of the non-fisher caste fishers in Chilika from representatives of these non-fisher caste fishers villages. First of all, the Project collected information of those villages from fishers in and around Chilika. Then surveyors visited village for check the number of non-fisher caste fishers in the village and also confirm other non-fisher caste fishers villages near by the village.

The results of survey is as follows:

Table 36 Population of Non-Fisher Caste Fishers in and round Chilika (1/3)

No.	Sector	G.P.	Village	Total		Fishers		Non-fisher caste fishers	
				Population	Households	Population	Households	Population	Households
1		Kantalabai	Jhanscipatana	1,000	230	0	0	643	80
2		Kantalabai	Gedapatana	470	50	0	0	310	33
3		Kantalabai	Tentuliapada	1,212	132	0	0	35	4
4		Kantalabai	Gobardhanpur	800	80	0	0	800	80
5		Kantalabai	Gopinathper	1,545	185	0	0	0	0
6		Kantalabai	Abhimanper	1,465	246	0	0	982	160
7		Kantalabai	Katuliagothapatana	1,143	95	0	0	865	70
8		Kantalabai	Katuliagothapatana colony	297	52	0	0	297	52
9		Kantalabai	Gobardhanpur colony	1,290	185	752	160	538	25
10		Kantalabai	Jhatinuagaon	1,514	256	185	15	1,329	241
11		Kantalabai	Jhatinuagaon colony	771	129	633	98	138	31
12	Northern	Kantalabai	Kantalabai colony	1,915	332	1,850	321	65	11
13		Sunderpur	Mangarajodi	1,667	224	710	85	957	139
14		Sunderpur	Kaaratiasahi	4,619	506	1,701	148	2,918	358
15		Jaripada	Jatcapatna	7,243	804	5,897	630	1,346	174
16		Jaripada	Naligadia (Chilikasahi)	610	55	127	9	483	46
17		Jaripada	Matiapada	308	46	0	0	308	46
18		Jaripada	Baunsumulu	931	97	383	41	548	56
19		Sorana	Barunapada	670	72	32	4	638	68
20		Kalakaleshwar	Panchupatia	1,326	176	1,008	124	318	52
21		Kalakaleshwar	Balinasi	1,038	67	72	12	966	55
22		Bhusandapur	Bhusandapur	6,736	1,073	3,411	434	3,325	639
		Sub-total		38,570	5,092	16,761	2,081	17,809	2,420

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Table 36 Population of Non-Fisher Caste Fishers in and round Chilika (2/3)

No.	Sector	G.P.	Village	Total		Fishers		Non-fisher caste fishers	
				Population	Households	Population	Households	Population	Households
23	Central	Nairi		6,535	889	3,654	438	6	2
		Sub-total		6,535	889	3,654	438	6	2
24	Southern	Chilikanuapada	Chilikanuapada (Pradhan Sahi)	1,426	240	0	0	1,396	235
25		Chilikanuapada	Anlakuda	650	103	0	0	625	98
26		Chilikanuapada	Gurubai	1,100	184	20	5	855	139
27		Krushunaprasadagada	Krushunaprasad san-anlo	1,200	220	0	0	1,200	220
28		Krushunaprasadagada	Dalabehera Sahi	550	106	0	0	500	96
29		Krushunaprasadagada	Bada-anlo	600	78	0	0	600	78
30		Krushunaprasadagada	Khatiakudi	1,300	200	0	0	1,300	200
31		Krushunaprasadagada	Jagiri Kuda	500	72	0	0	500	72
32		Ramagash	Prayagiri	1,600	260	300	60	1,000	150
33		Malud	Malud	1,050	172	0	0	800	140
34		Ramalenka	Bramandio	848	153	0	0	500	100
35		Ramalenka	Paikaraiper	500	80	0	0	400	60
36		Ramalenka	Samantaraiper	200	35	0	0	100	20
37		Bajrakota	Rasategaon	400	71	0	0	400	71
38	Malud	Patharganja	523	93	0	0	523	93	
39	Morada	Anua	664	130			664	130	
40	Morada	Jamuna	625	107	0	0	625	107	
41	Alanda	Alanda	837	158	0	0	600	100	
42	Alanda	Tichhana	1,186	224	0	0	1,186	224	
43	Titipa	Chadheia	500	60	0	0	500	60	
44	Gomundia	Tubuka	600	70	0	0	600	70	
45	Badajhara	Sipiya	732	122	0	0	732	122	
46	Krushunaprasadagada	Bauripalli	951	165	0	0	951	165	
		Sub-total	31,612	4,881	7,628	941	16,569	2,754	

