

Institutional arrangements and fisheries management in Bangladesh

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Abstract

Malthusian assumption bore enormous influence on ecologists to use population growth as a key variable in resource analysis and management and attribute decline of the resource to population size. Recent analyses have renewed the challenge against the assumption arguing that institutional arrangements are the determining factor in resource exploitation. Various defined, the institutional arrangements comprise 'operational rule' or 'allocation' of property rights that determines the entry to a resource and the pattern of exploitation. The entry is subject to mutual agreement or relations of power and authority between competing interests. This paper takes this view to the open fisheries management in Bangladesh by revealing the pattern of capturing property rights. According to state rule, property rights should go to fishers' co-operatives but in practice they are captured by lessees. With the transfer, neither the state nor fishers retain any power over the lessees to limit the level of exploitation of the fisheries.

1. Introduction

Malthusian analysis was based on an assumption that there is a direct relationship between resource availability and population density. The assumption bore enormous influence on ecologists who used population growth as a key variable and concluded that any growth in population would result in the depletion of renewable natural resources (Hardin 1968). The argument supporting this tradition was that an increase in the number of people would inevitably result in an increase in the number of resource users and eventually lead to unrestricted exploitation. This unrestricted exploitation would exceed the 'carrying capacity' or the 'maximum sustainable yield.' One policy option favoured in this tradition was to regulate resource exploitation through private or state control.

Although this solution has been criticised, the current situation tends to re-emphasise that where there is strong population growth there is a general decline in resources. Admittedly rural natural resources or common pool resources (CPR) are in decline throughout the developing world (Jodha 1991; van de Laar: 4) where population growth has also been high. This reality reinforces the Malthusian view in current resource analysis and management.

In recent years, social scientists renewed the challenge against Malthusian view (Leach, Mearns, and Scoones 1997; Berkes and Farvar 1989; Feeny et al. 1990) from the perspective of human ecology. The common thread in this human ecological view is the diversity of relationships of resource users involving claims and conditions of access under which a resource is held. They shift the focus of analysis from resource availability in aggregate terms (eg fish catch per unit) to the pattern of resource use. Based on historical and empirical enquiries, proponents of this tradition contend that the access to resources is a matter of institutional arrangements in which people are in continuous flux to secure claims to the resource before being able to exploit it.

This article examines the relevance of this argument of human ecology in open fisheries in Bangladesh. Open fisheries is seasonal, available mostly during the monsoon and early dry

season. It is most commonly accessed by a wide range of households following different strategies to gain their livelihood. On the other hand, as in other types of CPRs, open fisheries in Bangladesh is characterised by decline and over-fishing (McGregor 1997; Minkin 1989: 2). This characterisation has an important implication in the management and policy decisions with a likelihood of imposing stricter regulation.

To set a stage, the discussion in the following section begins by drawing attention to relevant concepts defining institution and functions of institutions in CPR management in general and fisheries management in particular. Drawing on literature, it then continues with a discussion of the role and characteristics of prevailing institutional arrangements in open fisheries to show who fish in what arrangements.

2. Relationships, claims and rights in resource management

McKean (1997) commented that, ‘There wouldn’t be much fishing if the only people who ate fish were the ones who caught them.’ This simple remark, apparently concerned with market, cleverly crosscuts key problems of CPR management: how many users (excludability) should harvest how much (subtractability) in the interest of maintaining the production level of fisheries. Excludability and subtractability are two important characteristics of the CPR. Excludability refers to the control of access in which due to the fugitive nature of fisheries resources controlling access by potential users may be costly or impossible. Subtractability refers to the consequence that each user is capable of subtracting from the welfare of other users. (Feeny et al. 1990: 3).

