CHAPTER 2

Understanding Fishery Conflicts in the Hilsa Sanctuaries of Bangladesh

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Abstract This chapter examines the causes of conflict and social tensions in the hilsa sanctuaries of Bangladesh. To collect the empirical data, a survey was conducted in two fishing communities situated adjacent to hilsa sanctuaries, which was further informed by semi-structured interviews with other fishery stakeholders in the region. The analysis shows that conflicts in the hilsa fishery are related to a number of factors such as increased competition over fishing space and irregularities in distribution of economic incentives. Conflicts in the fishery negatively affect the well-being of hilsa fishers and lead to increased social tension in the communities. Thus, a challenge for policy makers is to find a solution that benefits both the fishery conservation and poverty reduction. Based on the findings, the present study submits that a balance of fishery conservation and poverty reduction could be achieved by augmenting co-operative relationship that exists among different stakeholders in the hilsa fishery and in that case, co-management could be an effective tool.

1. Introduction

Fishery is a complex and dynamic bio-socio-economic system with many interactions amongst the resource itself, humans and governing institutions- where evidences of conflict are voluminous (Charles 1992; Bavinck 2005). Fishery conflict may arises when 'the interests of two or more parties clash and at least one of the parties seeks to assert its interests at the expense of another party's interests' (FAO 1998, p. 199). Different authors summarized the major causes of fishery conflicts, such as competition over scarce fish resources, demographic changes, dispute over use of fishing space, division of fishery benefits with different stakeholders in a fish chain, inequitable power relations, structural injustices and institutional failures, changing government priorities and rules that govern the fishery. In

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some cases, external competing users - such as aquaculture and tourism that vie for access to aquatic space and fish habitats also spark social tension (Charles 1992; Warmer 2000; Bennett et al., 2001). Understanding fishery conflict is important since such dispute may produce hardships and reduce the well-being of fishery users (Bennett et al. 2001).

In recent years, a number of studies have identified a wide array of causes that might escalate conflicts over fisheries resources in a tropical context (Charles 1992; Warner 2000; Bennett et al. 2001; Bavinck 2005; Jahan et al. 2009, 2014). Charles (1992) organized the wide range of fishery conflicts into four inter-related categories, such as (i) Fishery jurisdiction (related to property rights, government role and intergovernmental conflicts), (ii) Management mechanisms (related to the management issues), (iii) Internal allocation (related to conflicts arising within the specific fishery system) and (iv) External allocation (related conflicts emerging between internal fishery players and outsiders). Later, Warner (2000) included exogenous effects such as secondary stakeholder as another category in fisheries conflict typology. Bennett et al. (2001) revised Charles (1992) and Warner (2000) categories and introduced another typology of five categories covering conflict between fishers and multiple other actors outside the fishery.

In Bangladesh, which is ranked fourth for inland fisheries production in the world, fishing is the second largest agrarian economic activity. Bangladesh as a country heavily relies on fishery for a source of protein, livelihoods and income. For instance, fisheries supply an estimated 60% of the total animal protein demand. Covering an estimated total of 3 916 828 ha, the inland capture fishery produced 961 458 mt fish in 2012-2013 that represented 28.19% of total fisheries production of the country (FRSS 2014). In recent decades, both inland and coastal fisheries have faced several challenges such as overfishing, severe resource degradation, overcapacity, and climate change and variability, to mention a few (Islam, 2012). These factors coupled with institutional ineffectiveness, the influx of new entrant fishers, control over fisheries resources and space, extensive use of destructive fishing practices have led to increased incidence of conflicts among fishery stakeholders in inland fisheries of Bangladesh (Jahan et al. 2009, 2014; Islam 2012).

Among all fishery species, hilsa shad (*Tenualosa ilisha*) constitutes the single most important fishery of Bangladesh (Photo 2.1) valuing BDT. 90 billion (approx. USD 1.3 billion) annually (BOBLME 2012). Nearly 11% of the country's total fish production is contributed by the hilsa fishery (DoF 2015). It is estimated that more than half a million people depend on it for their livelihoods (Mohammed and Wahab 2013). The hilsa fishery is also identified as the largest estuarine fishery in the world in terms of catch (Blaber 2000) and constitutes a long-standing economic activity in the Meghna River basin. Fishers usually use drift gill nets (locally known as *gulti jal, kona jal*), monofilament gill net (*current jal*) and seine net (*ber jal*) to catch hilsa, of which later two types net are illegal.

