Flood Disasters and Forest Villagers in Sub-Himalayan Bengal

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Conservation policies to protect wildlife and biodiversity ignore the basic survival needs and imperatives of local people. This article aims to show how conservation policies trigger floods in protected areas, especially those located in the foothills of the Himalayan mountain ranges, leading to huge damage to plantations and habitats as well as settlements of the local people. It also explores what forest villagers do when the whole village is destroyed by a natural disaster and the socio-economic consequences in the post-displacement period.

The Himalayan ranges present a storehouse of biodiversity, where flora and fauna vary extensively with climatic variation from one region to another. This rich biodiversity has been threatened by the extensive commercial felling of forest for timber, industrial and urban development, leading to deforestation and habitat loss.

1 Introduction

The overexploitation of resources from this region leads to increasing natural disasters like earthquakes, mass wasting, high seismic activity, landslides, glacial lake outbursts, soil erosion and sedimentation (MOEF 1999). Consequently, soil erosion causes frequent flooding in the plains downstream and destroys biodiversity as well as the lives and livelihoods of the people. To conserve biodiversity the government has initiated certain action for creation of protected area networks through some strict legislation. Though studies are available on population responses and adjustment to natural disasters like flooding and river bank erosion (Zaman 1989, 1991), there is hardly any study on responses of people who are residing in the foothills of the Himalayas, particularly in the protected forest environment. The purpose of this paper is to describe the responses of affected villagers who were displaced forcibly, due to flood disasters from their original habitat. It further focuses on how legislation tends to increase the probability of higher habitat loss as well as the increased threat to the inhabitants due to recurrent floods in protected forest environments – an area of research which is not available in the existing literature of disaster research.

2 Natural Disasters

The intensity and severity of natural and technological disasters in the developing world has increased manifold during recent decades. Consequently, this has become the centre of debates on human-environment relations and issues of development and sustainability (Oliver-Smith 1996). Some researchers claim that they mainly occur at the interface of society, technology, and environment. It is a sudden and unexpected disruption of structural arrangements within a social system. In other words, it is a significant departure from normal experience for a particular time and place (Turner 1978).

Since a flood disaster is a common type of natural disaster, a large body of literature is available that includes the choice of adjustments to floods (White 1964); farmers’ perception of flood risk in the United States and the impact on land-use decisions (Burton 1962) and the perception to hazard and choice in floodplain management (Kates 1962). These studies concentrate on individual perceptions and response – attitudes, motivations, beliefs, values and personalities – to extend the explanatory framework of behavioural and decision-making models (Zaman 1989).

Studies are also available on survival strategies, people’s adjustment to distinct types of hazards, i.e., river bank erosion caused by changing river channels from the behavioural perspective in south Asia, particularly in Bangladesh. Zaman further extends the simple behavioural approach to social responses and advocates a unified approach integrating perceptual and behavioural variables with social, political and structural factors for a holistic understanding of the problem of adjustment (Haque and Zaman 1989; Zaman 1989, 1991). Although there are a lot of studies on population adjustment due to river bank erosion, there is hardly any study of people’s responses causing forced relocation due to flood disaster in a specific environment like the forest, particularly in the context of the protected area environment where several legal restrictions on day-to-day activities have been imposed under various conservation acts. To fill this knowledge gap the present study attempts to explore the causes of recurrent flood disasters in a specific geographical area, particularly in a protected area network backed by some strict legislation and...
describes what happens when a forest village, due to floods, is washed out, leading to displacement of villagers from their ancestral land. The study further explores the type of socio-economic activities that have taken place in the newly settled area and how the affected people perceive the displacement and other related phenomena in a forest environment.

For this, a micro level in-depth study was undertaken in a forest village of the Buxa Tiger Reserve (BTR), a national park in the foothills of the eastern Himalayas. To understand the processes and sequences through which the flood affected displaced were resettled in a new place and the socio-economic consequences in the post-displacement period, Bangdoba, a forest village of this national park was selected. Data for the present study was collected through household census and genealogical methods. Some additional information regarding relocation issues was collected with the help of structured and open-ended questionnaires. Almost all the families of these forest villages have been taken into consideration for the study. Older persons were selected as key informants for data collection. In addition, forest rules and regulations were studied, particularly those relevant for protected areas in India.