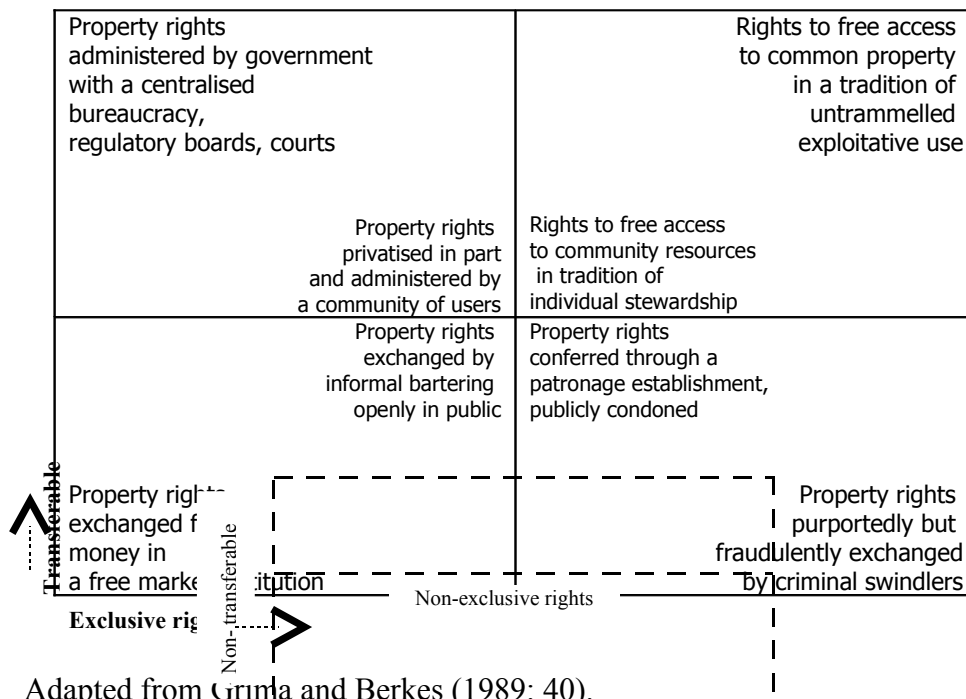
In his seminal CPR analysis framework Oakerson (1986) proposed to deal with this problem by diagnosing ‘operational rules.’ Operational rules serve to control use behaviour and strategies adopted by each individual fisher in a community. Basically, operational rules comprise the conditions of ‘entry’ and ‘exit’ agreed in collective choice and complied with by external compulsion. The conditions will vary between fisheries held or exploited under private property or common property arrangements. In private property arrangement individuals or owners are entirely free to decide for themselves. In community or CPR arrangements they participate in a process of collective choice that sets limit on individual use (p 47). Excludability and subtractability is therefore determined by ‘entry’ and ‘exit’ rules flowing from collective choice rather than by the number of people seeking entry.

The ability of users to participate in local collective choice may be constrained by legal or policy provisions. In extreme situations they may be inclined to seek extensive support from external decision-makers, such as fisheries officials, for legislation and enforcement of operational rule (ibid: 48). While the ability or availability of external support is a necessary condition, it is no guarantee to administering operational rules. Effective administration of operational rules generally hinges on ‘obstacles’ (or costs) and ‘inducements’ (or benefits) attached to the rules. If there is no cost involved, an operational rule turns into a free-riding strategy rendering a fishery over-exploited. In contrast, prudent inducements have potential to attract users to cooperate towards the long-term maintenance of the yield of the fishery. Oakerson explains these differences in behaviour and the underlying operational rules as the function of discrete institutions or organisations – a set of rules nested in collective and formal-legal decisions.

