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Management Regimes and Institutional Arrangement in Floodplain Wetlands Fisheries of Assam: An Evaluation

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ABSTRACT

Assam is endowed with copious aquatic wealth in the form of beels, swamps, ponds and rivers. The floodplain wetlands (beels) extending over one lakh hectare, constitute the most important fishery resource of the state. The floodplain wetlands are used as multiple use and multiple user system. These wetlands are the common property resource and under different management regimes. Multiple institutions play its role through ownership and control over the fisheries of wetlands. A large number of stakeholders are associated directly and indirectly with the beel, these include fishers, lessees, various state government departments, AFDC, financial institutions, research institutes, NGO's etc. These wetlands are under various management regimes, i.e., private management (individuals and groups), fishermen cooperative management, Community-based fisheries management (decentralized management, Government works as facilitator) and open access. An attempt has been made through this communication to describe management regimes and institutional arrangement in the frame work of stakeholders' mechanism of access to utilize the floodplain wetland resources for outcomes (positive or negative).

India is bestowed with a wealth of wetlands due to wide variation of climatic and topographical features. Wetlands are amongst the most productive life support systems in the world and are of immense socio-economic importance by providing food, fodder, fuel and water for domestic, irrigation and industrial purposes. A large population living in and around these wetlands depends on them for their sustenance. The state of Assam is endowed with copious aquatic wealth in the form of wetlands, swamps, ponds and rivers. With the total area of nearly 3.89 lakh ha, the total fisheries resources of Assam is highest in the country. The floodplain wetlands (locally known as beel) extending over one lakh hectare, constitute the most important fishery resource of the state. There are about 1392 listed floodplain wetlands in Assam of which 423 are registered and remaining 969 are unregistered and under the control of both government (505) and private ownership (464). The beels are considered to be one of the most productive ecosystems owing to their characteristic interactions between land and water system. The floodplain wetlands, the prime fishery resources in Assam, are highly productive ecosystems (Dey, 1981; Choudhury, 1998; CIFRI 2000).

The floodplain wetlands are used as multiple use and multiple user system. These wetlands are the common property resource and under different management regimes. A large number of stakeholders participate in the beels both within fisheries and across other sectors like forestry, animal husbandry, agriculture, flood control etc. (Sugunan and Sinha 2001, Ramsar Convention Secretariat 2004). The different set of stakeholders constitutes a diverse set of interests, goals and priorities for the fisheries. Livelihood of fishers' family from time immemorial is dependent upon fishing in floodplain wetlands. These wetlands are under various management regimes, i.e., private management, fishers cooperative management, Community-based fisheries management and open access. The adoption of conservation measures and sustainable production practices are embedded in Assam fishery rules 1953 (with amendments in 2005), which controls the beel fishery.

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This communication describes management regimes and institutional arrangement in the frame work of stakeholders' mechanism of access to utilize the floodplain wetland resources for outcomes (positive or negative). The objectives of this study are to review the institutional arrangement, identify the major issues, challenges, concerns and choices for sustainable management of fisheries.

METHODOLOGY

The paper is based on the data collected from the floodplain wetland located in various parts of Assam during the period 2004 to 2008 under various projects through Participatory rural appraisal (PRA) techniques, formal and informal discussions with the fishermen, lessees, village elders, local heads and various other stakeholders; formal and informal communications with the state governments. The framework of this evaluation study is based on the access to fishing in floodplain wetlands, formation of the ownership and control rights, domains of management in wetlands and role of institutions as controlling agencies in allocation of the fishing rights. The challenges, concerns and choices for sustainable management of fisheries were assessed.

RESULTS AND DISCUSSION

A fishery system is a plexus of subsystems. It is also a part of broader natural and human system and is affected by the environment, economy and society within which it exists. At wetland level fisheries may be described at several axes:

- Resource scale: small wetland to large size wetlands
- Fish scale: small local stock to exotic fish stock
- Fishery scale: small boat with small gear to motorized boats and gill nets
- Administrative scale: local, district and state level, small and large fisheries agencies, field level staff, cooperative etc.