3 Buxa Tiger Reserve

BTR is located in Alipurduar subdivision of Jalpaiguri district of West Bengal.

General Significance

The total area of the reserve is 760.87 km² of which 385.02 km² has been constituted as the Buxa Sanctuary and National Park² (Core zone of the BTR) and the balance 375.85 km² areas is treated as a buffer zone. The BTR was constituted in 1983 and became the 15th tiger reserve of the country. The forest is intercepted by numerous rivers, streams and jhoras which usually originate from the Himalayan region in the northern part of India. The principal rivers that flow through this reserve are Sankosh, Rydak, Jayanti, Bala, Dima and Gaburbasra. Major rivers like the Sankosh and Rydak originate from Tibet in the eastern Himalaya and pass through the Bhutan hills. However, rivers like Jayanti, Dima, Pana, Bala, and Gaburbasra originate from the Bhutan hills and flow southwards. These rivers cut across the various areas of the Buxa forest habitats and frequently change their main course causing extensive damage to the habitat during floods (ibid). Devastating floods have been reported in 1950, 1952, 1954, 1968 and 1993, causing massive damage to the habitat of the reserve. The wildlife to habitat has been destroyed several times due to recurrent floods in the flood-plains of these rivers.

Rivers and Streams

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The Presently, there are 37 forest villages in BTR out of which 10 forest villages are within the sanctuary area of the reserve with a total population of 15,608 according to 1991 Census. There are 34 tea gardens and 46 revenue villages on the western and southern (considering 2 km from park boundary) parts of the park. Since 1999, 2,919 families of diverse ethnic groups are residing in the forest villages of BTR (Das 2005a). Of them, the Nepali and Rabha communities are the two most dominant ethnic groups. The human population of these “revenue villages” is 95,049 (1991 Census). Migrant Bengalees, Muslims and Rajbanshis are predominant ethnic groups in revenue villages of the reserve.

Rain-fed cultivation of paddy, maize, marwa, millet, etc, is the principal economic

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activity of the forest villagers of BTR. Incomes from sale of milk, areca nut, bamboo and non-timber forest products (NTFPs) are treated as a supplementary source for sustaining the daily needs of families of villages especially in forest villages (Das 2009b). Livestock assets act as an emergency source of income especially during rituals and festivals, treatment, education or disasters. Employment opportunities for both forest villagers and fringe dwellers reduced substantially due to the ban in clear felling couples and artificial regeneration (CFC) operation and boulder collection with the creation of the tiger reserve in 1983. Prior to 1983, villagers of both forest and fringe areas used to be employed in timber harvesting and plantation work for nearly 100-120 days a year. It is observed that the employment generation of 5.9 lakh person-days during 1984 has dwindled to 2.775 lakh person-days in 1991 (S C Das, Management Plan for BTR 1999-2009).

4 Forest Villagers: A Historical Account

Against the backdrop of a changing strategy of forest management, i.e., from commercial forestry to conservation forestry of the forest area, the status and role of the inhabitants has also changed. A historical account of the forest villagers is necessary for better understanding of the situation. In a broader sense, a forest village refers to a village situated in the forest. Forest authorities use this term for administrative purposes and it refers to villages situated inside the reserved forest under the control of forest administration. These villages are not legally recognised by the existing laws.

The establishment of forest villages to secure a permanent labour force was initiated under the reign of fire protection, and with the taungya system the forest villages became absolutely essential (Karlsson 2000). Around 1894 forest authorities first allowed tribal and local fringe people to settle in the Buxa forest in connection with the scheme of taungya cultivation. Around 1904, the establishment of forest villages became a regular policy and very large numbers of forest villagers were allowed to settle in the forest. In 1912 rules were made limiting the cultivation and homestead land to 2.5 acres in the plains (wet area) and 1.5 acres in hills (dry area) per family (Anon 1970).

