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**Coastal Resource Degradation and
User-right Abuse in Bangladesh**

*An Overview of the Challenges towards
User-based Community Management*

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Abstract

Weak human rights, social injustice, inequity, and lack of freedom of expression and rights of association are of high consideration in the majority of the world's poor countries. The impact of these deprivations is more evident in the everyday life of the coastal indigenous peoples and backward classes in Bangladesh. Industrial effluents and urban sewage, along with aquaculture, especially shrimp culture, are the main causes of coastal resource degradation here. Industrialists from outside introduced shrimp culture for commercial benefit, without considering the environmental degradation and the rights of the indigenous people. The State does not recognize their rights; it even strictly restricts access to the resources. Private parties and the State own property rights, and class conflicts directly threaten the coastal people and fishers of Bangladesh.

The right to access is not sufficient for the sustainable use and development of the resource. Creating awareness about respecting and protecting the environment is an important aim. Equally important is empowerment through training and education about the fundamental right to participate in decisions and activities that directly affect lives and livelihoods. User rights will safeguard users' interest, while respect for the environment is the key for resource protection. To achieve both these goals, assistance should be provided to users under the concept of user-based rights to the community, with a guarantee of employment and minimum requirements leading to sustainable development.

Towards this end, nation States should undertake (i) immediate and effective measures to stop human oppression and resource degradation; and (ii) initiatives to restore the coastal resources involving all sectors: local government bodies, civil societies, especially NGOs. In addition, a comprehensive study needs to be done by a body of international experts to formulate an effective model for coastal resource management.

1. Introduction

Do we admit to the belief in universal brotherhood, i.e. that everyone on this earth is our brother or sister, and they are equal in the eye of justice and equity, irrespective of colour, religion, caste, community, profession and birth, and that we are responsible and committed to ensure these? As inhabitants of planet earth, with diverse characteristics of formation and location, we are like brethren or fellow citizens in a commune¹.

In all likelihood, the user concept came into practice with the introduction of agrarian civilization about 12,000 to 15,000 years ago. Men cut the jungles, made the rugged lands plain and sowed seeds. They did it to meet their basic and only need of food. Thus they acquired the right of use resource for their livelihood, a primary and fundamental right. The question of “common” is very much related to the user right because at that time men lived in a community and used resources commonly.

The concept of property is based on user right, and this right of use and possession is considered the property right. In the old days, this right was enjoyed commonly, hence it was a common property right. In the course of time, men adapted to their diverse livelihoods in different ways and means in relation to the food available and other natural resources through natural selection. Thus, the tillers settled in agricultural land, hill dwellers in hills and mountains, woodsmen in the jungles, fishers by water bodies, and so on. In this paper, I would like to dwell on the fisher community and their right to the resource in areas where they were born and brought up.

Fishers are of two broad categories, following the two basic types of fishery resources: fresh water and marine. They differ greatly in living styles, fishing practices, food habits, resource use, and so on. They experience the same property right abuse and resource degradation that lead to poverty and environmental damage as the outcome of unplanned overexploitation of fish resources by non-locals and industrialists.

2. Marine Resource Profile of Bangladesh

Bangladesh is a country with a small territory of 14 million hectares (mn ha), where the cultivable land area is only 9 mn ha. But it is blessed by 3 mn ha of coastal area, of which 1 mn ha is specially characterized by rich and diverse fauna and flora. The coastal area starts from the Indian border in the west and extends some 480 km up to the Burma (Myanmar) border in the southeast and the Bay of Bengal in the south. It includes the numerous low-lying islands and vast mangrove swamps (the Sundarbans) in the southern part of the Ganges-Brahmaputra delta, the similar but much smaller estuarine systems along the Chittagong coast (Chokoria Sundarbans and Naaf Estuary), and a single coral island of the extreme southern tip of the country (St. Martin’s Island).

¹ A group of people, not all of one family, living together and sharing property and responsibilities.

The estuaries are also very rich in prawns and shrimps, such as *Parapenaeosis*, *Penaeus*, *Palaeomon*, etc., including estuarine crocodiles, 25 species of turtles and tortoises, three species of monitor lizards and numerous snakes. In fact, the coastal resources are rich with a wide diversity of plants and animals, including significant wild life species. The western part of the Sundarbans lies in India and the rest, almost 60 per cent, is in Bangladesh. This is dominated by two plant species, *Heriteria fomes* and *Excoecaria agallocha*. It is characterized by tidal inundation with the pattern of semidiurnal type and the maximum amplitude of 3 m at spring tides. The climate is humid tropical, with an annual rainfall of about 1600 mm to 2500 mm in the central and outer coasts, respectively. Violent storms are frequent during the pre-monsoon period, and again in September, October and November.