Grima and Berkes (1989) offer a different perspective on the comprehension of use behaviour or rights-to-use in which allocative instruments comprise a complex mix of institutional

arrangements. In explaining allocation they are only concerned with the mechanism of assigning rights-to-use of a fishery or transfer of property rights. However the institutional arrangements envisaged by them have much in common with Oakerson's framework but goes further to embrace government regulations, market process, norms and tradition and private transaction (see Figure 1). None of them stands alone or above others rather they mix-and-match according to the local socio-economic and political contexts. Market mechanisms work better in some circumstances, the argument goes, government regulations in others (pp 41-42). They judge effectiveness of an allocative instrument in defining property rights in terms of transferability and exclusivity. The more defined the property rights the more transferable and exclusive they are and vice versa. As shown in Figure 1, the allocative process in the four outside corners as opposed to those of inside corners offer easy transferability and exclusivity and therefore clear scope of controlling use behaviour. Allocative disorder in the form of unauthorised or over-fishing, they note, arises when the limits to access or property rights are under-specified or not enforced. The disorder leads to the fast degradation of the fishery if demands on it conflict with the maintenance of yield or with the interests other users (ibid: 41).

Figure 1 Allocating property rights to fishery: transferability and exclusivity



Adapted from Grima and Berkes (1989: 40).

Gibbs and Bromley (1989) also assert that institutional arrangements are key in the prevention of over-exploitation of a fishery (and other renewable resources). They argue that principal factors in resource conservation or depletion are how property rights are assigned and what incentives the assigned property rights create. While the first part of their argument support the concept of allocation of Grima and Berkes (1989), the second part is in agreement with the concept of 'inducements' and 'obstacles' in operational rules propounded by Oakerson (1986). However, they do not offer any precise concept to analyse or comprehend the process of property rights transfer or associated incentives. They view the institutional arrangements in more general terms as rules and conventions 'that societies establish to define their members' relationships to resources, translate interests in resources into claims, and claims into property rights' (ibid: 22). Whatever the rules and relationships, they go on to

argue, an analysis of them under the blanket of institutional arrangements reveals who control the resource (p 23).

Relating institutional arrangement to control concur with the fact that institutions do not always serve collective good, as is claimed in the functionalist approach. They actually reproduce unequal relationships of power and authority or marginalize the concerns of particular groups. This is supported in the argument of Kremer (1994: 3) in the context of Bangladesh that institutional or socio-economic asymmetry (relative to ecological asymmetry) is key to understanding how fisheries is managed and regulated.

This argument is contrary to the functionalist approach to institution, which regards institution as a set of norms integrated around a major societal function – whether roles of the member of a society conform to the sets of norms governing social structures and functions. In this tradition if any institution ‘contributes to the maintenance of a larger whole’ then it plays a positive function and is considered ‘necessarily desirable’ (Cosser 1996: 237). Current resource management discourse strongly opposes this notion of desirability from the perspective of socio-economic and political inequality among individuals competing for accessing a resource. Leach and colleagues (1997: 11) point out that such desirability is value-laden and evolves from ‘regularized patterns of behaviour that emerge...from underlying structures or sets of rules in use.’ The rules in use are not just formally stated procedures and mechanisms but also include people’s practice around stated procedures. The practice can go far beyond a legal or policy provision and is performed according to the convenience or advantage of a powerful group in a society. In the context of land-based property rights, Rahman and Schendel (1997: 46) explain this deviation in ‘legal peripheralism’ as opposed to ‘legal centralism.’ Legal centralism assumes that the prescriptions contained in laws or policies are reflected with influence in the ‘real world,’ whereas large segments of social life are well beyond the reach of law and governed by ‘living law’ or the norms of actual life.

Leach and colleagues (1997), in their framework for analysing institutional dynamics, argue that institutions or rules in use play a mediating role in establishing command (or property rights) over renewable resources. They look at command over resources with the concept of ‘endowment’ and ‘entitlement.’ The former refers to rights and resources people have in principle and the later to what they actually get in practice (p 18), both of which are sanctioned by or gained through a range of formal and informal institutions of different scale. Formal institutions (eg rules of the state) are enforced by external agencies whereas informal institutions (eg customary rights or patronage) are upheld by mutual agreement among people involved, or ‘by relations of power and authority between them.’ Thus their notion of institutional arrangements bear similarity with Oakerson’s (1986) and, Grima and Bromley’s (1989) but is deeply entrenched in the notion of power asymmetry. They maintain that resource claims are often contested, and within existing relations some people’s claims are likely to prevail over those of others and that some people may not be able to mobilise some endowments (eg capital, fishing gear) that are necessary to make effective use of others. Drawing on new institutional economics and case study experiences they reject the view of linear relationship between population and resource availability and relate resource depletion to transaction cost – the cost of establishing and maintaining property rights. They found that excludability and subtractability in renewable resources were managed efficiently by institutional arrangements that gave due consideration to relative costs and benefits. High transaction cost led to high levels of commercial exploitation and subsequent depletion. They