So, the forest villagers were given allotment of land and residential hut without ownership right to land. Every member of such a village had to sign an agreement form every year issued by the forest department for ensuring labour from the former. Such agreement contained rules and regulations laid by the forest department and the workers were liable to contribute their labour for the forest department. Under no circumstance could the villager violate the contract, and the agreement continued till 1969.

In the 1970s, the protest movement started when the villagers demanded that they be paid normal wages for looking after the plantations. They also wanted more of land for cultivation for the increased number of families. The agitation turned violent and in response the government agreed to abolish the free service but did not agree to their demand for more agriculture land. The authorised workers were liable to provide their labour during plantation and for other forest works. The forest authorities usually provide three to four months' work to the approved workers and rest of the time they engage themselves primarily in cultivation. They are, in the real sense, the self-cultivators though they are deprived of ownership right to land.

5 Triggering Factors of Floods

This reserve is facing primarily two kinds of problems that trigger flood disasters destroying habitats and livelihoods of the inhabitants. Firstly, as this reserve is located in the foothills of eastern sub-Himalayan West Bengal bordering Bhutan in the northern side, several rivers and streams originate and flow southwards, intercepting the reserve. They rise and fall frequently and constantly change their course causing huge damage to the reserve. The reserve has a long history of devastating floods causing massive damage to the forest and agricultural lands of villagers. The habitats have been destroyed due to recurrent floods in the plains of rivers like Sonkosh, Rydak, Jayanti, Pana, Gaburbasa, etc. It has been observed that during July and August, the monsoon is at its peak in this region. The hilly streams (jhoras) and rivers are in spate. Boulders, debris, trees, etc, are carried down and get fixed at places and form barriers. As a result, the original river courses get elevated leading to diversion of rivers and streams courses. It leads to huge destruction of plantations and human settlements in the reserve (Management Plan for BTR 1999-2009). Persistent erosion of banks and intermittent landslides add to the misery of rivers and streams by the addition of boulders, bed materials and trees. The riverbeds become silted and are on level with the adjoining settlements or roads or even rise above the settlement level or roads, causing severe floods and loss of cultivable lands of villagers, wildlife habitats and plantations. An estimate suggests that in a few places silting occurs at an alarmingly high rate of two to four feet per year (Khalid and Patel 1999). The same study also reveals that about 1,596 hectares of forest area were damaged due to the changing course of streams (jhoras) and rivers of the reserve.

Secondly, a series of national government and Supreme Court orders imposed several restrictions on wildlife conservation within the protected areas. As there is an increasing trend of soil erosion and landslides in hilly regions with increased deforestation and infrastructural activities in Bhutan, this has led to excessive boulders and debris being carried and getting accumulated in the lower part of the river courses, forming barriers. Removal of anything like dead, diseased wood, boulders, debris has been banned with the Supreme Court ruling of 2000. Consequently, the MoEF released the Handbook of FCA, 1980; FC Rules 2004 and Guidelines and Clarifications, in which it declared:

The Supreme Court has passed an order on 14-2-2000 restraining removal of dead, diseased, dying or wind-fallen trees, drift wood and grasses, etc, from any national park or Game Sanctuary...In view of this, rights and concessions cannot be enjoyed in the Protected Areas (PAs).

The Supreme Court had passed such an order in the context of a proposal by the Karnataka and Uttar Pradesh governments to allow the removal of timber from protected areas, under the guise of it being dead, dying or diseased (Kothari 2005). The Court definitely had no other intention.
other than to stop destructive activities for commercial profit in the protected forests. But the MOEF interpreted this as the banning of all activities, including forest resource use for survival and livelihood of forest communities. The situation got further aggravated when the Central Empowered Committee of the Supreme Court had written a letter to all forest officials which stated that:

A number of instances have come to the notice of the Central Empowered Committee where felling of trees/bamboo, digging of canals, mining, underground mining, collection of sand/boulders...cutting grass, collection of minor forest produce, grazing, construction, widening of roads, etc, have been allowed to be undertaken in protected areas without obtaining permission from the Hon’ble Supreme Court on the plea that these activities are part of management plans. You are requested to ensure strict compliance of the Hon’ble Supreme Courts order so that none of the above prohibited activities are allowed to be undertaken in protected areas (cited in Kothari 2005).

