CHAPTER THREE
FISHERIES RESOURCE, FISHING PATTERN AND DEVELOPMENT INTERVENTIONS AT KUAKATA

3.1 Fisheries Resources

Hilsa and shrimps are the main fisheries resources in the sea of Kuakata. *Rupchanda, Phali Chanda, Sada Dtina, Ranga, Chaukha, Laukkha, Churi, Lan Poa, Camila, Coral Laitta, Kata, Bailla, Tekka, Faisa* etc. are the fishes collected from the sea. Fishermen catch these fishes mainly during the winter season. During this season they go to the deep sea for fishing using net (*Bar Jal*) and hook. *Bagda, Saga, Harina, Lalia, Ruda, Baghtara* etc are the shrimps caught from the sea.

According to conversation with the fishermen, fisheries resources in the sea are declining over the years. Now a days, fishermen are getting comparatively less amount of fishes than the previous years. Fishermen get more fishes in the peak and middle season and less fishes in the dull season.

Table 3.1: Daily average fish catch by the fishermen community of the study villages in different seasons

Sl.	Name of villages	Respondents in percentage								
		Peak (kg.)			Middle (kg.)			Dull (kg.)		
		1-100	101-200	200+	1-100	101-200	200+	1-100	101-200	200+
1.	Khajura	12.2	4.1	2.0	18.4	0.0	0.0	16.4	0.0	0.0
2.	Farshipara	6.1	0.0	0.0	6.1	0.0	0.0	6.1	0.0	0.0
3.	Naioripara	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0
4.	Alipur	4.1	2.0	6.1	6.1	0.0	6.1	6.1	6.1	0.0
5.	Mombipara	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6.	Musalliabad	6.0	2.0	2.0	8.1	0.0	2.0	10.2	0.0	0.0
7.	Hossainpara	6.1	0.0	0.0	6.1	0.0	0.0	8.1	0.0	0.0
8.	Panjupara	4.1	2.0	2.0	8.1	0.0	0.0	4.0	0.0	0.0
9.	Keranipara	2.0	2.0	0.0	4.0	0.0	0.0	2.0	0.0	0.0
10.	Nibinpur	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0
11.	Melapara	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0
12.	Kuakata	14.3	6.1	6.1	22.4	2.0	2.0	24.4	0.0	2.0
Total		61.2	18.4	20.4	85.7	2.0	12.2	89.8	8.2	2.0

Source: Field Survey, 2002.

Table 3.1 reveals that 20% of the respondents got more than 200 kg of fish per day in the peak season. And, only 12% and 2% respondents have reported that they got fish of more than 200 kg per day (in the middle and dull season respectively). In the middle season, 86% respondents have reported that they got fish between 1-100 kg.

Table 3.2: Daily average shrimp fry collection by the fishermen of the study villages in different seasons

Sl.	Name of villages	Respondents in percentage								
		Peak (No.)			Middle (No.)			Dull (No.)		
		201-400	401-1500	1500+	1-100	101-400	401-600	1-100	101-200	201-300
1.	Khajura		2.4	2.4		4.8		2.4	2.4	
2.	Farshipara		2.4				2.4			2.4
3.	Naioripara			2.4			2.4		2.4	
4.	Alipur									
5.	Mombipara		2.4			2.4		2.4		
6.	Musalliabad	4.9	9.7	2.4		12.2	4.8	12.2		4.9
7.	Hossainpara	2.4	9.7	2.4		14.7		12.2	2.4	
8.	Panjupara	2.4	12.2	2.4		14.6	2.4	12.2	4.9	
9.	Keranipara	2.4	2.4			4.8		4.9		
10.	Nibinpur	4.8	7.3		2.4	9.7		12.2		
11.	Melapara	2.4						2.4		
12.	Kuakata		12.2	7.3		4.9	14.6	12.2	4.9	2.4
Total		19.5	61.2	19.5	2.4	70.8	26.9	73.2	17.1	9.8

Source: Field Survey, 2002.

Table 3.2 reveals that 61.2% respondents caught shrimp fry of about 400-1500 (per day) in the peak season, 70.8% respondents caught 101-400 shrimp fries (per day) in the middle season and 73.2% respondents caught between 1-100 shrimp fries (per day) during the dull season. Price of shrimp fry is found comparatively higher during the dull season and comparatively lower during the peak season.

