

**Losing Biodiversity, Impoverishing Forest Villagers: Analysing forest policies in the context of Flood Disaster in a National Park of Sub Himalayan Bengal, India**

*Bidhan Kanti Das*

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**INSTITUTE OF DEVELOPMENT STUDIES KOLKATA**

**DD-27/D Salt Lake City, Sector - 1**

**Kolkata - 700 064**

**Phone : +91 (33) 23213120/21 Fax : +91 (33) 23213119**

**e-mail : [idsk1@vsnl.net](mailto:idsk1@vsnl.net), Website : [www.idsk.edu.in](http://www.idsk.edu.in)**

# **Losing Biodiversity, Impoverishing Forest Villagers: Analysing forest policies in the context of Flood Disaster in a National Park of Sub Himalayan Bengal, India**

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## **INTRODUCTION :**

The eastern Himalaya is a 'biodiversity hotspot' as well as 'eco-crisis zone' (Brooks et al 2006). The ecosystems of this region have been fragmented due to migration, economic development and population increase along with climatic change ( Beniston 2003). Fragmentation and fragility often cause soil erosion, mass wasting, landslides and other geo-climatic problems (Tewari 2000), ultimately affecting the downstream. These incidences along with intense monsoon rainfall lead to frequent flooding in the foothills and downstream and decrease in soil fertility level. This leads to reduction in crop yields and agricultural productivity threatening livelihood of the local people( Chettri et al 2010). The situation directly affects the forest areas located in the foothills of Himalayan regions as local inhabitants are either under the direct threat of dislocation or are involuntarily displaced due to changing courses of rivers, streams that originate from Himalayan region and pass through the protected areas (Das 2009). As a result, a large tract of cultivable land has either eroded or got silted making land unproductive for forest villagers.

In India, existing forest laws prevent villagers from relocating other areas of the reserve as per owner's wishes under the threat of dislocation because of the changing course of river and consequent flood disaster. So, forest communities are facing increased risk of flood disaster dislocation. These laws also prevent communities from

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\* Assistant Professor, Anthropology, Institute of Development Studies Kolkata (IDSK)

accessing forest resources to support their livelihood( Pathak and Kothari 1998). In effect, this threatens the lives and livelihood of the forest villagers as well as ecosystem and plantation areas particularly in national parks or sanctuaries located in and around the eastern Himalayan region. Against this backdrop, this paper tries to examine why the study area experiences recurrent floods and how existing forest laws and policies aggravate the situation which actually leads to loss of bio-resources and makes forest dependent people more vulnerable. This paper argues for changes in existing forest laws and policies to reduce the prevailing situation. It will help policy makers and forest managers to prepare resettlement strategy for local inhabitants after taking into consideration socioeconomic realities, peoples' perception about relocation in order to enhance peoples' confidence in conservation initiatives.

The paper is structured in the following sections. The second section deals with the conceptualisation of forced displacement and its consequences in the context of flood disaster or changing river courses / river bank erosion and current conservation strategies of biodiversity resources to locate the actual problem. The third section briefly describes the study area, i.e., Buxa Tiger Reserve and its importance for biodiversity as well as for the villagers who reside within it. Section IV tries to identify factors that lead to recurrent flood disaster making the reserve area more fragmented and fragile and forcing the villagers to perceive threat of dislocation and destruction of forest habitat. One case study will be presented to underline the threat perception of dislocation. Another case study will be presented to highlight the actual impact of changing course of rivers and streams and consequent flood disaster on forest villagers. A critical discussion is made on the findings with the help of existing literature available in section V. The concluding remarks are made in the last section which indicates the possible policy changes and recommendations to conserve existing bio resources and create positive attitude of local inhabitants for sustainable conservation of biodiversity resources.