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Table 36 Population of Non-Fisher Caste Fishers in and round Chilika (3/3)

No.	Sector	G.P.	Village	Total		Fishers		Non-fisher caste fishers	
				Population	Households	Population	Households	Population	Households
47		Satapada	Satapadagada	577	100	0	0	550	95
48		Satapada	Satapada Banki Jala	318	56	0	0	318	56
49		Satapada	Naubadi	360	55	0	0	350	54
50		Satapada	Baulapatana	342	58	0	0	342	58
51		Satapada	Nuagaon	1,031	147	0	0	1,031	147
52		Gambhari	Gambhari	1,784	237	0	0	1,700	220
53	Outer channel	Gambhari	Tua	320	50	0	0	300	45
54		Gambhari	Podadhia	370	68	0	0	370	68
55		Gambhari	Gola	216	50	0	0	198	40
56		Panasapada	Panasapada	1,413	218	0	0	1,350	200
57		Satapada	Baghamunda	1,145	176	0	0	1,120	166
58	Satapada	Chandikhol Bhoisahi	564	80	0	0	564	80	
		Sub-total		8,440	1,295	0	0	8,193	1,229
Grand total				85,157	12,157	28,043	3,460	42,577	6,405

As per the result of the baseline survey, 103,454 fishers including their family members (16,710 households) are fisher by caste in surveyed villages who depend on the fishery resources in Chilika. In addition to this, at least 42,577 non-fisher caste fishers including their family member (6,405 households) live in the villages in and around Chilika (Table 36) also depend their life on fishery resources in Chilika too.

(2) Fishing style of the non-fisher caste fishers

The Project also made interviewed some of non-fisher caste fishers in these village to survey the fishing activity of these fishers.

These non-fisher caste fishers villages are mainly located in Northern sector and from east of Palur canal in Southern sector to Outer channel. Farmer/general caste people who go to fish is very rear from Central sector to western side of Palur channel in Southern sector. Due to irrigation facility in western side of Palur channel in Southern sector (Rambha area), farmers in this area can cultivate crops throughout the year.

Most of the farmer in and around Chilika depend on rainy water as their agriculture water except farmers in Rambha area. Due to limitation of cropping season in Chilika (during rainy season from June to October), many farmers go to migrate outside of Chilika as unskilled labors or fish in Chilika for their living.

According to the respondents in Tentuliapada, Jhanscipatana and Gedapatana village in Kantalabai G.P. Northern sector, non-fisher caste fishers in this area go to fish about 15 to 20 days per month. As same as other fisher caste fishers, many of them took out a loan from middleman, and they repay the debt by their catch. Many of non-fisher caste fishers in this area do not have own boat. They lent boats form middleman or rich farmers who have boats. Basically, youth in the villages migrate to urban area for work but elder people stay the village and go to fish since labor work is too hard to these elder people. Although their cropping season is from June to October, some farmers who have irrigation well cultivate crops such as paddy and groundnuts throughout the year.

Respondents live in Tichhana and Krushunaprasad san-anlo village (eastern side of Palur canal in Southern sector) said that they cultivate paddy from June to October/November. These farmers also operate Khanda (a kind of fixed net) in Chilika from March to September (except winter season).