Property rights regime in wetland

The public trust doctrine allows government to lease, grant, and sell public resources as long as it does not unduly harm public interests. Privatizing fisheries means assigning rights (property, use) to individuals, groups, cooperative, or communities. Property is composed of a bundle of rights (access, withdrawal, exclusion) that can be allocated to users.

In the past, an individual fisherman held only one exclusive right: the right to own the fish he caught. Other rights were held in common. As fish became scarce and competition and conflict increased, the need to regulate prompted rules such as gear restriction or closed fishing season. As it became clear that regulatory techniques were not effective, the idea of restricting access to the fishery was introduced. There are a number of ways to restrict access, including limited entry (licensing), effort rights, and harvest quotas. However, these are limited rights, defined in law, whose ultimate ownership remains with the public. Group ownership of fishing rights by communities, cooperatives, or corporations is also possible (Petruny-Parker et. al. 2004).

Establishing property rights to fisheries creates stable expectations among users and managers. It provides owners with an incentive for long-term sustainability. The government retains the responsibility to conserve fishery resources for the public, who is involved through the management process.

Wetlands are common property resources. The property rights are the fundamental institutions of allocation and access. These are wide and vary from the highly controlled exclusive private properties to open access beels with almost no control. Various factors like size of the beel, traditional and customary rights, physiographic dimensions, accessibility and river connection etc. are the determining variables for the nature of property rights. The wetlands are managed for various objectives like economic benefit, livelihood security, sustainability, equity, conservation of biodiversity, maintenance of the ecosystem etc.

In most of the wetlands, customary rights of the tribal and other indigenous ethnic groups are safeguarded legally (Phukan 2006). These rights are for species, gears and purpose specific. The use of small gears and other small nets are free from any control. These rights are limited for self consumption only. The marginal areas of wetlands are become open after the harvesting season and women fishers usually fish in these areas. The access to the fisheries is predominantly governed by the lease holders but the traditional rights of access are also been integrated in the property rights. Generally fishing to the large fishes are determined by the lease holders where as small fishes are mostly open or regulated access to the specific group of the fishers.

Stakeholder in Floodplain wetlands of Assam

There are a large number of stakeholders which are associated, directly or indirectly with beels. These Stakeholders may include:

- Local user communities - those people who live in the vicinity and directly use the resources, and who, are partly in a subsistence relationship with the resources and partly in a market relationship i.e. the fishers, lessees;
- Local communities having an indirect interest in the management of the resource; for example, local communities which rely on some function of the wetland, but do not directly use the resources e.g. villagers in adjoining villages and areas.;
- Remote user communities who come from a distance to use the resources and who may be in competition with the local users (or may have a long-standing arrangement with the local community), or may use a different component of the resources i.e. share fishers and labourers;
- Commercial direct users of wetland resources (individuals, groups) who have a purely commercial relationship with the resources i.e. lessees, middleman and fish traders;
- Suppliers and marketers associated with wetland resource users can be a diverse group, including middlemen for wetland products, suppliers of inputs such as fuel and equipment, providers of credit, etc.
- Government agencies with responsibility for management of some aspect of wetland resources. This might include a range of agencies with sectoral responsibilities for different resources, for example, Department of fisheries, Assam Fisheries Development Corporation, Revenue Department, Panchayat, Department of Forest etc.;
- Research Organization,
- NGOs
- End consumers of wetland products.

Each of the stakeholders operates at different level of management. Therefore, a number of management domains exist with different components and output (Table 1). Thus, interventions in the management process which focus solely on a particular user community, or even on a user community and the relevant government agency, are often undermined by parts of the wider community that have not been included in project design considerations. Among different stakeholders the fishers constitute the most important stakeholders as the life and livelihoods of them are dependent on the resources.