Table 3.3: Average price of 100 shrimp fry at Kuakata in different seasons

Sl.	Name of villages	Respondents in percentage								
		Peak season (Tk.)			Middle season (Tk.)			Dull season (Tk.)		
		10-20	21-60	61-100	21-40	41-60	81-100	10-40	41-60	61-100
1.	Khajura									
2.	Farshipara			2.5		2.5		2.5		
3.	Naioripara		2.5		2.5			2.5		
4.	Alipur									
5.	Mombipara	2.5			2.5				2.5	
6.	Musalliabad	12.5	5.0		17.5				17.5	
7.	Hossainpara	2.5	12.5		10.0	2.5	2.5	12.5	2.5	
8.	Panjupara	15.0	2.5		17.5			5.0	7.5	5.0
9.	Keranipara	5.0			5.0				2.5	2.5
10.	Nibinpur	12.5	2.5		15.0			5.0	7.5	2.5
11.	Melapara	2.5			2.5				2.5	
12.	Kuakata	7.5	7.5	5.0	17.5	2.5		12.5	7.5	
Total		60.0	32.5	7.5	90.0	7.5	2.5	40.0	50.0	10.0

Source: Field Survey, 2002.

Table 3.3 reveals that 60% respondents have reported that the price of 100 shrimp fry during the peak season is between Tk. 10 to Tk. 20. 90% of the respondents have reported that the price is between Tk. 21 to Tk. 60 during the middle season and 50% have reported that the price is between Tk. 41 to Tk. 60 during the dull season.

3.2 Fishing Pattern

Fishing period and duration of stay in the sea

There are two fishing seasons in Kuakata. One is the rainy season and the other is the winter. Rainy season starts from May and continues up to September. Winter season starts from November and continues up to March. Fishermen get ready for fishing in the sea during the other two months of the year (April and October). They repair their boats, nets and other fishing gears during these two months.

Fishermen buy new boats and fishing gears in these months. The beginning and ending months of the two seasons sometimes are accompanied by rough weather and unavailability of fishes in sea. 100% of the fishermen catch fish during the rainy season and 90% of them catch during the winter season.

Fishermen mainly catch *Hilsa* during the rainy season. During this period, the sea remains rough. Other than *Hilsa, Poma, Laitta, Rupchanda, Churri, Saplapata, KanKon, Kangot, Maad*, and shrimps are also caught.

During winter season, the sea remains calm and quiet. The fishermen fix engines in small sized manual boats and go to the sea for fishing. These small mechanized boats are not suitable for fishing during the rainy season (for rough weather). Medium sized mechanized boats are used to catch fish round the year. It is mainly used to catch *Hilsa* during the rainy season and *Rupchanda, Coral, Lukkha, Churri* in other time.

Fishing period and stay of fishermen in the sea (for fishing) depend on the timing of ebb and tide. Availability of fish in the sea also depends on the moon.

Duration of stay in sea for fishing depends on the fishing season and the socio-economic condition of the fishermen. This period normally ranges from 0-20 days.

During rainy season (or the season of *Hilsa*) poor fishermen go for fishing in the sea twice a day. They stay in the sea for 12 hours. They go in small manual boats in a group of 6. Fishermen with medium sized mechanised boats stay for 6/7 trips per month.

Manpower and its distribution pattern

Fishermen of Kuakata who catch fish in the sea generally do not come from the same family. Like-minded fishermen from different families of the same or adjacent villages catch fish by forming groups.

A group of 6-8 poor fishermen is normally found and is suitable to catch Hilsa fish in a small manual boat. The number of fishermen in a group, are employed based on the size of boat and nets. Among them, one is the boatman and others are involved in catching fish.

Around 8-12 fishermen are found to be in a medium sized mechanized boat. One is the boatman, one is a cook, one is the engine mechanic and others are involved in catching fish.

A big mechanized boat can contain 15-20 persons in a group. Among them one is the boatman, one is the assistant boatman, one is the cook, one is the engine mechanic and others are involved in fish catching activities.