Respondents of Satapadagada, Baulapatna, Baghamunda, Baghamunda, Nuagaon and Pirigipur village also explained that they also cultivate crops (mainly paddy) from June to October by use of rainy water. Only few farmers who have irrigation well cultivate paddy/groundnuts after October. Farmers who have no irrigation facility, therefore go to fish in Chilika by Khanda and cast net. Some of them told that they have trouble with local fishers sometimes about their khanda although they set it in open access area.

There are some farmers work as unskilled labors since they do not have cultivation land. Although farmers who own cultivation area, many of them have less than one acre of cultivation land per family (paddy production volume is 450 to 600 kg/acre/time). In contrast, farmers live in Rambha area never go to fish in Chilika since they an cultivate crops throughout the year by use of irrigation well. They cultivate paddy from June to October as same as farmers in other area, and cultivate vegetables after harvesting paddy. There are some farmers who cultivate only vegetables too.

(3) Non-Fisher Caste Fishers Cooperative Societies

There are 8 fishers cooperative societies which are constituted by the non-fisher caste fishers in Puri district.

Table 37 Non-fishers Caste Fishers Societies in and around Chilika

	District	Village	Name of Society	No. of members	
				Male	Female
1	Puri	Patharganja	Maa Mangala	46	10
2	Puri	Tichhana	Maa Mangala	126	15
3	Puri	Anua	Maa Baliharachandidevi	104	15
4	Puri	Chilikanuapada	Gadiswaradeba	92	15
5	Puri	Jamuna	Maa Jaya Mangala	126	15
6	Puri	Alanda	Maa Padukei	128	5
7	Puri	Bauripalli	Budhima Badajena	338	58
8	Puri	Baghamunda	Jaya Maa Kalika	776	25
Total				1,736	158

These societies are organized only the villages in Puri district (a part of Southern sector and Outer channel) but no such society exist in Khurda and Ganjam districts.

4.3 Life of Fishers Wives

4.3.1 Daily works of fishers wives

(1) Daily life of wives

Most of the wives spend their time for social activities (i.e. SHG/group meeting, chattering/meeting with neighbors), and household affairs (i.e. meals preparing, cloths washing, house cleaning, child caring, water drawing, firewood (leaves) collecting) in daytime. Income generating activities are shown from 8:00 a.m. to 5:00 p.m. Wives in Southern sector and Outer channel spend much time for income generating activities than wives in Northern and Central sector.