Fishermen commonly catch over 120 species of fishes, including 95 species of water fowl, more than 270 species of local and migratory birds, along with very rich species of birds of prey in mangrove swamps. About 42 species of mammals are still seen in the Sundarbans, including the rare Royal Bengal Tiger, *Panthera tigris*. A recent study estimates the principal mammalian populations as: 350 tigers; 40,000-70,000 rhesus macaques; 50,000- 80,000 spotted deer; 20,000 wild boars; and 20,000 smooth-coated otters. Crustaceans are also important for the biomes of the system. Crabs, prawns and shrimps are the main groups.

About 20 million people live in the coastal region of Bangladesh, 20 per cent of whom directly depend on the coastal and marine resources for their livelihood. They live exclusively on fishing of wild fish, along with crabs, prawns and shrimps. In addition, the mangrove ecosystem provides living support to nearly 300,000 coastal people through fishing, collecting honey, wax and timber, hunting, and so on. Fishery production in mangroves increased significantly to 14,000 tonnes in 1982-83, compared to 640 tonnes in 1972-73. Many thousands are engaged in collection of honey and wax. It was estimated that about 232 tonnes of honey and wax were harvested in 1983. In addition, collection of shrimp fry is an important source of livelihood. The mangrove forest also has a buffer function, protecting the densely settled agricultural areas to the north from the full force of cyclonic storms and tidal waves.

The marine resource of Bangladesh is also of great importance, geographically provided by a relatively shallow embayment of the northeastern Indian Ocean and the Bay of Bengal in the southern part. The Bay of Bengal occupies an area of 2,173,000 sq km, with an average depth of 2,600 meters and a width of 1600 km. In 1974, the special economic zone provision allowed Bangladesh the right of enjoying up to 200 nautical miles (370 km) from the seashore, which comprises an area of 166,000 sq. km, larger than the land mass.

The ecosystem in this region is quite distinct and tropical in nature. The huge river drainage and the profusion of wetlands, marshes, and mangroves increase productivity of near-shore fish species. About 475 species of fishes are found in this renewable habitat, along with 16 species of marine shrimps. In addition, several species of crabs and 31 species of turtles and tortoises, of which 24 live in coastal fresh-water environment, are also found (P. Gain, 1998). The marine fishery is

totally open and contributes to 23 per cent of the total fish catch. The marine fisheries are of two types: industrial (trawling) and artisanal, the former contributing about 6 per cent and the later 17 per cent of the total catch.

Another aspect is the discovery of petroleum and gas reserves in the marine zone. It was recently estimated that about 20 trillion cubic feet of gases can be extracted from the bottom of the Bay of Bengal. The most recent World Bank estimate shows that Bangladesh is expected to receive US\$ 1049 million by 2004, most of which would go to the oil and gas sectors. Regarding ocean transportation facilities, the Bay of Bengal is of great significance to Bangladesh and neighboring countries like Sri Lanka, India and Myanmar. Carriage of cargoes to and from these countries is of immense importance. The oceanic transport route directly supports the principal seaports of Bangladesh, Chittagong and Mongla.

3. Degradation of the Marine Environment

Industrial effluents and urban sewage, along with agrochemicals used in the coastal crop fields, are the main threats to the coastal-marine water resource. The two seaports, Chittagong and Mongla, along with the industrial cities of Khulna and Chittagong are of highest concern. In Chittagong, out of the 720 industrial units, only 20 per cent treat their liquid effluents before disposal. These effluents contain hazardous chemicals like chromium, salt, sulphur, costic soda, butanol and so on, finally carried to the Bay of Bengal through the river Karnafuli.

Khulna possesses 300 large industrial units, which discharge about 10 million gallons of liquid waste that finally reach the Bay of Bengal through the Sundarbans. Oil spills on the seaports and ships navigating the area are other sources of pollution. Shipbreaking on the beach add to the pollution. All these pollutants seriously affect the aquatic fauna and the mangrove vegetations. Uncontrolled, illegal fishing and overfishing of marine fishes and aquatic turtles, molluscs and crustaceans threaten marine fish resources. Excess navigation also disturbs the natural habitat of the aquatic flora and fauna.

The Sundarbans have been exploited from time immemorial, when human settlement started in the basin by cutting and clearing the vegetation for homestead and cultivation. Hardly 100 years ago, the area came under the maintenance of the government's department of forest. Agricultural encroachment, a common and indigenous phenomenon to this important ecosystem, threatens its existence. Population explosion and dense settlement in the coast surrounding the Sundarbans could reach a disastrous position, unless checked. Fishermen's camps are also a cause of serious disturbance, with their illegal trapping and hunting. This illegal activity is also done by the woodcutters and a reasonable number of civil and defence officers. Along with agricultural encroachment, the recent aquaculture missions, especially shrimp farms and their intensive cultivation, have added serious damage to the mangrove forests, including the fries of all wild fish.