There are a number of groups and categories of people involved in the hilsa fishery. Thousands of people are involved in hilsa fishing and in different forward and backward linkage activities in the fish chain. The fishery is capital intensive, so the majority of the fishers cannot afford to go fishing at own cost, thus having to depend on middleman (*aratdar* and *mohajan*) for economic support. Usually *mohajan* take advanced loan (*dadon*) from fish traders *(aratdar*) for buying or maintenance of productive assets for hilsa fishing and sale

their catch to *aratdar* at lower than market price and also pay percentage commission of total price. *Mohajan* either work as the head (*majhi*) of the fishing team or hire another experienced crew as *majhi* for his business. Crews are termed *malla* or *vaghi*, and are either waged labour or sharer of fishing profit (Photo 2.2). Among all, *aratdar* as investor is a key player in the capital intensive hilsa fishery.

Photo 2.1. Hilsa shad (*Tenuolosa ilisha*) constitutes the single largest fishery in Bangladesh.

Photo 2.2. In a mechanized boat fishing team consists of *majhi* and several fishing crews.

To protect the fishery from recruitment and growth overfishing, the Government of Bangladesh (GoB) has declared five sanctuaries in the Meghna River and other associated rivers (Figure 2.1). Department of Fisheries (DoF) in cooperation with law enforcement agencies and local government administration initiated a countrywide ban for eight months from November to June every year on fishing of catching, carrying and sale of *jatka* (juvenile

hilsa less than 25 cm in size). Another restriction is placed on the catching of brood (mature and about to spawn) hilsa for 22 days during the peak breeding season in October, before and after the full moon. To compensate for loss of earnings due to fishing restrictions, the government initiated a Payment for Ecosystem Services (PES) program for fisher communities (187 000 households) with 40 kilograms of rice per household per month and supporting alternative income-generating activities (Rahman et al. 2012).

After establishment of the sanctuaries the production of hilsa increased both in inland and marine waters. However, the majority of the dependent fishers have suffered economic hardship as the compensation is deemed to be insufficient. Such competing interests of conservation efforts and livelihood necessities caused spike in tension. Competition with fishers' groups and tension with other institutional authorities are arising significantly. This conflict included social, economic and econometric aspects, technological aspects and anthropological aspects (Jabri 1996). As stated above, conflict may produce hardships for the poorest members and may reduce overall well-being of other members of the society. If the institution is no longer able to effectively minimize conflicts and facilitate cooperation, community structures may be weakened and will be increasingly unable to function properly. Therefore, it is necessary to find out the underlying conflicting issues and possible policy recommendation for a win-win solution for poverty reduction and fishery conservation.

Using the hilsa fishery in two sanctuaries in Bangladesh, the chapter explores fishery conflicts in the inland sanctuaries context. In order to provide a better understanding of the conflicts this study will (i) examine the factors that cause fishery conflict and social tension, (ii) investigate the trade-offs involved between different fishery stakeholders and, (iii) offer solutions or processes that benefit both poverty reduction and environmental conservation (i.e., 'win-win' scenarios).

The remainder of the chapter is organized as follows. Section two provides a brief description of the methodologies used for studying fishery conflicts in Meghna River system. Section three presents results and discussions whilst the section four concludes with some policy recommendations.

2. Materials and Methods

The study was informed by both primary and secondary data. To collect empirical data, fieldwork was conducted during January 2015 in two fishing communities named Banglabazar of Shariatpur district and Puraton Hijla of Barisal district; both villages are situated adjacent to two hilsa sanctuaries in the rivers of Padma and Meghna (Figure 2.1). The selected communities are mainly dependent on hilsa sanctuaries to earn their livelihoods by various fisheries activities such as fishing and fish trade. Thirty in-depth interviews were conducted using semi-structured questionnaire. The questionnaire asked information regarding perceived cause and the nature of the conflicts as well as participants involved in the conflicts. In addition, twenty key informant interviews were conducted with knowledgeable persons that included *majhi,* fisheries official, and fish trader (*aratdar*). Two focus group discussions were conducted in the two villages. Collected data were entered into a database

system, then contents were analysed and themes were identified and classified into variables.