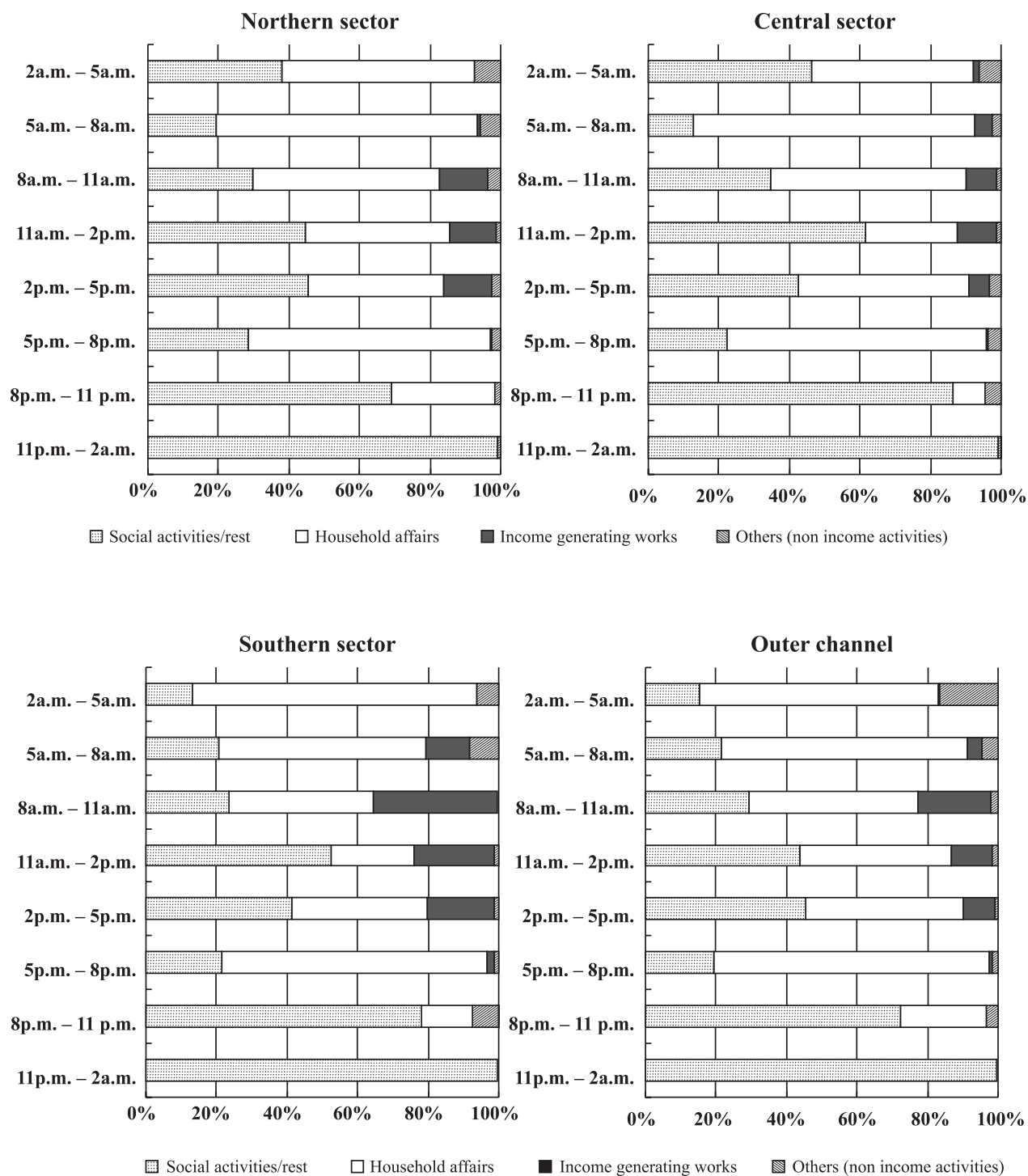


Fig. 2 Daily Life of Fisher Wives

(2) Hardest Work

The hardest and strenuous work for fisher's wives is "water drawing", second hardest is "fire leaves collection" and third is "cloths washing". Income generating activities such as "fish marketing" and "laboring" also listed up as fourth and fifth hardest work in Southern sector and Outer channel.

Table 38 Top Five Hardest and Strenuous Works

	First	Second	Third	Fourth	Fifth
All Chilika	Water drawing	Firewood (leaves) collecting	Cloths washing	Fish marketing	Meals preparing
Northern	Water drawing	Firewood (leaves) collecting	Cloths washing	House cleaning	Meals preparing
Central	Water drawing	Cloths washing	Firewood (leaves) collecting	House cleaning	Meals preparing
Southern	Water drawing	Firewood (leaves) collecting	Cloths washing	Fish marketing	Laboring
Outer Channel	Firewood (leaves) collecting	Water drawing	Meals preparing	Cloths washing	Fish marketing

4.3.2 Living condition

(1) Water supply

There are 1,081 wives (59%) out of 1,826 draw water from public tube well in the village and 506 wives (28%) draw it from the public open well in the village. Only 10% of wives have individual well (open well or tube well) and 145 of wives use tap water.

Table 39 Main Water Sources (multiple answers)

Unit: Respondents

Sector	No. of respondents	Public Tube Well	Public Open Well	Piped water/Tap water	Individual Open Well	Artesian Well (Chua)	Individual Tube Well	Lake Water	Others
Northern	650	368	199	61	56		17	3	45
Central	439	262	171	85	44	26	16	1	3
Southern	444	251	128	87	13	10	8		11
Outer Channel	293	200	8	27	3	64	35		6
Total	1,826	1,081	506	260	116	100	76	4	65

(2) Electricity

Around 50% of respondents answered that they are not yet electrified. Most of electrified respondents got power from grid, and only few respondents (less than 1%) use generator.