The ecological disturbances of mangrove forests have been caused by many anthropogenic activities that go against the natural course of development. The first one is the diversion of Ganges water streams. About 40 per cent of the dry season

flow of the Ganges has been diverted upstream, following the Farrakhan Barrage in India in 1974. This accelerates the decrease of fresh-water flushing and increases the saline water intrusion, particularly in the dry season, which damages the vegetation and finally degrades the environment. Oil spills cause immense damage, especially to the aquatic fauna and sea birds. The seaport Mongla is the main source of oil spills, with pollution also coming from the large and numerous shipping vessels that pass through the Sundarbans every day via the northeast shipping route.

The most significant and immediate threat is the illegal overextraction of the timber and fauna. In the 1980s, an assessment showed that the stock of *Heriteria fomes*, the principal variety of mangrove locally known as Sundari, has declined by 40 per cent since the forest inventory of 1959. At the same time, another dominant species, *Excoecaria agallocha*, has fallen by 45 per cent. For any Bangladeshi, it would be shocking to know that, in the near future, the Sunderbans will be a misnomer due to the possible extinction of Sundari if the trend of exploitation continues, instead of conservation and management.

4. Commercial Shrimp Culture

Intensive and commercial shrimp culture is one of the most important export-earning missions of Bangladesh. Initially, the area under shrimp culture was only about 20,000 ha in 1979-80. It has now reached 137,995 ha (BBS, 1998) and contributions of this sub-sector is estimated at US\$9 million to US\$180 million, including employment of 1 million people². Though the employment and export earnings are impressive, to achieve them, Bangladesh has to pay considerable costs relating to environmental degradation, deterioration in soil quality, declining cereal and vegetable production and many social conflicts. The yield of rice and other cereals has declined, along with land quality, increased salinity, acidity, etc. As a result, the marginal farmers are affected and forced to live in poverty and landlessness.

Environmental degradation due to retention of saline water includes loss of biodiversity (disappearance or extinction of indigenous flora and fauna), declining land quality, loss of genetic diversity due to monoculture and so on. The coastal mangrove forests are now threatened by the expansion of shrimp farm. It is reported that a total of 60,000 ha of mangrove forest area was converted to shrimp farm and for other purposes, of which 2,944 ha have gone to the Directorate of Fisheries for shrimp aquaculture in an ADB-funded project (Md. Kamal,1999). Mangrove forest is also considered suitable ground for breeding for many fresh-water and marine fishes (including shellfishes and other wild species). Removal or destruction of mangroves may disrupt the entire coastal environment in many ways. Due to extensive clearance of mangroves, the high erosion and siltation in

² The employment scenario is estimated ignoring the extent and magnitude of eviction and deprivation of the local poor from their user/property right. The poor and helpless people are forced to engage in shrimp farms as day labour for subsistence, including collection of fry. In fact, both the works are done against their interests, financial and environmental.

certain areas has affected the coastal habitats like grass beds, habitats of migrating birds, sea turtles, dolphin, molluscs and crustaceans.

In the polder areas, the long retention of saline water causes serious damage to the natural vegetation, aquatic plants and weeds, leading to their extinction. The most important and common ones are the Pati, Bajua, Shapla, Helenchi, Malencha, Kalmi, Durba, Thankuni and Ambali. A wide variety of fruit and woody trees, like mango, blackberry, jackfruit, lemon, papaya, banana, coconut, beetel nut, guava, babla, etc. have already declined at an alarming rate. The production of all kinds of household vegetables have been stopped due to soil salinity and water retention in homestead land and vegetable fields. This flooding of land also reduces the availability of grazing field, accommodation and drinking water, which inevitably leads to reduced livestock and poultry population.

Loss of biodiversity due to shrimp culture is of highest concern. The wild fry is the largest source of the shrimp fry in commercial farming, collected from the river by thick nets. The collection system is such that primarily all collected wild fries, including all other fish fry, are kept in a jar/pot, and only the shrimp fries are sorted out, while the rest are all abandoned. Thus, we are losing thousands/millions of wild fries of thousands species of aquatic flora and fauna just for one or two shrimp fries. On the other hand, in the shrimp farm areas, selective species of *bagda* and *galda* are cultured intensively and all other natural aquatic species have declined or become extinct. During the visit of the author to the farm area of Khulna and Bagerhat, the farmers reported this scarcity and decline of so many indigenous aquatic fishes, turtles, molluscs, etc.

5. Deprivation of Rights Relating to Environment and Resource Use

Bangladesh is a poor and underdeveloped country, where all the indicators of human development are weak. More than 40 per cent of the people are illiterate and over 60 per cent live below the poverty line (daily consumption below 2200 k cal). The infant mortality rate is 57 per 1000 live births, and 0.3 million are born without medical care per year, 10 million suffer from malnutrition, and nearly 0.2 million children die before attaining 5 years of age. In view of these human deprivations, protective security and access to the resources are of highest concern. The latter should be considered as a right and not a privilege and must be ensured through democratic processes of the nation/State.

6. Deprivation by Law and Practice

Bangladesh is a post-colonial State. Though it achieved freedom in 1971, all current parameters indicate a transitional stage from colonial practice to freedom, with most of the policies and biases of the former ruler still being followed, especially in laws related to resource use right and management.