Table 1: Management Domains in Floodplain Wetlands of Assam

Sl.No.	Domains of Analysis	Components	Outcomes
1.	Natural Process	• Nutrient assemblage • Auto stocking • Connectivity to River • Biodiversity • Flooding	▪ Productivity potential ▪ Technological and Management options ▪ Production possibilities ▪ In-situ conservation ▪ Sustaining assemblage and ecosystem
2.	Human Intervention	• Management • Fishing practices • Efforts • Weed control • Bunds and spillways • Katal or Zeng	▪ Sustainable production ▪ Productivity enhancement ▪ Resource use
3.	Agencies of Intervention	• Individuals • Formal & informal groups • Community • Govt. Departments • Traders & Commission agents • Scientific organization • Financial institutions	▪ Efficient resource use ▪ Increased participation ▪ Employment ▪ Livelihood security ▪ Fishing ban & holidays ▪ Credit availability ▪ Technology improvement ▪ Improved resource monitoring

4.	Institutions	• Social Interaction & process • Property relationship • Social Institutions • Market agencies	■ Rules and Norms ■ Negotiated understanding ■ Conflict resolution ■ Increased participation ■ Access to resources ■ Community involvement ■ Information sharing and exchange ■ Capacity utilisation
5.	Policies	• Leasing policy • Infrastructure development • Control of effort • Resource Conservation • Institution Building • Security mechanism	■ Resource allocation, user right ■ Sustainability ■ Long term welfare ■ Input support ■ Improve decision making ■ Protect endangered species ■ Participative and precautionary measures ■ Improved enforcements ■ Awareness ■ Biodiversity conservation

Institutional Arrangement

The floodplain wetlands in Assam can be categorized on the basis of ownership in two categories Government fisheries and Private fisheries. The ownership of floodplain wetlands comes under the different government departments viz. Department of fisheries, Revenue department, Department of forest, Assam fisheries Development Corporation (AFDC), Gram Panchayats etc. (Figure 1). The formation and the transfer of fishing rights are determined through either tendering methods or direct transfer based on the criteria by different departments of governments. The purpose of ownership and control rights of government