Fry collection:
Shrimp fry is generally collected on the sea shore by traditional pull nets. Small manual boats and ***behundi*** nets are used for collecting shrimp fry during the winter. In this case, one fry collector occupies a small manual boat and he carries 3-7 behundi nets. He normally windups his nets (for releasing the fry from the nets) one hour after setting them in the sea. The collectors collect fry by using small manual boats and 3-7 nets. These boats and nets are normally bought by the money taken from the ***dadandars***. Micro-credit from NGOs and loans from relatives and friends also supplement the capital required to buy boats and nets.

Table 3.4: Pattern of fishing and fry collection of fishermen community of Kuakata in different villages

Sl.	Name of villages	Respondents in percentage			
		Individual	With family members	With non-family members	Total
1.	Kuakata	6	6	88	100
2.	Melapara	0	0	100	100
3.	Nabinpur	33	0	67	100
4.	Keranipara	0	0	100	100
5.	Panjupara	14	0	86	100
6.	Hossainpara	14	0	86	100
7.	Musalliabad	17	17	67	100
8.	Mombipara	0	0	100	100
9.	Alipur	0	0	100	100
10.	Naioripara	0	0	100	100
11.	Farshipara	0	0	100	100
12.	Khajura	0	0	100	100
Total		10	4	86	100

Source: Field Survey, 2002.

Table 3.4 shows that 86% of the fishermen go for fishing with non-family members in group, 4% go with family members in group and 10% fishermen go for fishing alone.

Table 3.5: Ownership of fishing boats used by fishermen community of different villages of the study area

Sl.	Name of villages	Respondents in percentage		
		Own	Shared	Total
1.	Kuakata	35	65	100
2.	Melapara	100	0	100
3.	Nabinpur	0	100	100
4.	Keranipara	25	75	100
5.	Panjupara	25	75	100
6.	Hossainpara	44	56	100
7.	Musalliabad	67	33	100
8.	Mombipara	100	0	100
9.	Alipur	33	67	100
10.	Naioripara	0	100	100
11.	Farshipara	33	67	100
12.	Khajura	25	75	100
Total		39	61	100

Source: Field Survey, 2002.

Table 3.5 reveals that 61% of the fishermen have shared boats and 39% have boats of their own (bought by money taken from the *dadandars*).

Table 3.6: Fishing gears used by fishermen community of different villages of the study village

Sl.	Name of villages	Respondents in percentage		
		Own	Shared	Total
1.	Khajura	12.7%		12.7%
2.	Farshipara	4.8%		4.8%
3.	Naioripara	1.6%		1.6%
4.	Alipur	1.6%	1.6%	3.2%
5.	Mombipara	1.6%		1.6%
6.	Musalliabad	15.9%	1.6%	17.5%
7.	Hossainpara	12.7%		12.7%
8.	Panjupara	9.5%		9.5%
9.	Keranipara	4.8%		4.8%
10.	Nibinpur	7.9%		7.9%
11.	Melapara	1.6%		1.6%
12.	Kuakata	20.6%	1.6%	22.2%
Total		64.2%	35.8%	100.0%

Source: Field Survey, 2002.

Table 3.6 reveals that 64% of the respondents have fishing gears other than boats (of their own) and 36% have shared items.

Table 3.7: Type of fishing trips by the fishermen community of different villages of Kuakata

Sl.	Name of villages	Daily	Weekly	Monthly	Total
1.	Khajura	8.2%		4.1%	12.3%
2.	Farshipara	1.4%	1.4	1.4%	4.1%
3.	Naioripara	1.4%			1.4%
4.	Alipur	0.0	2.7	5.5%	8.2%
5.	Mombipara	0.0	1.4		1.4%
6.	Musalliabad	11.0	5.5		16.4%
7.	Hossainpara	4.1	6.8		11.0%
8.	Panjupara	6.9	1.4	1.4%	9.6%
9.	Keranipara	2.8		1.4%	4.1%
10.	Nibinpur	5.5%	2.7	1.4%	9.6%
11.	Melapara	0.0	1.4		1.4%
12.	Kuakata	9.6	9.5	1.4%	20.5%
Total		50.6%	32.9	16.4%	100.0%

Source: Field Survey, 2002.

Table 3.7 reveals that 51% fishermen go for fishing in daily trip; 33% in weekly trips and 16% in monthly trips.