It is worth mentioning that land, along with all other resources in this country, were settled to private ownership by the *zamindars* (king) during the British regime under the "Sunset Law", Permanent Settlement Regulation (PSR) 1793. The trend was to settle almost everything possible to ensure a fixed economic return or revenue for the rulers. The termination of British regime in 1947 gave birth to two separate

States: India and Pakistan.³ East Bengal became the eastern province of Pakistan. Due to the PSR in 1947, the land tenure situation in this part reached such a position that 91 per cent land was under permanent settlement, 3.5 per cent under temporary settlement and only 5.5 per cent under “public property” status; and all the tenancies created by the *zamindars* were legally valid tenures by the Bengal Tenancy Act 1885. The *zamindari* system was abolished under the State Acquisition and Tenancy (SAT) Act 1950 and all rent-receiving interests were vested to the State, which made the lawful settlers by the *zamindars* owners of the property. However, the SAT Act 1950 (Section 20) restricted private ownership over certain categories of property as absolutely “non-retainable”, which includes forests and ⁴water bodies (except tanks constructed solely by excavation). Today, the water bodies and forest resources are public property (State-owned) and maintained by the government. Forests are managed by the Department of Forests under the provision of the Forest Act 1927. The land ministry regulates the management of land tenure and revenue system under the Land Management Manual (LLM) 1991. The tenural provisions for water body management under the LMM of 1991 are:

- a) The closed water bodies measuring up to 20 acres are entrusted with the *upazila* (sub-district) administration for management and open auction.
- b) The water bodies managed by the Ministry of Fishery and Livestock would be available and accessible to the scientists and researchers of the Department of Fisheries for investigation and environmental information collection.
- c) The closed water bodies, mainly ponds not more than three acres in size, would be preserved by the union council so that people can exercise their customary right of using the waters for domestic and other uses. These fisheries would not be leased to anyone.
- d) All other closed and open-water bodies covering an area larger than 20 acres would be leased through open auction to the people by the Deputy Commissioners concerned.

This generalized tenure and resource use practices are also applicable to the coastal resources. Except for the rivers and mangrove swamps, 2 million ha of coastal lands are cultivable and under private ownership, while the remaining 1 m ha is, more or less, State-owned. Eighty per cent of the population are farmers and live on rice cultivated in their fields. Due to salinity, the crop production is very low and the mangrove ecosystem provides livelihood through fishing, collecting honey, wax and timber, hunting and so on. About 20 per cent of the coastal people live exclusively on fishing of wild fishes along with crabs, prawns and shrimps. Mangrove forests and all open-water bodies are controlled by the government. All type of harvestings of mangrove forests are regulated by the Forest Department. Open-water bodies are

³ In British India, this territory of Bangladesh was under the province Bengal (Bengal, Bihar and Orissa). As Viceroy, Lord Curzon, in 1903, decided to divide the original Bengal, and, in 1905, a new province was created comprising East Bengal and Assam. Later on, in 1947, during the partition of India and Pakistan, East Bengal was included to Pakistan and renamed as East Pakistan. After 24 years, the people of East Pakistan achieved victory on December 16, 1971 through a liberation war.

⁴ ‘Land’ includes land which goes under inundation daily or seasonally (SAT Act 1950).

also leased to the individuals for a period of 2-5 years. In this way, the local indigenous people are being deprived from their right of harvesting and fishing because they are poor and unable to lease the water bodies, though it is declared by the government that the water bodies will be leased only to the fishermen, not to others. Another recent mission of intensive and commercial shrimp culture by non-fishermen deprived the poor and marginal farmers. In many cases, these poor people are being evicted by the non-local farm owners, which adds to their sufferings.

Forests, including public land resources, are strictly restricted and come under the practice of public-individual property right system through leasing, either permanently or temporarily, to an individual or a corporation. In case of water bodies, the government practices the public-group property right with a legal arrangement where the government conditionally leases the water bodies to the fishermen society or user groups of the particular locality. In both the systems, the practices are now jeopardized by mismanagement and inefficiency of the public sector, along with the social weakness and lack of political commitment.

A careful examination reveals that two major types of property rights, the private and state owned/public, are supposed to be in practice in the coastal area of Bangladesh. Here the most important common and open-access property rights are no more recognized in tenure form. This tenured system is a great threat to the community-based property rights, including the commons, particularly for the local and indigenous people of Bangladesh.

7. Deprivation by Power Structure

If we consider the economic contribution on national account in respect of export earnings, shrimp culture plays an important role, including in employment. But all these achievements have various costs of damages to the society; marginal farmers and local fishers are specially subjected to exploitation. So many conflicts and litigations have also arisen between the farm owner and small landowners, marginal farmers and fishers which affect social life in various unpleasant ways; to some extent, eviction from property and user rights have happened.