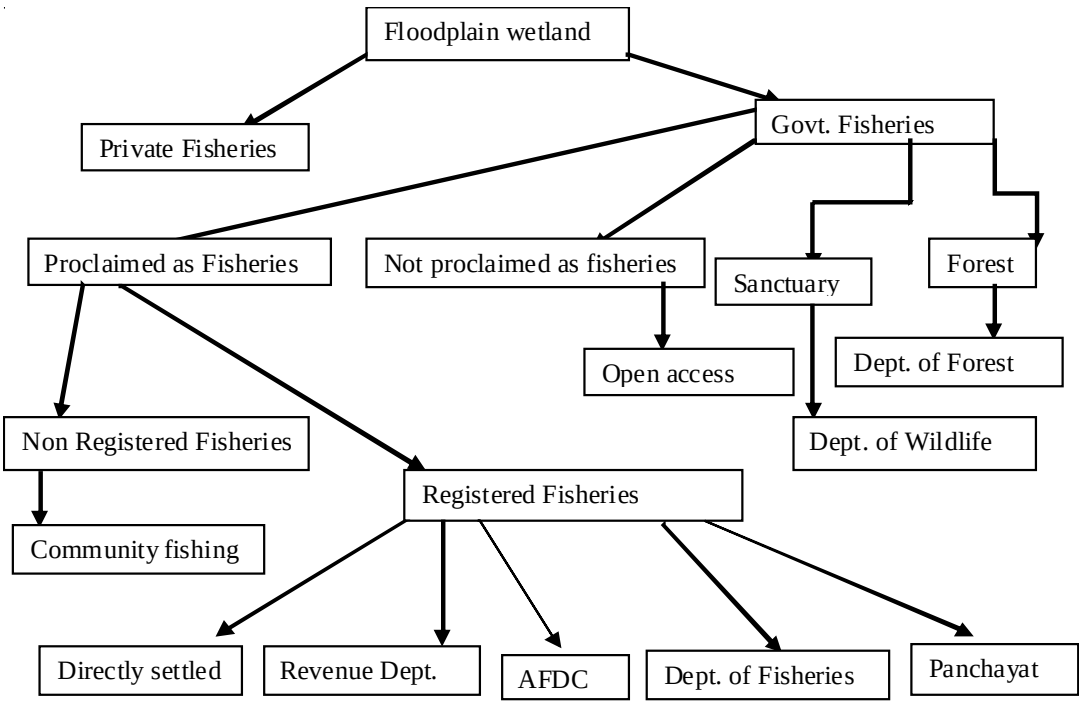

Table 2: Formation of the ownership and control rights

Sl. No.	Controlling Agencies	Purpose
1.	Dept. of Revenue	Collection of revenue, utilization of resources by fishing population
2.	Dept. of Fisheries	Collection of revenue. utilization of resources by fishing population, community based fisheries management
3.	AFDC	Development of Fisheries, Better utilization of resources by fishing population
4.	Dept. of Forest	Conservation of resources
5.	Dept. of wild life	Protection of wildlife and conservation of resources
6	Panchayats	Revenue collection, utilization of resources by fishing population

departments is to better utilize the resources for fishing population, conservation of resources, revenue collection (Table 2).

The management rights of registered beels were given on lease to the highest bidder (either individual or Fishermen Cooperative society).The lease of the registered wetland is given only to fishermen. The term fisherman in Assam include the persons belonging to the schedule castes, community (Maimal community in Barak Valley) and defined vide government circular number RGF/62/57/ 103, dated 15th February 1960 and subsequent amendments thereafter and engage themselves in any of the following profession:

i. that the persons undertake fishing by themselves in a fishing group

ii. that the persons directly undertake fish trade such as marketing of fresh fishes, preserved fishes, other preserved fishes, fishing implements etc.

iii. members of the fishermen cooperative societies undertaking fishing or fish trade etc. as in (ii) above.

The system followed by different government departments for limiting access of fisheries in wetlands is as given below:

1. Revenue Department: Open tender system price fixed on the basis of produce in one year till January 31st.
2. Government (Fisheries): by state government without tender system
3. Director of Fisheries: tender to highest bidder to fishermen community or fishermen Cooperative
4. AFDC: leasing by tenders to fishermen community or fishermen Cooperative
5. Panchayat : Direct transfer or limited tenders to the villagers or individuals
6. Department of Environment and Forest: Permit and license; in sanctuary and national park the wetlands are not given on lease and fishing is only restricted for locals for their sustenance.

Management Regimes of Floodplain Wetlands

Based on the property rights and access the management regimes of the floodplain wetlands of Assam can be categorized into four types i.e. Private management (individuals and groups), Fishers' cooperative management, Community-based fisheries management (decentralized management, Government works as facilitator) and Open access with no management.

Private Management

Private management relates with the management of beels *de facto* by lessee. The lease period which was earlier one to five years has been amended to seven years for providing incentives to lessee for adopting stock enhancement measures. The management of beel including the fishing operation is done by the lessee according to his choice subject to the restriction that (a) no wetland should be drained dry by the lessee, who shall be required to leave sufficient water for the protection of fish fry and drinking water purpose of the cattle (b) the lessee must keep the fisheries (beel) clear of water hyacinth and other aquatic weeds (c) fishing by more than 25 persons at a time for their own consumptions, even on payment of the lessees is prohibited in as much as it is highly detrimental to the interest of both the lessees and the government.

The beel fisheries management including stock

enhancement measures, weed management, fishing in the beel is done by the lessee. Access of other fishermen operates in the beel on paying some amount to the lessee or coming under the sharing arrangement, where a share of the fish catch is taken by the lessee as fee.