## **LOCATING THE PROBLEM:**

Forced displacement due to large scale development projects, conservation projects and natural disasters often create a severe

impact on the socio-economic and cultural existence of the displaced persons. Most people lose their home, land and livelihood. Moreover, people who experience involuntary resettlement are unable to regain their losses, ending up worse off than before ( McDowell 1996; Downing 2002).As a measure of current conservation programmes, enforcement of rules and regulations for wildlife protection and biodiversity conservation, local communities either face forced displacement from their original habitat or significant restrictions on access to forest resources including restrictions on the quantity, timing or technology used for resource extraction as well as threat of loss of life and crops from wildlife depredations (Seymour 2008). There are numerous experiences accompanying the consequences of forced displacement like landlessness, joblessness, food insecurity, increased morbidity and mortality, loss of access to common property resources to social disarticulation due to development interventions (Cernea 1997, Mahapatra1999/2000, Cernea and McDowell 2000, Scudder 2005). Later, researchers tried to test whether risks faced by development-induced displacees are applicable to refugee situation (Kibraeb 2000) or conservation programmes (Cernea and Schmidt-Soltau 2006; Schmidt-Soltau 2003; Brockington 2002; Kabra 2003, 2006; Shahabuddin et al 2005). Similar to development-forced displacees, forced displacees as a result of current conservation programmes also have to face a wide range of deprivations ranging from costs of material, economic, social losses, to psychological disturbances ( Schmidt-Soltau 2003). In India, anthropological researches have focussed on the current conservation strategies that led to displacement of communities and the resultant impoverishment of livelihoods and cultures (for example, Kabra 2003,2009; Mehra et al 2004; Shahabuddin et al 2005; Karnath 2007; Lasgoriceix and Kothari 2009) and emerging conflicts (Mukherjee 2009) centering around national parks and sanctuaries created under Wildlife Protection Act 1972 (WLPA 1972).

The Himalayan Mountain ranges, particularly the Eastern Himalaya,are a rich repository of biodiversity. They are now facing increased pressure from various elements like land use patterns,population increase, economic development including climatic change.Rapid reduction of glaciers in the greater Himalayas

as climatic change impact has implications for future downstream water supplies (Nogues-Bravo et al 2007). It is argued that the on-going climatic change would produce significant effects on river flows, natural hazards, and biodiversity, ecosystem composition and structure, and function and human livelihoods (Parmesan et al 2006; Bates et al 2008). The Eastern Himalayan region has experienced an increased frequency of events like floods, landslides, mudflows, and avalanches affecting human settlements over the past three decades (Shrestha 2004; WWF 2005). Moreover, frequency and magnitude of high intensity rainfall are also on the increase(Goswami et al 2006). Recognising the Eastern Himalayas as important ecosystems or 'crisis eco-regions', establishment of protected areas has been the important management strategy to reduce the loss of biodiversity (Chettri et al 2010). There are about 100 protected areas of different sizes and categories which is about 20% of the total region (Kollmair et al 2005). Against increased deforestation and on-going climatic change in the Eastern Himalaya,one may question the relevance of the current conservation policies of biodiversity conservation,particularly for the protected areas in the foothills of eastern Himalayan regions.What are their direct impacts on the forest habitat and on the local human settlements? What are the drawbacks of the existing forest laws and regulations when applied in this particular geographical environment? There is a dearth of study in this direction. This study is an attempt to fill this knowledge gap.

The study intends to understand how the current legal enforcement for biodiversity conservation helps to increase the intensity of flood disaster and consequent impact on local ecological and forest resources as well as settlement areas in a specific geographical environment like the present study area. For this, data were collected from Government records and other related sources. In addition, two case studies are presented very briefly to understand the gravity of the situation. One case study reveals what happens when people perceive risk of forced displacement on the changing course of rivers and streams. The second case study narrates what happens when a village is washed out leading to displacement of villagers from their ancestral land due to flood. Further micro-level indepth study was

undertaken in two forest villages of Buxa Tiger Reserve (BTR), a national park located in the foothills of Sub Himalayan West Bengal. The two villages experienced two types of incidences. Data of the present study were collected through household census and by applying genealogical method. Some additional information were collected with the help of structured and open-ended questionnaires. Almost all the families of these forest villages were taken into consideration for the study. Older persons were selected as key informants for data collection.