3.3 Fishing Boats and Gears

Fishermen of Kuakata use mainly three types of boats. These are small manual boats, small mechanised boat and medium sized mechanised boat. Most of the fishermen have no fishing boats and gears of their own. Fishermen who catch *Hilsa*

in-group have small manual boats and fishing gears (nets, floats, rope and others) of their own, but these are bought by the money taken as loan (*dadan*) from the *dadandars* or money investors or depot holders. The poor fishermen who catch *Hilsa* and other fishes as day labourer in medium and large sized mechanised boats (of the rich fishermen) have no fishing boats and gears. There is no co-operative at Kuakata that can arrange sharing of fishing boats and gears.

3.3.1 Small Manual Boat (Dingi)

A group of (six) fishermen who catch *Hilsa* in the sea normally own small manual boats. This boat is also called *Dingi*. Small manual boats are suitable for fishing *Hilsa* during the rainy season when weather remains rough and there is storm and cyclone. These boats are light enough to adjust the direction of waves. Strong and large waves can not damage these boats. It is about 6-7meter long, 1.2 meter wide and 0.9 meter deep. Average price of such boats is between Tk. 4,000 to Tk. 10,000. 65% of the respondents in the fishing villages of Kuakata use small manual boats to catch Hilsa. These types of boats are made of planks of *Garjan, Jackfruit* or *Jarul tree.*

3.3.2 Small Mechanized Boat

Small manual boats can be converted into mechanised boats by setting a water pump engines on them. Due to setting up of the engines, these boats are heavier than small manual boats. It becomes tough to operate the boats in strong waves and wind that occur during stormy rainy day. Strong waves and wind can damage the mechanised boats during rainy season when the weather remains rough. Thus, small-mechanised boats are not suitable for fishing Hilsa during the rainy season. These boats are usually used to catch sea fishes (other than Hilsa) during winter season when the sea remains calm and quiet. Engines of 6 Horse Power cost about Tk. 10,500/-.

Table 3.8: Type of fishing boats used by fishermen community of different villages of Kuakata

Sl.	Name of villages	Respondents in percentage				
		Small manual	Small mechanized	Medium mechanized	Big mechanized	Total
1.	Kuakata	72	6	22	0	100
2.	Melapara	67	0	33	0	100
3.	Nabinpur	75	0	25	0	100
4.	Keranipara	50	25	25	0	100
5.	Panjupara	80	0	20	0	100
6.	Hossainpara	70	10	20	0	100
7.	Musalliabad	70	0	20	10	100
8.	Mombipara	100	0	0	0	100
9.	Alipur	0	17	83	0	100
10.	Naioripara	100	0	0	0	100
11.	Farshipara	25	50	25	0	100
12.	Khajura	75	25	0	0	100
Total		65	10	24	1	100

Source: Field Survey, 2002.

Table 3.8 reveals that 65% of the respondents use small manual boats, 10% use small mechanized boats and 25% use medium and large sized mechanized boats for fishing in the sea.

3.3.3 Medium and large sized Mechanized Boat

The boat is around 15-17 meter long, 1.4-1.8 meter wide and 1 meter deep. The boat is made of *Sundari, Jarul* or *Garjan* wood. 10-15 fishermen go for fishing in a medium sized mechanized boat. The boat costs about Tk. 15,000 to Tk. 20,000. Rich fishermen of the villages near Alipur and Mohipur own medium sized mechanised boats. They catch Hilsa and other fishes employing poor fishermen as day labourer. *Gillnet* and *setback net* (*Behundi Net*) is used mainly to catch Hilsa and other fishes from the sea. Large sized boat is about 15-20 meter long.

3.3.4 Pole Net or *Khuta Jal* and *Bhasa Jal* (Floating net)

The poor and small fishermen catch *Hilsa* fish by *Bhasa Jal* (Floating net) or *Phulka Jal* (Gill net). They catch *Hilsa* fish by using small manual boats. They also catch other fishes in the shallow sea. Among other fishes, they catch *Bata, Poma, Maitta, Hangor* etc. The floating nets are of about 1.5 km. long and 20-40 meter wide. Upper side of the net is kept floating by using plastic floats attached at certain intervals with a rope. The net is kept vertical by using weights.