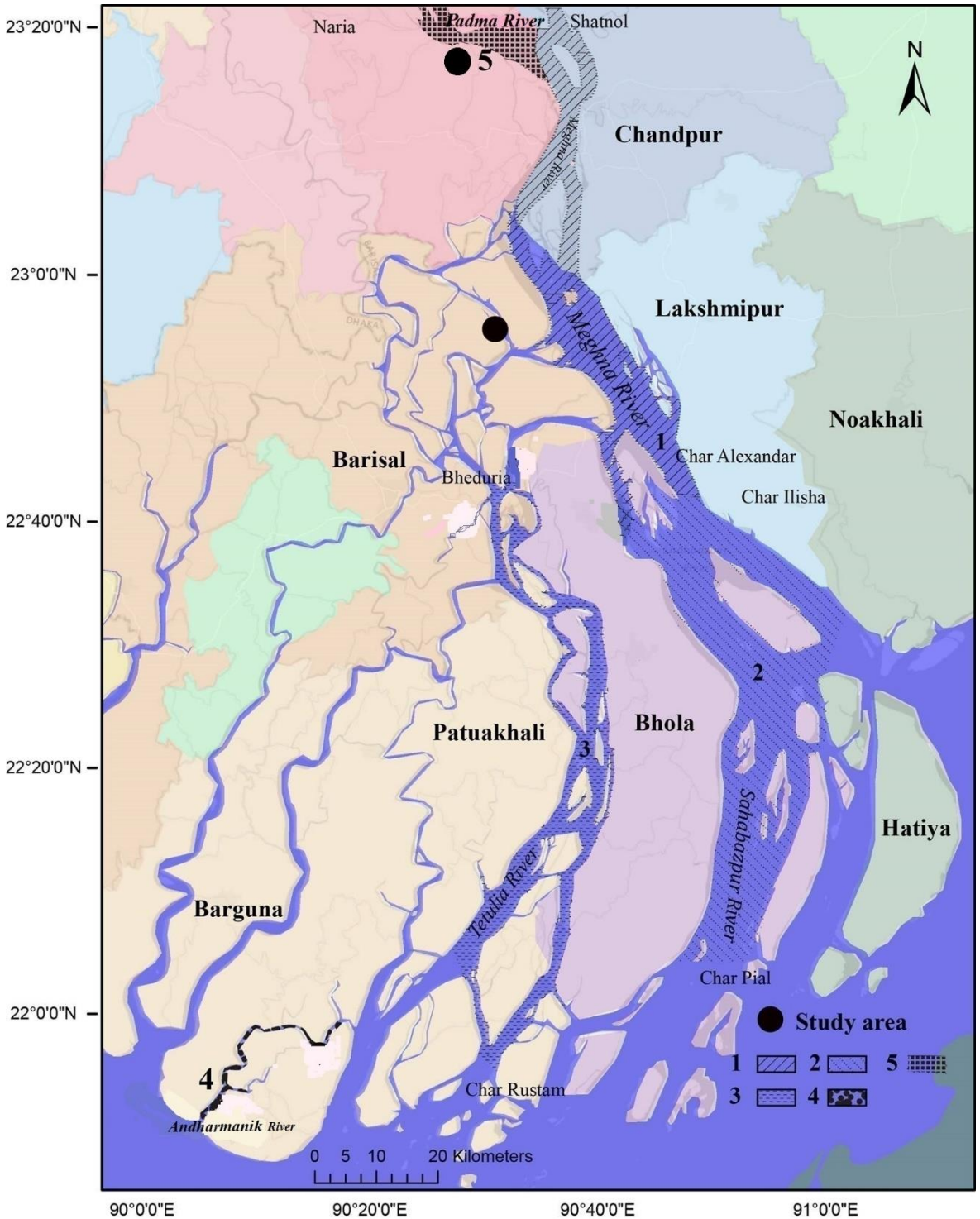

Figure 2.1. The location of study areas and five hilsa sanctuaries in the Meghna River, and other associated rivers and inshore waters. (Two dark circles show the study areas. Five different shades in rivers represent the extent of five hilsa sanctuaries).

3. Results and Discussion

3.1. Conflict among fishers

Increased number of fishers is a common concern by most of the interviewed fishers. In addition to an overarching pressure from population growth, each year many farming households become destitute due to river bank erosion and cyclone. A portion of them thus start their livelihood from scratch by entering into fishery. Since hilsa is a profitable fishery, *aratdar* encourages entry of new fishers into the fishery which leads to overcapitalization. The over-crowded situation in the fishery is explained by a 40-year-old fisher as: *During my teenage years, I could hardly see any other fisher in a mile distance. Now nets are set so close like fingers on hand* (Interview conducted in Puraton Hizla).