Thus the reserve is severely impacted due to locational disadvantages as well as enforcement of legal measures for conserving biodiversity in protected areas. It actually threatens the lives and livelihoods of the forest villagers as well as the ecosystem and plantation areas especially in BTR where frequent and devastating flood occur with the continuous changing courses of rivers and streams.

6 Bangdoba Forest Village

Bangdoba, a forest village of BTR, is basically a multi-ethnic village, inhabited by Nepali, Santal and Rava communities.

Study Area and People

There were 25-agreement holders in this village before 1969. Now, a total of 47 families are present in this village, making 22 families non-agreement holders as per forest rules. Out of 47 families, 22 families belong to the Nepali, 16 families to Santal and nine families to the Rava community. A total population of 238 is present in this village. Before displacement, they possessed 147 acres of land and 74 bullocks, 62 milch cows and 78 goats. Now, they have only 21 bullocks, 26 milch cows and 16 goats.

The Nepalese are the most dominant community in this village. The Santal tribal group is the second most numerically

dominant group. It is interesting to note that there is wide disparity of income among the population of this village. Nearly half of the total population had family income of less than Rs 2,000 per month and the rest of the population had family incomes of more than Rs 6,000 per month. Community-wise, the Nepalese earn more money and hence are better-off. The Santal and Rava family incomes are less in comparison to the Nepali community.

Historical Account of the Village

Bangdoba is a forest village established before independence. They were allowed to settle in the forest in accordance with the taungya system. Under taungya, the forest department provided five acres of cultivable land and one pair of plough bullocks and two milch cows to each household. In June 1998, the Gholani river, a principal tributary of the Sankosh river which originates from Tibet and passes through Bhutan, shifted its course westwards badly damaging all agricultural and homestead land. It deposited huge sand and silt on the agricultural land of Bangdoba forest village; as a result, villagers were forced to move to other areas. Forest villagers of Bangdoba, encroached and settled at the plantations areas of Ghoramara beat, Volka range under the east division of BTR, after displacement. They are residing on encroached land of about 20-22 acres. By this, they have already damaged the whole plantation of 1998, partially also damaging the 1997 and 1989 plantations.

From a chronological standpoint, the then British government encouraged settling in Buxa forest division for exploiting forest resources with establishment of forest bastees. Bangdoba village is one of the 37 forest villages at the BTR. In 1968 huge damage occurred to agricultural and homestead lands due to the deposition of sand caused by floods. In June 1998, the whole village was washed away and sand and silt were deposited on cultivable land due to the changing course of the Gholani river. From June 1998 to August 1999 the displaced persons stayed in a temporary camp at the premises of a primary school. During this period people repeatedly demonstrated and appealed to the forest and civil administration for resettlement but without any results. The affected people forcefully encroached plantation areas within the protected area.

Effect of Forced Displacement

Any type of forced displacement will not only lead to economic uprooting but also to social cultural impoverishment reflecting the fact that displaced people lose natural, manmade, human, and social capital (Cernea 1995, 1997). Forced displacement of the Bangdoba villagers due to natural disasters has had serious consequences for the socioeconomic status of the villagers. By analysing development-induced displacement, Michael Cernea has conceived how far impoverishment risk can be traceable to flood disasters in specific environments like protected areas. The study reveals some major consequences which are as follows:

(a) Landlessness: In the pre-displacement period, villagers had about 147 acres of cultivable land with homestead gardens. Due to damage of land and deposition of sand and silt, the land became unproductive. As a result, in the earlier settlement villagers became virtually landless. Thus, affected families became severely impoverished because the villagers’ primary occupation (in the pre-displacement period) was agriculture and care of home gardens. During distribution of land in encroached area in the post-displacement period, it is observed that Nepalis, the numerically dominant and economically better-off got most of the land (about 80%) with better communication in comparison to others. But the Santals and Rava who are economically poor got less and worse quality land in relatively remote areas for only house construction. Most of the households of the dominant communities sowed mustards in areas adjacent to the house. But tribal people did not do so as they had no land and money for cultivation. So it is interesting to note that even in encroached areas, power dynamics play a major role.