3.3.5 Setback or *Behendhi Jal*

Setback net *(Behundi Jal)* is used to catch fishes other than *Hilsa. Laitta, Churi, Poma, Bata, Chanda, Kamila, Faissa,* Shrimp etc. are caught by setback net. The front part of the net is wider and is kept open by fixing with two poles. Fishes enter into the net by the current of ebb and tide. The rear portion of the net becomes gradually narrow.

3.3.6 Fry Net (Setback net, Pull net and Push net)

Fry collectors of Kuakata use setback nets and pull net to collect shrimp fry. Pull net and setback nets are used by most of them. One fry collector use 2-3 setback nets and collects fry in every 1-hour interval.

Table 3.9: Type of fishing gears/nets used by fishermen community of different villages of Kuakata

Sl.	Name of villages	Respondents in percentage					
		Hilsa net	Bar net	Fry net	Behundi net	Hook	Total
1.	Kuakata	44	9	4	39	4	100
2.	Melapara	34	0	33	33	0	100
3.	Nabinpur	17	0	17	50	17	100
4.	Keranipara	40	0	20	20	20	100
5.	Panjupara	50	0	0	50	0	100
6.	Hossainpara	30	0	0	70	0	100
7.	Musalliabad	23	7	39	31	0	100
8.	Mombipara	0	0	0	100	0	100
9.	Alipur	50	20	0	0	30	100
10.	Naioripara	34	33	0	33	0	100
11.	Farshipara	60	0	0	20	20	100
12.	Khajura	64	0	0	27	9	100
Total		41	6	9	36	8	100

Source: Field Survey, 2002.

Table 3.9 reveals that 41% of the respondents use *Hilsa* net, 45% use *behundi* cum fry net, 6% use bar net and 8% use hooks.

3.3.7 Hook

Fishermen catch Shark, *Poma* and *Saplapata* fish by using hooks. Raw meat is used as bait in these hooks. Hooks are used for fishing normally in winter season.

3.4 Development Interventions

Capital is required to carry out fishing and fishery business. *Dadandar* (money investor) is the prominent and most reliable source of capital at Kuakata. NGOs, Banks, Cooperatives and relatives are other sources of capital here. *Dadandars* provide loan *(dadan)* to fishermen in condition of selling fish to them at a fixed price. The price is much lower than the normal price (that is found in local retail markets). Dadandars partly take their loan from the sale amount and make much profit by buying fish at lower price and selling at higher price. This is why, loan *(dadan)* is the most easiest and available source of capital at Kuakata. A number of NGOs are also working as sources of capital. CODEC, URBAN, CARITAS, BRAC, ASA, Grameen Bank, CCODA, PROSHIKA, PMUS are the NGOs working in different villages of Kuakata. These NGOs provide loan to run fishing and fishery related businesses. Loan from the government banks is not available to the villagers. It requires mortgages (of land) to take loan from the government banks. As most of the farmers are marginal and landless, they are not competent to get government bank loan. The rate of interest of government loan is lower than that of the loan of other sources.

There exists few co-operatives namely, *Kuakata Juaba Kallayan Samiti, Khajura Juba Unnayan* Club, *Khajura Samabaya Samiti, Alipur Mazhi Samiti, Kalapara Upazila Mazhi Samiti* within the 12 fishermen villages. The co-operatives are also in the primitive stage of formation. Fishermen save money in the co-operatives on monthly or weekly basis. There is option to get loan from the co-operatives. But still now most of the fishermen are not getting loan from the co-operatives. Only the members of the co-operatives can get loan. Non-members are not allowed to get loan.

Most of the fishermen of Kuakata and its surrounding villages are poor. They have lack of capital. They can not receive loan from government banks, because bank loan requires mortgage of land that is not owned by most of them. They know well that they are being extorted by the *dadandars* or money investors, but they have no alternative way out.

From the study it has been found that 34% respondents have received loan from *dadandars*, 45% from NGOs, 13% from co-operatives and 2% from relatives. In Bangladesh, rate of interest of *dadan* is 10 to 12 times higher than the interest of the loan provided by government banks (around 100% a year).

Fishermen take loan to buy fishing boats and gears, engines, to repair boats and gears, to maintain family, to celebrate religious and cultural festivals, and for medical treatment. Loan is mainly taken in months on the eve of fishing season and also in months when they remain unemployed. If the fishermen are provides with government soft loans to run the fishery activities, they would be benefited.