Cooperative Management

Under Assam Fisheries Act, the lease of the fisheries in wetlands on priority should be given to the fishermen or fishermen cooperative societies. In Cooperative management of floodplain wetlands, the management of fisheries operations is done by the members of the cooperative society as per the rules prescribed by the society. Here the access of property is governed by the membership of the cooperative society. Two types sharing arrangement of cooperative society and individual members are prevalent. In some societies, the fish catch is pooled together and sold in the market and a part of income shared among the members of the communities. In other societies, fishers give twenty five percent of their catch to the society as share of revenue.

Community Based Fisheries Management

In Assam, floodplain wetland fisheries following the history of traditional management and lessee based management approaches, there is currently much interest among government agencies and NGOs in community based and Co- management approaches which involves local communities in beel management and conservation. Government of Assam under AACP has initiated community based fisheries management in several beels of Assam under the aegis of Department of fisheries. These beels have now been put under the administrative control of fisheries department from the revenue department. In these wetland, beel development committee has been formed with the membership of fishermen and women of adjoining village. The Beel Development Committee is a group of 20-500 individuals living in the adjacent village of a floodplain wetland coming together for effective utilization of the natural fisheries resources, better price of the produce and more market power for enhancement of livelihood in a sustainable manner by the landless, small and marginal beel users. The number of individual of BDC is depending upon the size of the beel and number of surrounding village. The beel development committee then selects their executive committee for day to day operation of beel fisheries. The fisheries department works as a facilitator in community based fisheries management.

Open Access

Most of the unregistered beel are open access in nature means there is no control of access. But in fact the access of these beels is also based on local rights i.e the fisherman operating in these beels must be from the adjoining locality or same community or tribes etc. Only capture fisheries are practiced in these beels based on the automatic recruitment during the flood period. In some open access beel even separate *katal* has been erected by all the families living in the vicinity of that beel.

Challenges, Concerns and Choices for sustainable fisheries management in Wetlands

Management faces some fundamental choices, and questions. Moving from a sectoral to an integrated approach implies balancing alternatives. All the challenges faced by wetland fisheries in turn raise the concerns of ecosystem health, social justice, livelihoods and employment, and food security and safety (Table 3). Changes in livelihood outcome resulting from specific mechanism of access may result in increased access to existing resources, access to new resources and the establishment of new mechanism, for example through the application of new technologies (Franks and Cleaver 2007).

Table 3: Challenges Concern and Choices for Wetland Fisheries

Situation and trends	Challenges	Concerns	Choices
Overexploitation of fisheries resources-catch per unit effort increasing	Exploited ecosystem-no consensus of restoring it	Managing the ecosystem health	Short term versus long term fisheries
Increasing in the number of people employed in fishing	Exploiting market while protecting interest of fishers and consumers	Livelihood security of the fisher community	Small scale versus large scale operation
Other use of wetlands (other than fisheries)	Balancing profit and cost to society	Social justice through providing more option to fishers	Fisheries versus ecotourism
Involvement of a large number of middle man	Sustainable fisheries		Community based versus individual based fisheries

A full recognition of the complex nature of fishery systems must led to the recognition that fisheries issues, like other large- scale environmental and societal issues, are not merely ecological and scientific, but also social, economic, institutional, and political requiring strong processes that necessary involve societal values and issues of social justice and equity (Garcia and Charles 2007).

CONCLUSION

Floodplain wetlands in Assam are dynamic resources where a large numbers of stakeholders operate for gaining access and livelihood. Understanding various stakeholders and their level of involvement in the management is important for bringing them into effective governance. The inclusion of the entire actor group and the presence of active linkages within and among them will strengthen governability. An understanding of management regimes and institutional arrangement in beels will lead to a deeper understanding of how the riparian society orders its affair in relation to one of the key natural resources and citizen. Beel fisheries as one of the multiple use and multiple- users systems operate in an environment of multiple and conflicting objectives. The real objective is governed by the institutional arrangement and management regimes which decide the priorities of the resource use.

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