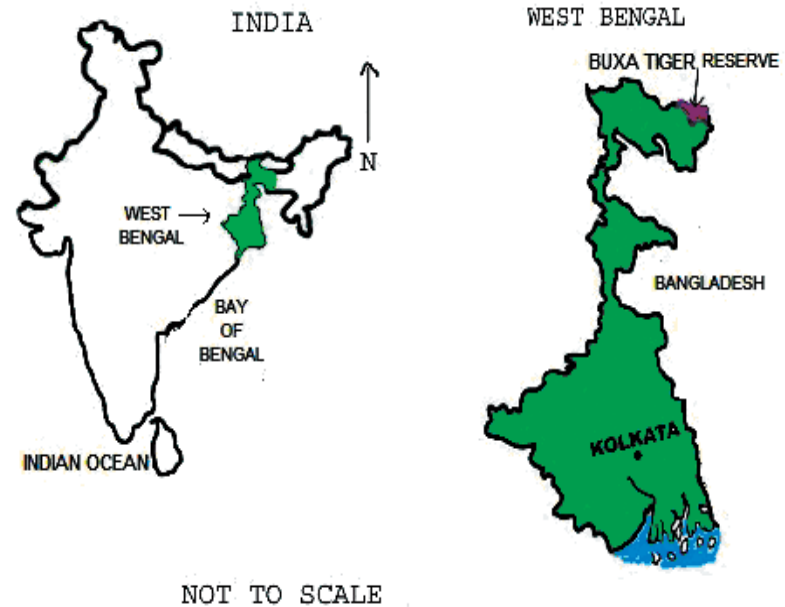
**RESEARCHED AREA : BUXA TIGER RESERVE:**

*Location and span:* The Buxa Tiger Reserve (BTR) has dense, diverse vegetation cover and can boast of a rich wildlife. It is located in Alipurduar subdivision of Jalpaiguri district, West Bengal. It stretches over a length of 50 km from west to east and 35km from north to south. The total area of the Reserve is 760.87 sq. km., of which 385.02 sq. km. is Buxa Sanctuary and National Park and the rest 375.85 Sq. Km. falling outside the sanctuary is considered to be a buffer area. On the eastern side of BTR lies the border area of Assam, the demarcating line being the Sankosh river. The Reserve is bounded on the north by the border areas of Bhutan. A number of tea gardens and cultivable lands demarcate the western and southern boundaries of the Reserve.

*Biological significance:* It is located in the confluence of three major bio-geographic zones, viz. Lower Gangetic plains (7B), Central Himalayas (2C), and Brahmaputra Valley (8A). The big cat (*Pantheratigris*), the national animal, constitutes the most important fauna in the reserve. It reveals a number of elements of bio-diversity of North-East India, one of the most bio-diverse Indian regions (Management Plan of BTR-1999 to 2009). The endangered Indo-Malayan species like Chinese pangolin (*Manis crassicaudata*) and reticulated python (*Python reticulatus*), rare clouded leopard (*Neofelis nebulosa*), marbled cat (*Pardofelis marmorata*), black-necked crane (*Grus nigricollis*), which represent some of the endemic species of North-East zone, are present in the Reserve (Das 2009). Moreover, the Reserve acts as a carbon sink of the region. The mountain ranges intercept rain laden clouds and recharges ground water. It

protects the catchments of several rivers and streams, thereby reduces soil erosion and maintains water regime. It sustains the economic prosperity of the region through downstream irrigation.

**Map 1 : Location of Buxa Tiger Reserve, India**



*Floral and faunal diversity:* More than 50 per cent of the plant species of India are represented in North-East India. Of these 60 per cent are endemic. BTR has many of those characteristics and the present checklist shows 352 species of trees, 133 species of shrubs, 189 species of herbs, 108 species of climbers, 144 species of orchids, 46 species of grasses and reeds, 6 species of cane and 4 species of bamboo. Along with the floral diversity, the BTR has a wide range of faunal diversity. There are 68 species of mammals, 41 species of reptiles, 246 species of birds, 4 species of amphibians, 33 species of fishes identified within the reserve. A study on the entomofauna of BTR listed 500 species of insects belonging to 13 Orders, 65 Families and 229 Genera (Management Plan of BTR-1999 to 2009).

*People and economy:* BTR has 37 forest villages<sup>1</sup> and four fixed demand holdings within its boundary with a population of 18,100 (1991 census). Twelve forest villages and 2 fixed demand holdings are located within the core areas of BTR. In forest villages about 2919 families have been residing. Of them, the dominant ethnic groups are Nepali, Rabha, Oraon (Das 2005a). BTR is also encircled by 34 tea gardens and 46 revenue villages on the western and southern sides (2 km from the park boundary). The human population of these revenue villages is 95,049 (1991). The predominant ethnic groups in these revenue villages are Rajbansi, Mech, migrant Bengalees (Das 2009).