Thus there are intense competitions for fishing space which often lead to conflicts that cause loss of property or even physical harm (Table 2.1), which often spills over into communities on land further increasing social tensions. Most notably, there are conflicting situations among mechanized and non-mechanized fishers. Fishers of non-mechanized boat and mechanized boat blame each other for illegal fishing, though both types of fishermen continue fishing during the ban period. But due to limited mobility with smaller boat (Photo 2.3), non-mechanized fishers can only harvest a smaller catch and often caught red handed during raid by law enforcers. However, mechanized fishers can harvest more due to greater mobility and can escape easily due to higher speed of boat engine. One fisher explains the situation as: *Large mechanized boats are usually owned by local people with connection to power. They usually give bribes to the police and are able to continue fishing during the night. If there is any raid, they usually get information from their sources in a police station. Non-mechanized engage in illegal fishing out of dire need of survival but mechanized fishers do fishing out of greed* (Interview conducted in Banglabazar).

Photo 2.3. Fishers of non-mechanized boats face competition for fishing space.

Competition for inclusion in the compensation scheme of the GoB, together with irregularities in rent distribution sometime also cause spike in tension. However, majority of interviewed fishers agreed that supports from their colleagues are important to overcome any crisis situation such as sudden illness (Table 2.1). Again, in the sanctuaries, non-hilsa targeting fishers are not eligible to receive any compensation. However, they also face restrictions as law enforcers sometimes fail to differentiate between fishers, prohibiting all netting in the sanctuaries during the hilsa ban season (Photo 2.4).

Photo 2.4. Non-hilsa fishers using lift net, negatively affected by hilsa catch ban.

3.2. Conflict between fishers and fish entrepreneurs (*aratdar/mohajon*)

Since the hilsa fishery is a capital intensive economic activity, most fishers without collateral do not have access to loan facility of scheduled bank. Thus informal loan (*dadon*) from fish entrepreneur (*aratdar*) is only source of finance. In return, *aratdar* buy catch at a lower price than the market value. Sometimes conflicts arise between *mohajon (*boat owner*)* and fishing crew when the latter perceives injustice on profit sharing or wage payment because the former has connection with powerful local political leader, thus tries to deprive hired fishers of their alleged compensation. Benefits of hilsa fishing are unevenly distributed among different groups in fish chain. Several respondents indicated that a major part of their fishing benefit from the hilsa fishery goes to middlemen (*aratdar* and *mohajon*) before reaching the consumer market (Photo 2.5). Though *aratdar* and *mohajon* provide multiple supports to fishers, but they also demand high interests from the loan. Excessive pressure to pay loan compels many marginal fishers to engage in illegal fishing during the ban period. *Aratdar* provides necessary resources to apprehended fishers to continue fishing during the ban season. For instance, if fishers get arrested, respective *aratdar* can provide legal support or protective security. In a similar fashion, the micro-credit loan from NGOs can also push fishers to resort to illegal fishing for repayment (Table 2.1).

Photo 2.5. A number of intermediaries in hilsa marketing channel disfavor fisher to get fair price.

3.3. Conflict between fishers and various institutions

Imposition of a fishing ban brings economic hardship to full time fishers who do not have other alternative occupations. The compensation (i.e., PES) that fishers receive from the government is of insufficient quantity requiring extra cash support for satisfying other essential costs for family such as children's education. Thus, the ban of hilsa fishing pushes marginal fishers into poverty. Moreover, not all fishers are included in the PES scheme. Key fishery players such as *aratdar* do not receive any compensation for their lost earnings from fishing business. Consequently, non-compliance of the ban season is rampant. Particularly, the majority of the fishers use destructive monofilament gill net (*current jal*) (Photo 2.6). When law enforcing agencies seize illegal fishing gears, fishers buy gears again by taking microcredit loans from NGOs or taking *dadon* from the middleman. Fishers also need to take out a loan to meet subsistence living costs. Thus, the majority of fishers became indebted. Other forms of punishment such as seizing hilsa catch, monetary fines and imprisonment also make fishers vulnerable to economic crises. However, all fishers do not experience the same degree of vulnerability. There are allegations that fishers give a bribe to some corrupt police for continuing fishing. Here, conservation initiatives would further suffer due to corruption.