suggest that in this situation encountering resource depletion would require some types of institutional arrangements with lower transaction costs (ibid: 25).

A similar view is found in the currently popular sustainable rural livelihood (SRL) framework. Institution in this framework is defined as 'process' and regarded as critical in granting or denying access to resources (Carney 1998: 8-9). It is principally concerned with how people own natural resources and convert them in combination with other types of resources for maintaining and enhancing livelihood options without undermining the natural resource base.

The concepts discussed above perhaps pose more challenge than offer an easy path to discover relevant institutions and their linkages to renewable resource management. Empirical enquires may vary but following generic questions should enable to comprehend wider contexts, relationships and rights in fisheries: How different people gain property rights and control over fisheries? How they set down rules of use?

3. Gaining rights and granting access in Bangladesh fisheries

Answers to these questions in open fisheries in Bangladesh have to be sought in a complex mix of public, private and common property regimes (cf Figure 1). Open fishers (*beel* and *haor*¹ mainly) are owned by the state, allow common access in the monsoon when they turn into a vast single pool and, become subject to private (or group) control in the winter when they reduce to smaller depressions. The cyclical rise and fall of flood waters have a link to the scarcity and abundance of fish and thus determine the seasonal rate of exploitation and fishing opportunities for different groups of people.

As open fisheries are owned by the state, gaining rights to them involves negotiation with the state in various forms. Major negotiation takes place in the form of leasing fisheries periodically by the state to fishers' co-operatives (MSS). For the convenience of negotiation, the state regards the MSS as the representative of fishers or *jeles*² and an outlet to transfer property rights of fisheries to *jeles* for their well-being (Ahmed 1991: 16; Toufique 1997: 459). The state earns revenue from leasing but in policy statement subsumes the revenue earning to the objective of contributing to the well-being of the *jeles*. Changes made in the leasing process – from open to preferential bidding to the MSS – are also attempt to emphasise the well-being of the *jeles*.

The change in the negotiation was not accompanied by a reduction in the amount of lease fees charged. On the contrary, the fees increase every time a transfer takes place disregarding the productivity of a fishery. Lease fees are set in auction at 10-25 per cent above the average annual revenue of the last three years or of previous year, whichever is higher (Nabi 1998: 27). No explicit justification is given as to why lease value should increase every year only that such increases reflect the general price inflation. The outcome is that lease fees are unlikely to reflect the true productivity of the waterbody.

3.1 Competing interests and asymmetrical power: the State, the jeles and the ijaradars

¹ Rivers recently have been declared as open-access fishery and therefore currently exist under no management or lease.

² An occupational identity construed with social exclusionary meaning (see Nabi 1998: 29-30).

The assumption that leasing to the MSS allocates property rights to *jeles* is questioned in literature as well as in management options. Sufficient evidence exists to suggest that the MSSs are controlled by socially and financially powerful individuals known as *ijaradars* (lessee). The *ijaradars* are allowed by the *jeles* to use their names or their MSSs to secure, however small, an access to the fisheries (FAP 17 1994a: ii). Having won the property rights, the *ijaradars* distribute fishing access of leased fisheries on payment of fee based on gear efficiency. An *ijaradar* would allow entry of as many *jeles* as possible as long as he receives an entry fee. In many locations, the *ijaradars* were found to be a stable group whose power base was sufficiently entrenched to exclude *jeles* from free-fishing (Toufiq 1997; Ullah 1995). Neither the state nor the MSS or the community has any influence over the 'entry rules' set by the *ijaradars*.