The cultivation of paddy, maize, *marwa*, millet with rainwater is the prime economic activity of forest villagers of BTR owing to the absence of any irrigation facility. Sale of milk, areca nut, bamboo, NTFPs are the complementary source of income for sustaining the daily needs of families particularly in forest villages (Das, 2005b). Assets like livestock form as an emergency source of income, especially during rituals and festivals, or bearing the cost of medical treatment, education or disaster management (Das 2009). Employment opportunities for both forest villagers and fringe dwellers get drastically reduced due to ban in clear felling coupes and artificial regeneration (CFC) operation and boulder collection with the creation of Tiger Reserve in 1983. One estimate suggests that villagers used to be employed in timber harvesting and plantation work for about four months in a year prior to 1983. In 1984, about 5.9 lakhs mandays had been created, which had dropped to 2.775 lakh mandays in

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1. For exploitation of forests for commercial purposes, the then British rulers established forest villages (*bastees*) in different parts of North Bengal. As a result a number of forest villages came into existence in different pockets of Buxa division. People were first allowed to settle in the forest in connection with the scheme of *taungya* (contract) sowings (Karlsson 2000). With the establishment of forest villages the steady supply of labour force for silvicultural operations had developed. The forest villagers had been found to be quite skilled in raising new plantations and in doing other silvicultural operations including ordinary road and bridge works and other minor repairs.

1991, within a gap of seven years [Management plan for BTR (1999-2009)]. This has increased dependence of local people on natural resources of the Reserve for sustaining their livelihood and has become a serious cause of deterioration of habitat. Moreover, a ban on dolomite mining and restrictions on collection boulders from the core areas lead to conflicts with the local inhabitants as well as a larger section of the adjoining population.

In revenue villages, about one fourth of the villagers are landless or share croppers and are largely engaged as agricultural labour or daily labour. A majority constitutes small and marginal farmers. About one fourth of the total cultivable lands have been brought under minor irrigation system. Villagers from revenue areas cultivate paddy, potato, jute, mustard, and other vegetables. Landless people are engaged as agricultural labour, daily labour at panchayat (three tier system of local government) works, selling firewood, and forest departmental works. Some members sustain their livelihood from small scale businesses in vegetables, cattle, areca nut. A fair number of youth have migrated to northern parts of India for working as daily labour in industries.

#### **FINDINGS :**

##### ***Locational disadvantage and Forest Laws: Causes of recurrent Floods***

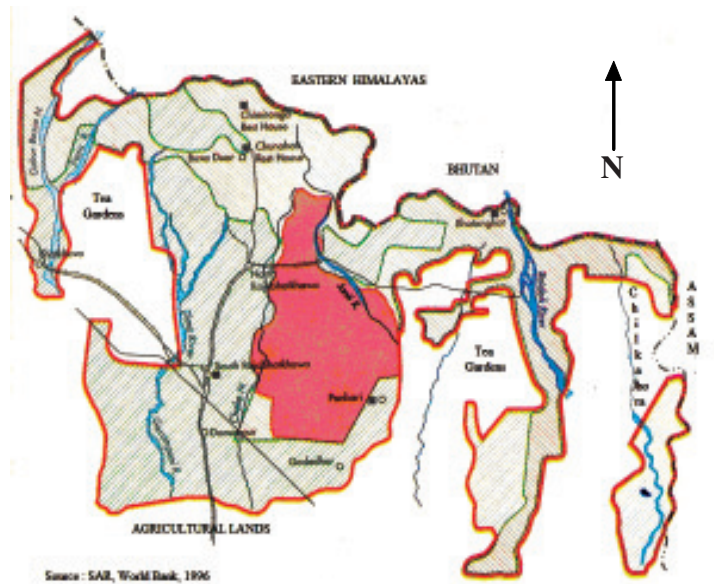
It is reported that BTR is experiencing recurrent floods, which have become annual feature leading to huge damage to forest habitats and human settlements (Management Plan of BTR 1999-2009). Local people are either under threat of displacement or forcefully dislocated (Das 2009). Why is this happening? What are its major causes? It may be suggested that this Reserve is facing two major problems that exacerbate flood disaster destroying forest habitat and life and livelihood of the local villagers inhabiting within the Reserve.

##### ***Changing Course of Rivers: Loss of Forest Habitats***

Wildlife habitats have been destroyed several times due to recurrent floods in the flood plains of rivers which have originated from the Himalayan region that pass through the Reserve. Floods also cause huge damage to high forests and plantation areas of the Reserve.