The shrimp farms are either on private or public ownership; in most of the cases, land belongs to the marginal farmers and the farm owners have to procure or lease them from the farmers. In fact, the owner of the large shrimp farm seized the properties of all other small/marginal farmers in collaboration with the local touts. To some extent, the helpless farmers were forced to sign the deed of lease; otherwise, they would have been evicted and driven away. In extreme cases, they have been tortured by paid musclemen. It was reported that in places like Paikghacha (in district Khulna), the farm owner even did not hesitate to shoot down the household women in broad daylight. The story does not end here. When the fight has settled down, the farmers are again deprived of their lease money, whatever be the amount.

In many places like Paikgacha of Khulna district, shrimp farm owners procure lands on lease for 2-7 years from many farmers to make a large commercial farm unit. The

farm owners usually pay US\$35-50 seasonally to the farmer per acre and, as a rental or annual basis, the cost is doubled (US\$70-100). It was seen that the per acre cost in semi-intensive shrimp farming, on average, is US\$1,300 and the net return is US\$4,600. From this it would not be difficult to estimate the degree of exploitation by the farm owners. In fact, farm owners, on average, get more than US\$3,300 from one acre of land, while the real owner of the land, the farmer, gets only US\$35-100. On the other hand, due to increasing salinity, cereal and other household production, including livestock, declined remarkably and thus the farmers are on the verge of destruction. In these ways, uncontrolled deterioration in household incomes burdens the land users with debt, forces them to migrate to non-farm activities or leaves them stranded as sub-marginal patch farmers, which, in turn, may lead to increased rate of landlessness and poverty.

The farm owners and lease holders strictly restrict access to the fishing ground, both in open water and shrimp culture areas, leaving the fishers to starve with their children and others for days together. To survive, they have to compromise and come in unofficial contact with the farm owner for work. The episode of sufferings does not get end here, as the farm owner seizes the right of subsistence by putting an embargo on collecting crabs and small crustaceans to eat⁵. Thus, both property rights and human rights are on the verge of serious and severe threat in this coastal area of Bangladesh. As a result, poverty, and in extreme cases, migrations of fishers and poor farmers leaving their property and homestead are the hidden scenes in the export drama.

8. A Bangladeshi Perspective

User rights and community property rights, including human rights, are the major areas of violations of rights in the coastal area of Bangladesh. The right to access to the resources is also strictly restricted by the State. For example, the reserved and protected forests are controlled by the Department of Forest, and other public properties are under the jurisdiction of district administration (the colonial law enforcing institution). The marine and coastal resources are now under threat of degradation due to anthropogenic irregular activities. The private ownership concept contains a bundle of titles that are protected by the legal system. So sustainable resource management requires a fundamental and conceptual change in juridical perception and interpretation of titles, rights, duties, interests and liability.

It is noteworthy that there are no specific laws for marine resource management. Most of the related laws are either for management in terms of rent/revenue receiving and environmental conservation based on a legal framework. If we consider the Environmental Conservation Act 1995, the legislation purely deals with the environment; it does not, however, explicitly recognize the right to a sound environment. Like this Act, all other rules and regulations are devoid of the rights and title of the community, ignoring their vital part in the particular environment.

9. A World Perspective

⁵ During a visit, the author witnessed extreme abuse of human rights.

The scenario that Bangladesh is experiencing regarding the right and management issues of coastal resources can be considered as a common and generalized phenomenon in the Indian Ocean Region countries. If we extend our views to a more generalized form, we can identify some common factors, as given below:

1. The majority of the people of the world live in developing countries.
2. Human rights are weak in these countries.
3. Access to justice and information, and freedom of association and expression, are of highest concern, along with property rights.
4. Private/individual activities are accelerating human rights violations and environmental degradation.
5. In the name of development, human rights and environmental abuses occur.
6. The national/State law does not recognize the human rights of the local communities and indigenous people, including their rights to land and other resources.
7. It is now more apparent that deprivation of the local/indigenous people has a very close linkage with environmental resources and human rights abuses.

10. Key Challenges

From the above picture of weak human rights and abuse of property and environmental rights in the coastal region of the developing world, we can consider a few key challenges:

1. Prevention of human rights abuse/violation.
2. Establishment of community participation and user-based property rights.
3. Avoidance of environmental degradation.
4. Legitimacy of user rights and enforcement, i.e. compilation and enforcement of laws in support of user-based property rights and environmental management by the Nation State.

11. Overcoming the Challenges

We believe that humans have a right to user-based property and environmental management and are committed to overcome the challenges. We need a creative approach and new opportunities to respond to the challenges and contributions pertaining to community and user-based legal incentives for sustainable development. From environmental and human rights perspectives, it is challenging to develop equitable legal relationships between local communities, government and other supportive organizations for sustainable user-based community management of resources. Before modeling such an effective and creative approach, we should share experiences gained by fisher communities in community-based use and participation in resource management system, in the process, doing and learning.