3.4. Conflict among various agencies of GoB

Local government administration, *Union Parishad*[1], selects the beneficiary list of the PES program. Excluded fishers complain nepotism and corruption in preparation of the list. Due to connection with political power, a section of non-fishers are included in the beneficiary list, while many marginal fishers are left out. Some fishers argued that irregularities in the compensation scheme create social tension. Institution has an important role to play in conflict resolution too. The DoF takes different initiatives (such as PES and support for alternative livelihood option) to improve the livelihood of the hilsa fishing communities as

mentioned above which are implemented through Upzilla Fisheries Officer. However, there are complaints that some officers and staffs do not follow the instructions of high officials accurately. At a local level, during an illegal-fishing raid of the DoF, local government administration and law enforcers jointly conducted the operation. However, there are disputes in managing the raid. The DoF complains that it does not receive support from other two departments during emergency needs. Also, local government administration receives a bigger grant allocation than local DoF officials for ban season monitoring, but the activities of local DoF official allegedly require more budget than the former one. Some officials complain that checking illegal fishing is not successful since some police takes bribes and sends information to fishers before raid starts.

Photo 2.6. Widespread use of illegal monofilament gill net is blamed for destructive fishing in the sanctuaries.

Table 2.1. Conflicts and cooperation among different stakeholders in the hilsa fishery in Meghna River.

Stakeholder interaction	Conflict	Co-operation
Fisher-Fisher	• Competition for inclusion to Payment for Ecosystem Services (PES) • Unfair profit distribution or irregular payment between boat owner and crew • Competition for fishing space	• Daily supports as colleague and well-wisher • Instrumental supports (comfort, money and food) during crises period such as illness, disaster, or persecution for non-compliance
Fisher-Fish entrepreneur (*Aratder/Mohajan*)	• Debt bondage cause selling fish at lower price • Fishers sell fish to other buyers • Some fishers' delay to pay loan • Attach productive assets of fishers in case of default	• Provide dadon for buying and maintenance of fishing productive assets • Provide loan for buying daily necessities • Provide protective security from subjective insecurity
Fisher-Local Government Administration (*Union*	• Nepotism and corruption in PES beneficiary list antagonize deprived	• Prepare beneficiary list of Payment for Ecosystem Services

Parishad)	fishers	(PES) program • Distribute PES to fishers • Distribute emergency relief after any disaster • Responsible for maintenance of physical infrastructure
Fisher- NGOs	• High interest rate of microcredit • Fishers utilize microcredit to buy illegal gears such as monofilament gillnet	• Provide micro-credit, training and asset for alternative income generating activities • Campaign and advocacy for women empowerment
Fisher- Law enforcing agencies (Police, Coast guard)	• Allegation of bribery and harassment • Allegation of allowed illegal fishing	• Ensure safe fishing environment by preventing criminal gangs
Fisher- Department of Fisheries (DoF)	• Fishers opined DoF don't consider their opinions in developing fisheries management strategy • Less field visits of DoF officers makes alienation with fishers that hamper biodiversity conservation	• Co-ordinate and distribute PES among fishers • Awareness building campaign among fishers about hilsa conservation
Department of Fisheries- Law enforcing agencies	• Sometimes Department of Fisheries failed to prevent illegal fishing due to some corrupted law enforce personnel	• Department of Fisheries, Police and Local Government Administration work by collaborating each other for development of fisheries resource
Department of Fisheries- Local Government Administration	• Disagreement in decision making • Local Government Administration gets more allocated money than Upzilla Fisheries Officer (UFO), though UFO is the core office for the management	• Collaborate in the distribution of PES and drive operation to check illegal fishing

4. Reflections

Globally fishers' conflict is mainly related to harvest (Charles 1992) which is also evident in the hilsa fishery context, where multiple stakeholders have competing interests on a single species. Reportedly the production of hilsa increased after declaration of sanctuaries; however, fishers' socio-economic conditions deteriorated due to lost harvest during a ban season. A section of fishers, with support from local elite continues fishing during ban periods to maximize their benefits. Thus in hilsa sanctuaries, illegal fishing continues on and weak institutional capacity is unable to control the access of resources that ultimately hamper conservation and increase social tension (Dnes 1985). In absence of necessary supports from the state, fish entrepreneurs provide fishers protective security and buffer against economic crises. However, the entrepreneur's investment causes over-capitalization in the fishery which, coupled with their push for maximizing benefits, leads to over-exploitation and

dissipation of potential economic benefits (Gordon 1954). To maintain their daily income and to satisfy the need of entrepreneurs to make profits from fishing, hilsa fishers target whatever they get- juvenile or berried, using destructive fishing gears. Microcredit from NGOs could have been an alternative source of financial capital; however, it proved largely ineffective. Excessive pressure to repay microcredit often force fishers to do illegal fishing. Thus both *dadon* and microcredit entrapped fishers into an endless cycle of debt and non-compliance of fishery regulations.