**Map 2: Major rivers originate from northern part and passes through Buxa Tiger Reserve ,Northern West Bengal, India**



Accumulation of flood water in the forest area creates a condition of 'physiological drought' and as a result, trees die out in large number. The sand and debris carried down and deposited by flood water on the forest surface area reduces moisture holding capacity of soil resulting in drying up and death of standing trees. Devastating floods have been reported during 1950, 1952, 1954, 1968 and 1993 causing extensive loss to the habitat of the Reserve. In 1968, the flood of Rydak river had destroyed huge tracts of central Rydak and Marakhata block. It left a long trail of sandy beds on either side of main course (Management plan of BTR, 1999-2009). The same report mentioned that the huge area of the Reserve suffered heavily due to heavy rains on 18<sup>th</sup> July (922 mm) 1993. The flood caused havoc to vegetation and forestland. Since 1922-23, Sankosh, a principal river has moved westwards and crossed through the north and south Bholka forests leading to inundation of the entire forest areas. 'Sal' (*Shorea robusta*) and other trees died sporadically and in patches and were replaced by tall grass. In the year 1998, Gholani, the main tributary of Sankosh, shifted its direction westwards damaging severely Bangdoba forest village and in the process deposited huge sand and silt on forest land. This has caused drying of 'teak' plantation

in certain areas (ibid). Another river, the Rydak, which flows through various blocks of the Reserve, changed its courses several times in 1905, 1930, 1933, 1950 and in 1968. When flood occurred, it passed through the old course of the river along the central Rydak and Marakhata forest block, causing extensive damage to the forest tracts. However, chance of flood has considerably reduced due to construction of embankment across the old Rydak. But again, the main course has been bifurcated. This river again shifted its course towards east near Newlands area and destroyed about 100 hectares of plantations in Newland block. Jainti, another river, originates from the Bhutan hills and flows southwards, often changing its course. It has damaged important habitats of core areas of the Reserve. Change of course and its consequent bank erosion threaten human settlements as well as forest establishment. Bala river has caused severe damage to the standing forest crop in south Rajabhatkhawa and Checko blocks since the flood in 1950. Recently, floods of Bala river have damaged valuable standing 'sal' forests of Damanpur and Cheko compartments. In the year 1998, Dima river changed its course and moved westwards and washed out a large area of 'teak' plantation of Dima compartments. Now Dima is flowing near forest establishment leaving the older course. Similarly, Pana river also caused huge damage to Pana and Bhutri forest blocks (ibid). So it may be said that changing courses of rivers intercepting the Reserve and consequent flood disaster cause huge damage to forest habitats and human settlements, making ecosystem more fragmented.

But what are the probable causes that lead to increased flood disaster? It is already mentioned that this reserve is intercepted by several rivers, streams (*jhoras*) which generally originate from the Eastern Himalayan region bordering Bhutan in the northern part of India. Sankosh, Rydak, Jayanti, Bala, Dima, Gaburbasra are the principal rivers. Rivers like Sankosh, Rydak originate from Tibet in the eastern Himalaya and pass through Bhutan hills. However, other rivers such as Jainti, Dima, Pana, Bala, Gaburbasra originate from the Bhutan hills and flow southwards (Management plan of BTR 1999-2009). These rivers intercept the various areas of the forest habitat of Buxa and frequently change their main course causing extensive loss of the forest habitat during flood as has already been reported.

The habitats have been destroyed due to recurrent flood in the plains caused by rivers like Sankosh, Rydak, Jayanti, Pana, Gaburbasra,

Bala. In the months of July and August, the monsoon is at its peak in this region. The hilly rivers and streams (*jhoras*) are in spate. Boulders, debris, trees, etc. are carried downstream, which get accumulated at places and form barriers. As a result, the original river beds are raised in relation to banks of the river leading to diversion of rivers and streams. It leads to huge destruction of plantations and human settlements in the Reserve. Continuous erosion of banks and intermittent landslides add to the accumulation of boulders, bed materials, debris and trees. The riverbeds become silted and are at level with the adjoining settlements or roads or have even risen above the settlement level or roads causing severe flood and loss of cultivable lands of villagers, wildlife habitats and plantations. It has been observed that siltation is occurring at an alarmingly high rate of 2 ft to 4 ft per year at a few places (Khalid and Patel 1999). Estimate suggests that about 1596 hectares of forest area were damaged due to changed courses of streams (*jhoras*) and rivers within the Reserve (Table 1).