12. Experience of Community-based Co-management in the Philippines

In any process and practice, the need of the time is an important pre-condition for change. Fisheries are now passing through such a transitional process towards

sustainable use of its resources through environmental conservation practices. This is done by community-based participation at the user level, i.e. the fishers. Like many other fisher communities of different countries, the fishers of the island of San Salvador in the Philippines⁶ took the initiative to avert the overexploitative fishery resource in the late 1980s and, by 1997, they attained a tangible success in community-based resource use and co-management. Most of the honorable participants at this conference may well be experienced in this field. Nevertheless, I feel it necessary to describe the key initiatives and processes taken by the fisher community of San Salvador.

13. Invasion of Non-locals and the Beginning of Degradation

The fishery of San Salvador was an open-access resource, without any law enforcing arrangement since the time of human settlement. Until the late 1960s, resource use conflicts were rare and the resource remained in good condition. But, in the early 1970s, non-local fishers from the central Philippines entered the area and brought with them illegal fishing methods such as cyanides, fine-mesh nets and explosives. The new fishers also integrated the village economy into the international market for aquarium fish.

14. Crisis Point

In the late 1980s, the resource degradation and use conflict reached a crisis point. The average catch per trip of 20 kg in the 1960s declined to 3 kg in 1988. Many reef fishes, such as groupers, snappers, and damselfish, became scarce. In 1988, living coral cover had declined to an average 23 per cent for the entire island.

15. External Agents and the Initiatives of Local Fishers

As the local fishers of San Salvador felt the need of resource protection for their livelihood, they went in search of solutions to their problems. Peace Corps volunteers had arrived in San Salvador in 1987. They conceptualized a community-based coastal resource management project for coral reef rehabilitation. In 1989, a local NGO led a project to establish a marine sanctuary. The project featured biological conservation (sanctuary and reserve) and governance interventions with other programmes like management planning, community organizing, income generation, rules and regulations, education and training.

16. Sharing of Experience

In the same year, 1989, the core group members made an exchange visit to a successful marine sanctuary in the central Philippines. That visits increased motivation and support for the idea of sanctuary and reserve, which resulted in the drafting of a local ordinance to ban fishing within the sanctuary and allow only the non-destructive fishing in the reserve.

17. Participation of the Local Government Authority

⁶ This Filipino experience is adopted from *Managing Small-scale Fisheries: Alternative Directions and Methods* by F Berker et al, 2001.

Depending on the draft local ordinance, the local government authority, the Masinloc Municipal Council, helped by passing an ordinance for the marine sanctuary and reserve. The ordinance also increased the role and participation of the government authority and brought about a resource management partnership between government and fisheries in a number of ways:

- the legislation provided a legal basis for the sanctuary and for apprehending rule violators;
- conflicts were mediated between local and outside resource users;
- boats and equipment for patrolling coastal waters were provided;
- a government patrol team to enforce laws was created; and
- a political environment that allowed for the pursuit of community-based initiatives was provided.

This inspired the core members to monitor the illegal fishing activities and guard the sanctuary. As a result, other resource users participated in village consultations, endorsed local ordinances, adhered to the rules, and adopted non-destructive fishing methods.

18. Obstacles

The path of co-management was not trouble-free. The fishers had to fight against the non-locals and also the local exploiter and moneymakers. Those fishers who were displaced from the sanctuary and reserve by destructive and illegal methods of fishing, became alienated and resentful. Over time, however, tangible benefits in the form of higher fish catch from San Salvador's fishing grounds helped to encourage rule compliance and non-destructive fishing practices.

19. Outcome of the Co-management System

Fish catches went up from 3 kg in 1988 to 6-10 kg in 1998, within a period of 10 years only. The extent of living coral reef cover increased from 23 per cent to 57 per cent for the whole island. Another biological achievement was the increase in fish diversity. Fishers perceived gains in equity, knowledge, household income, empowerment, and conflict reduction. Overall, the system of co-management gave the villagers a reason for optimism, a motivation for collective action, and pride in their resource management achievements.

20. Contributing Factors

A large number of factors led to the success of the co-management or community-based management system. The important factors are:

- a) The participation of resource stakeholders, including a sense of ownership in planning and implementation of programme.
- b) Partnership agreement between fishers and the government to promote community management.
- c) Specification and legitimacy of user rights and enforcement.
- d) Empowerment and capability building.
- e) Tangible benefits such as redefined resource access.
- f) Shift to non-destructive fishing methods and improved enforcement.

g) Observable changes in biological, social and economic development.

21. Conceptual Clarification for a Model Approach

Though the model of community-based management relating to co management involving the government, community and NGOs as practised in San Salvador is a good one, it is not sufficient to explain the basic points of property rights in the light of user-based community concept and environmental right and management. We may think of a complete approach of resource management leading to both user-based property rights and aversion of environmental degradation. Before that, we have to clarify the basic concept of user-based community, user-based property rights, environmental rights, the importance of locals as a part of environment, and so on.