An *ijaradar* also uses his socio-political power to prevent new competitors from participating in the leasing arrangement. Because, leasing a fishery requires the payment of a lump sum (lease fees) but transaction cost required to retain control of it is no less important. The lower the transaction cost the lower the cost of retaining control of a fishery and in turn the higher the return on investment in the lease. Raising lease fee is a general problem for the *jeles* (an indicator of insolvency) but meeting transaction cost is far more difficult (an indicator of powerlessness). An *ijaradar* is an investor and therefore has no problem in raising lease fees. He is also able to lower transaction costs through his relationships with the existing power structure in the villages around a leased fishery. Through this relationship he also obtains favour from the local state bureaucracy which feels reassured that transferring property rights of the fishery to this person will not result in default in the payment of lease money (FAP 17 1994a; Ullah 1985: 213).

The asymmetry in socio-political as well as in financial power is also a source for *ijaradars* to draw support from the *jeles*. The *jeles* (or their MSSs) extend their support to *ijaradars* as a strategy to gain fishing access to the fisheries in which they would lose to the *ijaradars*. They understand that the *ijaradars* will reward them by granting access if he secures the lease. The access may be gained individually or in the form of sub-lease of the part or the whole of a fishery (Nabi 1997: 36). Despite the fact that neither of the arrangements is allowed in the stated procedure, the local bureaucracy overlooks it as long as the lease fee is paid. The *jeles* are compelled to submit to social and financial power of the *ijaradars*. Although they cede a portion of their incomes to the *ijaradars* for fishing access, they regard their supported *ijaradars* as protectors of their fishing livelihoods (Kremar 1994: 11). In these circumstances, *jeles* in general see the wealth and influence of the *ijaradars* as an advantage rather than an obstruction to their access to the fishery.

The scale of fishing or harvesting pattern in many fisheries tends to influence the relationship between *jeles* and *ijaradars* and thereby the arrangements for granting fishing access. Major fishing in some *beels* and *haors* in the north-east (as well as in rivers) require large gear, which an individual *jela* cannot afford to buy. For this type of fishing, small and temporary groups are formed to obtain access to certain fishing grounds. These groups are organised along kinship relations and factional loyalty (Khan 1989: 98; Ullah 1985: 213). Leaders of these types of groups own the fishing assets and members are in agreement with him to offer their skill and labour in exchange for an agreed proportion of catch. Following this agreement within the group, negotiation takes place between the group leader and an *ijaradar*. If an *ijaradar* decides to harvest on his own he hires *jeles*, preferably close kin, as fishing labourers on a catch-share basis (FAP 17 1994b).

Although *ijaradari* was found to be a hereditary occupation (Toufique 1997), it is not free from uncertainty as a lease is obtained through a series of negotiation and competition. *Ijaradars* maintain their stability in this business by competing for more than one fishery, sometimes across districts (FAP 17 1994b; Nabi 1997: 16-17). An *ijaradar* competes for more than one fishery with no expectation that he will be able to capture property rights of all of them. If he fails in a certain fishery in a certain year, he still retains influence in the local bureaucracy and among the *jeles* through their involvement in local politics.

Around a fishery there are more than one MSS whom different *ijaradars* try to bring under their influence. Failing to do that *ijaradars* create 'paper MSS' and bring individual *jeles* under their influence. The competing interests of the *ijaradars* divide the *jele* into different groups and thus the MSSs become factions under the influence of different *ijaradars*. On the other hand, the frequent changes of officials bring in new faces in the local bureaucracy making new set of relationships possible. The dynamics in social and bureaucratic relations give rise to severe competition for capturing a lease. This makes leasing a subject of constant conflict and litigation. In this circumstance those who can influence the bureaucracy in winning the litigation, establish property rights to a fishery.