The conflicting situation between socio-economic needs and conservation measures revealed inherent trade-offs between these the two goals in hilsa fishery. Hilsa conservation strategy emphasize on the protection of the species from recruitment and growth overfishing, which achieved some success at short-term socio-economic costs of fishers. However, the issues of fair distribution of benefits in fish chain as well as socio-economic considerations of dependent fishers have not been adequately addressed in management plans, which ultimately undermine the success of conservation through illegal fishing. Success of providing PES to the hilsa fishers in controlling illegal fishing is complicated, since many fishers still continue fishing even if they receive the incentives to not-to-fish during ban periods. Particularly, during the 8-month ban on netting of juvenile hilsa (*jatka*), the majority of the interviewed fishers defy the restrictions and catch indiscriminately by using destructive fishing gears such as monofilament gillnet. Hilsa fishers' goal to maximize present economic profits at any costs by compromising long term benefits creates further trade-offs. Since scientists postulated that harvesting young, pre-reproductive fish species will generally result in non-equivalency in fish population, which negatively affects provisioning service of the fisheries and the socio-economic status of the associated communities (Shelton et al. 2014).

In the above-mentioned context, policy makers facing challenges in balancing conflicting interests related livelihoods needs and hilsa conservation. Such a balance could be achieved by augmenting co-operative relationships that exist among different stakeholders in hilsa fishery. As the table 2.1 illustrated, a relationship between two stakeholders is not just always one-sided, but there are simultaneously cooperative aspects to any conflicting relationship. The GoB's supports for the incentive program and alternative occupations need to be in sufficient quantity and be made more inclusive and transparent for all hilsa fishers. It is clear that better cooperation between the government and other stakeholders (fishers, *aratder*, local government official, NGOs, etc.) is necessary for successful conflict management (Jentoft and McCay 1995). The GoB could build up partnership with NGOs for training and asset building for long term alternative income generating activities, which will reduce dependency on fisheries-related jobs. Further synergistic relationships between fishers and the authorities could be built in terms of sharing responsibility for enforcement of conservation regulations, selecting appropriate alternative income-generating activities, increasing women participation in alternative occupations, and enhancing awareness building campaign for more compliance of ban season. At present, hilsa fishers are rarely consulted with prior to any changes being made in fisheries regulations, which contribute to the high level of non-compliance with ensuing conflicts.

Given that conflicts and social tensions negatively affect the well-being of the hilsa fishers, fishery co-management could be an effective solution for building a synergistic

relationship among resources users and government which will ultimately lead to poverty reduction and fishery conservation. Across the world, fisheries co-management is considered as one of the most practical and effective solutions to reduce resource conflict levels and increase civil order (Charles 1992; Bennett et al. 2001; Pomeroy et al. 2007). For instance, Bennett et al. (2001, p. 374) argued that "It is likely that a close alliance between government and local stakeholders (e.g. co-management) is a pre-requisite for successful conflict management in tropical fisheries. Co-management facilitates increased communication and understanding among all concerned, at least in principle, thus can minimize social conflicts and maintain or improve social cohesion for synergistic relation (Pomeroy and Rivera-Guieb 2005). Co-management enables redistribution of power and responsibility in the fishery that could mitigate potential conflicts related to power relations and allocation of resource (Bennett et al. 2001). Participatory resource management by co-management has the aim of helping resources users to become resource managers who can manage the hilsa fishery in sustainable, equitable and efficient ways. Co-management will increase legitimacy of the fisheries governance which will lead to improved compliance of laws. In designing co-management plans for the hilsa fishery, the simultaneous conflict/cooperation that exists in different fishery stakeholders should be considered to make the hilsa co-management model more effective and compliant.

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Note

[1] Union is last and third lowest tier of local administration system. Upzilla is the second lowest tier, whereas district is the first tier of local administration system in Bangladesh.

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