(b) Homelessness: In earlier settlements, most of the households had wooden houses with corrugated tin sheets on the roof. In the post-displacement period, they got encroached land of about 20 to 22 acres. Almost all the Nepalis got 80ft × 80ft space for house construction. They have already erected wooden house. On the other
hand, the tribals got only a little area for house construction. They just made temporary shed for shelter. They could not erect a house due to poor economic conditions.

(c) Joblessness: Almost all the families became jobless and lost their lands where they could cultivate yields. Very few families without cultivable land engaged themselves in agricultural work on others’ land on engaged in daily labour in panchayat works. Income from the sale of areca nuts in homestead gardens played an important role for forest villagers in the pre-displacement site. Because homestead land was washed away, villagers also lost another source of cash income.

Due to unemployment in these regions, a large part of the male population migrated to northern and western parts of India for working in companies and factories as daily labourers or other similar jobs.

(d) Other Effects: Due to sudden landless-ness, villagers became more marginalised in the post-displacement period. Vulnerable groups like tribals were the worst affected. It is revealed that people are not able to earn money due to the lack of opportunity for work in nearby regions. As a result, people do not even get their daily food. They have to survive on the sale of firewood besides collecting edible roots, fruits, tubers, vegetables, and leaves from the forest. Furthermore, people did not send their children to schools in post-disaster period.

Survival Strategy in Post-Displacement Period
Due to landlessness, people’s main productive systems, economic activities and livelihoods became severely affected and led to impoverishment of the village people. It is observed that villagers’ income for subsistence and survival heavily depended on the sale of cattle, goats, pigs, daily labour, sale of firewood, savings and other assets created before displacement. More than 65% of total bullocks were sold by villagers; the villagers also sold more than 70% of the goats and 55% of milch cows for their daily food needs.

7 Discussion
The reserve and its inhabitants are facing two kinds of threats, (a) threat caused by the frequent changing course of rivers in hilly areas and the consequent damage and destruction of habitat and plantation areas as well as of settlements; and (b) threat caused by the creation of protected areas with stricter legislation for protection and maintenance of biological diversity and wildlife that trigger flood disasters.

As mentioned, this reserve situated in the foothills of eastern sub-Himalayan West Bengal bordering Bhutan in the northern side, has numerous rivers and streams that originate and flow southwards, intercepting the reserve. Environmental degradation and consequent soil erosion and landslides in eastern Himalayas is seriously impacting this reserve forest area through increased flooding due to the so-called development initiatives by the Bhutan government. This has resulted in heavy loss of cultivable land of the villagers, wildlife habitats and plantations (Management Plan for BTR 1999-2009).

Various legislations enforced in protected areas like BTR for conserving biodiversity further aggravate the flood situation. As mentioned earlier, legislation in protected areas restricts the removal of dead, diseased, dying or wind-fallen trees, drift wood and grasses (MOEF 1999). As a result, forest authorities are not interested in taking measures for the management of original river courses. They claim that they have no permission to remove boulders, debris and trees from river courses caused by continuous erosion of river banks and intermittent landslides despite these destroying plantation areas and habitats as well as settlement areas of villagers. In addition, rights and concessions of forest communities have been curtailed. As was observed, these rules and regulations actually threaten the lives and livelihoods of the forest villagers in a situation where frequent and devastating floods occur. In effect, forest villagers are facing continuous threats of destruction and forced displacement from their original settlement as we observed in the case study. The serious impact of these orders on livelihood issues of forest villagers has been evident in several national parks and sanctuaries like the Satkosia Gorge Sanctuary and Sunbeda Sanctuary in Orissa, Kumbalgarh Sanctuary and Bharatpur National Park in Rajasthan (Kothari 2005) and the BTR wildlife sanctuary in Karnataka. The impact is also evident in terms of the ecological aspect in some protected areas like destruction of plantation areas as observed in this study, to severe fire in the Kumbalgarh Sanctuary in Rajasthan (ibid).