22. User-based Community

Community is a term with a wide diversity of usage, which denotes: the people living in one place, area or country, as a whole;

- a group people of the same religion, race, occupation, etc. or with shared interests;
- a group of people sharing and having things in common or being alike in some way;
- a group of people with a community spirit, a feeling of sharing the same attitude, interests, etc;
- a group of animals or plants living or growing⁷ in the same place.

From the above terminologies, it is clear that constitution of a community requires five fundamental components: a certain area, a group of living mass, a common mode of living and growing, sharing of resources, and the feeling of sharing the same attitude and interests. The last one is exclusively applicable for rational beings. In our present discussion, we have to choose the appropriate and suitable words that are more useful to understand the theme and ethics of the user-based community approach. Now we may define these components as follows.

- Certain area- the area where the resources are present, i.e. resource-based area.
- A group of living mass: this is an ecological term which includes animals and plants as living mass, but, in our present discussion, only human population should be considered as those living in that resource-based area.
- Common mode of living and growing: the people should have a common life pattern and livelihood, i.e. occupational entity.
- Sharing same resources: the people must depend on the same resource and everybody has access to enjoy the resource.
- Feeling of sharing the same attitude and interests: the people must have a feeling of sharing the ways of thinking, doing, managing and protecting, and make others do the desired common things.

⁷ Living and growing: those who born and brought up in a certain place, depending on the resources available there; this can be considered as a birth right through user-based acquired right, irrespective of diversities in colour, caste and nationality.

So the use-based community is a group of people who live in certain resource area and directly depend on that resource with a common mode of living and growing (same occupation), having a feeling of sharing same attitude, interests, etc.

23. User-based Right

This right is of our highest consideration in the resource use and management issue. I stated earlier that user-based right should be established on a first-user basis. This needs further clarification. It may so happen that one who was a resource user (fisher or tiller) in the past, may have shifted, in the course of time, from being a resource user to being a businessman, settled in the urban life; at the same time, a day labourer of that urban life may have shifted to being a resource user, settled in that resource area. The normal ethics should be that the first one must lose his right to the resource and the latter should be provided acquired user right. Hence, we may specify the point of user right further with the concept of direct user and indirect user⁸. The latter group should not be entertained or included in resource use and user right.

24. Nature and Type of Property Right

The concept of private property right is the most harmful and hateful practice in society. Polarization of money and assets is the principal outcome of private ownership, and the root of inequity, which creates the scope for inefficient, uncontrolled and insufficient use of resources. Private ownership is quite inapplicable in natural resource use and management. Previously, I stated the type of community that is in the best position to ascertain the property right and monitor the use of resources. Here, I try to figure out what the nature of property right ought to be.

Apart from the private, two other basic types of property rights are in practice in society: the common and the public or State. In certain cases, where no well-defined property rights exist, the situation is very often taken as open access. Though open access and common seem to be synonymous, they differ greatly. Common property rights are the rights to enjoy any property or resource commonly by the members of a certain community, which may be regulated by law, either local or national. Open-access right is also for the common but not restricted within the local community, i.e. all the people of a State may enjoy the resource without any legal framework in use.

The public properties are of a different resource base where the title is exclusively vested to the State but the right of use is diverse in relation to the nature of the property. In some cases, the State uses the property for national interest under direct control as reserve forest, national parks, etc., but, in most cases, the public properties are used by the people under different legal framework with a view to rent collection, like lease (short-term and long-term) to either individuals or groups.

⁸ Those who shifted to other livelihood but get the benefit of use of resources through paid labor or any other secondary support.

In most of the cases, the State encourages the private and individual rights concept even in resource use. In certain areas, the State still does not establish public control over the resources and there, users common rights exist. In many countries, the nation State recognizes the community participation, and rights to resource use and management within a community in a process of co-operatives.

Here I need to clarify the concept of property right on the basis of two user-based terminologies. No property right should be recognized in respect of title except by the State and people should possess only user rights. And the user rights can be ascertained depending on the mode of use⁹ of property by the people of the community of that resource area. The vital point is the right of use to the resource, not the title, and the user right should be ascertained on user-based community concept. The title creates hereditary rights, which provoke the private ownership to the descendants. So, the changed property right should be established on the philosophy of “ User-based Community Property Right”.

25. Environmental Abuse and Human Right

Degradation of resources due to unplanned and uncontrolled anthropogenic activities lead to environmental damage. This environmental abuse is relatively higher where human rights are weak, i.e. the degree and extent of environmental abuse is very much proportionate to human rights violation. In the name of development and poverty eradication, a large number of projects are adopted in developing countries, like the coastal flood protection embankment and export-oriented intensive aquaculture, which lead to further exploitation of resources and marginalize the indigenous and poor people.