Table 40 Availability of Electricity

Unit: Respondents

Sector	by Grid	by Generator	Not Electrified	Total
Northern	330	11	309	650
Central	250	3	186	439
Southern	218	1	194	413
Outer Channel	109	2	182	293
Total	907	17	871	1,795

(3) Place of Defecation

Most of respondents do not have toilet in their houses, and only 4% of them have toilet in their houses. Although government agencies constructed public toilets in the villages, it is hard to change villager's behavior, and many of them defecate at the open fields.

Table 41 Place of Defecation

Unit: Respondents

	Own toilet	Open field	Others	Total
Northern	26	622	2	650
Central	28	411	0	439
Southern	14	399	0	413
Outer Channel	4	289	0	293
Total	72	1,721	2	1,795

(4) Domestic work

80% of the respondents answered that they purchase daily rations and commodities at the shops in villages. There are 20% of respondents who go to market outside of the village in Northern sector.

Table 42 Way to Obtain Daily Rations and Commodities

Unit: Respondents

	Shop (kiosk) in the village	Market outside the village	Exchange and barter	Other Ways
Northern	473	134	3	40
Central	343	8	0	88
Southern	347	16	1	49
Outer Channel	273	18	-	2
Total	1,436	176	4	179

As mentioned on 4.3.1 (2), Fire wood (leaves) collection is one of the hardest work for house wives. Most of the wives in all sector use firewood and leaves for cooking. They purchase the wood and leaves but some of them go to collect it as daily work.

Table 43 Type of Fuel for Cooking (Multiple answers)

Unit: Respondents

	Fire-leaves		Firewood		Dried cow dung		Charcoal	Kerosene	LPG
	Buying	Collecting	Buying	Collecting	Buying	Collecting	Buying	Buying	Buying
Northern	461	230	503	127	258	82	28	281	0
Central	298	131	369	69	52	12	0	298	11
Southern	203	129	289	112	51	21	0	87	3
Outer Channel	161	76	237	36	68	16	11	15	0

These people spend Rs. 137 to 158 per month for fire leaves and Rs. 178 to 189 per month for firewood. In case of fire leaves/wood collection, women spent 1 to 2 hours for collecting fire leaves/wood everyday. This situation is almost same in all sectors.

Table 44 Average Cost for Cooking Fuel per Month

Unit: Rs./month

Sector	Fire leaves	Firewood	Dried cow dung	Charcoal	Kerosene	LPG
Northern	142	178	139	105	54	
Central	151	184	52		48	162
Southern	158	189	68		28	227
Outer Channel	137	188	138	96	66	

Table 45 Average Time for Collecting Cooking Fuel

Unit: Hours/day

Sector	Fire leaves	Firewood	Dried cow dung
Northern	2.0	1.7	1.9
Central	2.3	1.5	1.4
Southern	1.1	2.0	1.1
Outer Channel	1.9	1.8	1.9

4.3.3 Group Activities

871 respondents out of 1,795 belong to organizations. Most of these wives belong to Self Help Group (SGH), and only two respondents in outer channel belong to the community based organization. SHG is very popular organization as the support target in rural area. Many government and non-government projects targeted to SHGs were implemented.

Table 46 Number of Respondents belonging to Groups/Organizations

Unit: Respondents

	CBO	SHG	Other org.	Total
Northern	0	288	13	301
Central	0	226	10	236
Southern	0	182	0	182
Outer Channel	2	148	2	152
Total	2	844	25	871

More than 90% of respondents who belong to the organization answered that their organization is very active or partially active.

Table 47 Evaluation for Active Situation of SHGs

Unit: Respondents

	Very active	Partially active	Not active	Defunct
Northern	139	123	18	8
Central	142	71	6	7
Southern	47	124	6	5
Outer Channel	28	113	4	3
Total	356	431	34	23

**Data book of
Socio-Economic Survey of
Fishers in Chilika Lagoon**



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