The impact of the flood disaster on the villagers varies according to vulnerability patterns generated by the socio-economic system they live in (Canon 1990). The coping strategy of the vulnerable groups like women, poor and disadvantaged groups varies. The case study reveals that among the displaced people, tribal and other marginalised groups are more impoverished after displacement. These powerless people are exploited even more by the powerful group of the same village. During land distribution among themselves in a new site, the dominant group within the village tries to occupy lands of improved category and with better communication facilities. So power dynamics among the displaced has a role when resettling in other places as reported in studies (Zaman 1989). In the post-displacement period, the affected people sustain their daily livelihood by use of assets created in the pre-displacement period, as there are no alternative stable economic activities. Moreover, forest villagers have no legal right over ownership of land (Anon 1970) but residing in an ancestral place as per agreement stated earlier, they become more vulnerable in the new area after the flood disasters. They are vulnerable in the newly settled area because they lose lands and shelter which earlier they possessed as per agreement with forest department that ceased to exist in 1969. This may lead to forceful eviction of forest villagers from the reserve by the forest authority.

The study also reveals that repeated appeals and demonstrations by affected villagers to forest authorities and civil administration for rehabilitation has little impact on them. The forest authorities claim that they have no legal power to resettle the villagers in another area according to the Wildlife Conservation Act of 1972 and other government orders. On the other hand, the civil administration passed off the responsibility to the forest authorities by saying that the forest department should provide land for resettlement. So the problem continues without any solution. The actual perception and attitudes of local
forest managers reveal that they do not give much attention to this problem as they believe that villagers would have no option but to shift to other places outside the forest area with the recurrent river bank erosion. But in reality as we observed in this case study, there were villagers who encroached and destroyed large areas of plantation within the reserve and resettled there.

But interestingly the record suggests that there are degraded areas in the reserved forest area as well as in protected areas, where villagers are forced to leave ancestral places, can be resettled (Management Plans of BTR 1999-2009). This strategy may help in two ways. First, re-establishment of villages in these degraded peripheral regions may create open grasslands. Second, this will instil confidence in the displaced villagers on forest management, as active participation and involvement of local villagers is extremely important for maintenance of protected areas which is the main objective of the National Forest Policy (1988) as well as in line with international agreement under the convention of biological diversity.

Actually blanket bans or restrictions in every national park and sanctuary does not necessarily have a positive impact on biodiversity and local people. It is mistakenly assumed that all geographical areas and their ecosystems are alike. In India, conservationists, ignoring local truths, always look for universal international models for conservation (Lewis 2003), and these, although effective in one area, fail to achieve the desired result in other areas.

8 Concluding Remarks

From the above discussion, it is clear that rules and regulations in protected areas like the BTR affect the forest ecosystem in two ways. First, huge tracts of plantation areas are getting destroyed every year reducing the forest biomass within protected areas due to the constant change of rivers and stream courses as well as erosion of river banks and landslides. Second, with continuous change of courses of rivers, devastating floods occur causing huge damage to homestead as well as cultivable lands of the forest villagers who are forced to relocate in new encroached areas thereby destroying plantation areas of the forest.

To reduce the threat faced by villagers especially in a protected area like the BTR, there should be some area-specific policy involving legal changes to deal with the land scarce area circumscribed by national parks and sanctuaries as well as rivers that originate from hills causing severe damage and erosion of forest lands. Suitable strategies amending rules should be adopted so that relocation of affected forest villagers can be possible in degraded peripheral areas of the reserve. Attention should also be given to marginalised tribal villagers who are the worst sufferers during relocation. Moreover, active coordination between the revenue and forest departments in dealing with this kind of situation is extremely important.

NOTES

1. An area of land or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means (IVth World Park Congress 1992).
2. Under the Wildlife Protection Act (1972), national parks are given higher level of protection, with no grazing and no private landholding or rights permitted within them, while sanctuaries are given a lesser level of protection, and certain activities may be permitted for better protection of wildlife or for any other good and sufficient reason, as judged by the chief wildlife warden.

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