Local communities and indigenous people suffer from human rights violations, including environmental abuse where the State does not recognize their rights. This non-recognition trend is also true for other resource users, like the land tillers. Thus, the right to access and live in certain environments of a particular community, i.e. environmental right, is very difficult to differentiate from human rights. The right to environment does not include merely the right to live and enjoy the resources but also the right to conserve resources through proper use and management. So the user right approach is very much appropriate where the user can apply his environmental right not only to use but to conserve and protect the environment against damage and injustice.

26. Man as a Part of Environment

The two basic components of the environment are the biotic communities (living biomes) and abiotic resources (non-living physical bodies), including the interaction of the components. And the interactions of these living and non-living components in certain resource areas (habitat) constitutes an ecological unit, the ecosystem, which is the basic contribution of the natural world, leading to environmental balance. Ecologically, community includes all living bodies, i.e. plants and animals living in a certain habitat, and the integrated unit of interaction, ecosystem

⁹ Tilling in land, fishing in water, etc. are modes of living and livelihood relating to resource.

community¹⁰, includes all the species of living bodies. The nature of the resource and the climatic conditions of certain habitats play a vital role in selection of species of plants and animals that can be adopted there, and this process of selection, the “natural selection” is very complex and long. Like many other living species, man struggled for existence against abiotic and biotic environmental factors and acquired the crown of victory over all the living beings in the competition of the “Survival of the Fittest”. But man has become a threat to the environment by enjoying resources in an uncontrolled way, which is against the natural law of environmental balance. Men have forgotten that they are also a part of the natural system, under the ecosystem where resource is the base of all living and non-living conditions and if they fail to restore or maintain the rhythm, the whole world would be doomed¹¹ in the near future. Man is the only living creature that engages in damaging the resources that is beyond the regeneration capacity of the natural system.

If we consider the above facts, the responsibility to restore resources does not lie exclusively with the people who live in the resource area, but to the nation States, civil societies, NGOs and all sectors of people. By way of restoration, we have to consider the vital role of the local and indigenous people, as they are the inhabitants of that particular habitat, like all other species of living bodies, and it is their environmental right to live and enjoy the resource. Ignoring this right, we seized their resource for our class benefit and caused great damage to the environment. This is the proper time to reinstate their rights and avert environmental degradation through recognition of user rights to resources.

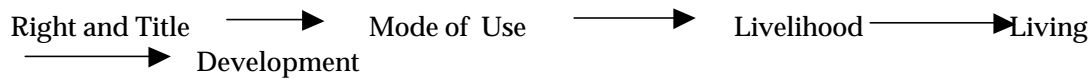
Some may differ on the point that the indigenous people are not aware of environment and they do not know how to use resources in a sustainable way. This political economy of ignorance makes it easy to overlook the presence of rural people and their rights. Though all the local and indigenous people do not equally respect and protect their resources, many of them know much more about the resource and its management than modern scientists. In addition, we have to consider that they are human beings and inhabitants born in that area should have a fundamental right to participate in decisions and activities that directly affect their lives and livelihoods.

27. The Approach and the Model

To achieve the goal of sustainable development, we must consider the user right of the resource-based community, along with the use of resources in a sustainable way, where ecological balance should not be hampered, so as to allow the regeneration capacity of nature to work. The major considerations of the concept can be interlinked and designed as follows:

¹⁰ Someone may think of ecosystem-community to explain the human community of a certain area in respect of community-based rights; in such a case, resource management is not suitable enough and inappropriate.

¹¹ Greenhouse effect, acid rain, toxic wastes dumping, etc. can be taken into consideration.



where,

Type of property right = user-based right of the community, i.e. the right of access to the resource.

Mode of use = sustainable use of resource without compromising the future.

Significance of livelihood = employment of human resources by occupation.

Living = survive with a guarantee of minimum requirements and equity.

Significance of development = sustainable development.

28. Probable Outcome

Whatever the strategies and ways applied to implement the model, the probable outcomes are:

- protection of resources from indiscriminate and irregular use.
- creation of common-right ethics, which declare that “Resources are ours and we should protect them”.
- reduction of private ownership and minimization of conflicts at the individual level.
- human resource utilization through employment.
- maximum use of resources, without compromising the future.
- individual and social security through community-based life.
- guarantee of minimum requirement, i.e. food, cloth, shelter, etc.
- reduction of inequity.

29. Conclusion

Indiscriminate use, misuse and exploitation without replenishment of resources, along with irregular and unplanned activities against nature, leading to environmental degradation and a disastrous end is the talk of the town today. Man is his own enemy, doing harm to his own kind, though he is the only rational being who can restore the resources. Along with many other devices for restoration and avoidance of degradation of resources, the user-based community right is an important and effective one in most of the fragile ecosystems. This is the proper time to take effective steps. In this regard, the nation States may take:

- immediate and effective measures to stop human oppression and resource degradation; and
- initiatives to restore the coastal resources involving all sectors—local government bodies, civil societies, especially NGOs—by applying the concept of user-based property rights and management.

And we, of the Indian Ocean Region, may take the initiative to form a team of experts to conduct a comprehensive study to finally shape the model and programme.

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