However, it also happens that the *jeles* and their MSSs capture fisheries and distribute fishing access among them. But lacking capital and power they go for less productive fisheries leaving the more productive ones to the *ijaradars* (Toufique 1997). Exceptionally, they may hold control of a fishery with the favour of a generous fisheries official. This favour of the fisheries official cannot minimise the influence of *ijaradars* or existing social power that favour the wealthy and powerful rather than the socially marginalised *jeles*. As a result, entry and exploitation rules set by the MSSs face constant threat from loosing *ijaradars* and their agents.

3.2 Infringed access of other users

As the non-*jeles* (people other than *jeles*) do not compete for lease of fisheries, their access to fishing depends on customary rights. Those who fish in peripheral waters are not strictly controlled but those who fish regularly even in the periphery are subject to entry rules set by the *ijaradars* (Nabi 1998: 37). This pattern of control demonstrates inter-fishery and inter-region variations. A study in the *haors* in the north-east revealed that the non-*jeles* who fished regularly were completely excluded from the key fisheries, whereas in the *beels* in the south-west there was less control by the *ijaradars* where most non-*jeles* fished widely in most fishing grounds. (FAP 17 1994a: 23).

Fishing in the flooded land – seasonally submerged private land – has been free because it is costly for landowners to control fishing in the waters over their lands. In recent times, landowners made increased attempt to contravene this open access and privatise the productive parts of the flooded lands. This infringement on the traditional rights by the landowners has also encouraged the *ijaradars* to extend their control beyond the limit of the leased waters. Thus the last vestige of open access in the fisheries has been brought under stringent control (Nabi 1998: 38). It is reported that the non-*jeles* paid bribes to the *ijaradars'* guards in order to access the floodplains for fishing even during the monsoon.

4 Conclusion

Accessing open fisheries in Bangladesh follows a complex pattern. The pattern varies in fisheries and regions and is regulated by a range of state rules and social practices. Generally,

property rights are captured by *ijaradars* who then allow fishing access to the *jeles*. This practice is a deviation from leasing as a procedure which reserves priority of *jeles* organised into MSSs. The foregoing discussion suggests that being excluded from the leasing competition no *jeles* enjoyed unrestricted access to a fishery.

The rate of exploitation of a fishery is decided by an *ijaradar* albeit periodically. For him the prime inducement in deciding the rate of entry or exploitation is return on his investment. He seeks maximum aggregate fees by allowing entry of as many *jeles* as possible. Given the condition, had there been no or few people seeking entry, the *ijaradars* would have used an intricate technology to obtain maximum return. This contradicts the Malthusian view that the level of exploitation is positively correlated with the size of population. As our discussion shows, the rules of the *ijaradars* care little about limiting subtractability and maintaining fish stock. With individual entry, *jeles* on the other hand are more concerned with individual catch than with the flow in the stock.

Thus if any production ‘decline’ or ‘over-fishing’ occurs in open fisheries in Bangladesh, this should be attributed to the combined effect of the leasing arrangement of the state and fishing access distribution of the *ijaradars*. The number of *jeles* (or non-*jeles*) seeking entry did not appear to influence the arrangements. Entry or exit in leased fisheries is not a collective choice but a decision of the *ijaradars* drawing on their ability to meet leasing cost and transaction cost.

The existing allocative arrangements discount the power of the state to enforce a limit to entry or subtractability. With the transfer of property rights, the state loses its influence relating to management of waterbodies. Importance attached to this arrangement is the collection of revenue and the local bureaucracy would care little about harvesting pattern once the stipulated amount of revenue is paid.

As we saw, contrary to the solution of Malthusian ecologists, neither state (leasing) nor private (*ijaradar*) control can deal effectively with the problem of excludability and subtractability. Exclusive rights giving to *jeles* is also not a solution as long as the question of power asymmetry is not addressed. Optimistically, an appraisal of local situation would offer to assess how the question could be addressed. This approach is being increasingly adopted in current management experiments in open fisheries in Bangladesh.

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