**Table 1: Affected areas due to changing course of rivers which pass through the Buxa Tiger Reserve**

Sl no.	River/Jhora (stream)	Range	Total area affected (in hactares)
1.	Jainti	Jainti	250
2.	Rydak II	Kumargram	230
3.	Kalikhola	Do	14
4.	Sankosh	Do	01
5.	Hathinalajhora	Do	12
6.	Khuruljhora	Do	05
7.	Dima	Buxaduar	400
8.	Buxajhora	Do	300
9.	Bala	Do	300
10.	Pana (at Hathinala)	Pana	15
11.	Gangutiajhora	Do	02
12.	Raimatong	Do	15
13.	Swetikhola	Do	02
14.	Rydak I	North Rydak	15
15.	Dhoksha	Do	20
16.	Basra	Hamiltonganj	15
	<b>Total</b>		1596

Source: Khalid and Patel 1999

*Existing Forest Laws and regulations:*

Despite these huge damages of plantation and settlement areas due to frequent changing of course of rivers and streams, forest authorities are not authorised, as they claimed, to remove boulders, debris, trees from the river course caused by persistent erosion of river banks and intermittent landslides leading to heavy siltation and blocks in original courses of rivers. But why are the forest managers denied of permission for removal? The critical factor is the universal adoption of the western philosophy of forest management, particularly in developing countries. Wildlife biologists and conservationists believed that conservation of biodiversity could only be done without any kind of human interference (Shah 2007) and the creation of 'inviolable space' seemed to be the best way to preserve the remaining biodiversity of the earth. One of the basic assumptions of this paradigm is that human interference invariably causes disturbance to wildlife and degrades biodiversity. Following this 'Yellowstone national park model' of management strategy, a legal framework was constituted in India in 1972, which is popularly known as Wild life Protection Act (1972). It seeks to exclude local communities from the forest reserve to stop biotic pressure.

Under WLPA, there are three categories of protected Areas (PAs) : national parks ( NPs), Wildlife sanctuaries (WSs) , and closed areas. NPs are given the highest level of legal enforcement where all human activities are to be stopped (Pathak and Kothari 1998). No grazing and private land holding or rights are permitted within them. WSs are given a lesser level of legal protection and certain activities may be permitted within them for better protection of wildlife. Here, human activities like collection of fallen and dead wood, grazing, habitation are allowed, subject, however, to the approval of the District Collector in consultation with the Chief Wildlife Warden (the highest official in wildlife wing). So, it is a kind concession, not right over resources. It has tremendous implication on the question of local people's access to livelihood. A blanket restriction on human activities, as in the case of NPs, and severe restrictions on resource extraction, as in WSs, have been a recipe for further impoverishment of the local people and conflicts between local people and PA manager (Kothari 2005;

Mukherjee 2009). In fact, these rules and regulations actually threaten the lives and livelihoods of the forest villagers as well as the ecosystem and plantation areas especially in situations like BTR where frequent and devastating flood occurs accompanied by continuous changing courses of rivers and streams. As there is an increasing trend of soil erosion and landslides in hilly regions with changing climate as well as increased deforestation and infrastructural development activities in Bhutan areas, excessive boulders and debris are carried over which get accumulated in the lower part of the river courses, forming barriers ( Das 2009). Extraction of such things like dead, diseased wood, boulders, debris has been stopped with the Supreme Court ruling passed on 2000. Consequently, the MoEF released a 'Hand book of FCA, 1980; FC Rules 2004 and Guidelines and Clarifications', in which it was stated :

*'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).'*

This order has resulted in widespread ramifications in ecological as well as livelihood aspects of the forest villagers of BTR. In ecological sense, huge damage to wildlife habitats has occurred as observed here due to changed courses of streams (*jhoras*) and rivers. On the other hand, already excluded forest-dependent communities are marginalised further as some cultivable as well as homestead lands have been lost or come under the threat of loss due to frequent changing course of rivers and streams and consequent flood disasters. Moreover, income opportunity from boulder and bed materials has been stopped due to enforcement of existing laws under WLPA 1972. One estimate suggests that about 2500 persons may get employment for about 8 months per year from boulder or bed material removal (Khalid and Patel 1999). This will certainly help in developing a positive attitude toward forest and decrease dependency on forest resources to sustain livelihood.

The following case study will help to understand what happens when people come under the threat of forced dislocation due to destruction

of cultivable land as well homestead land as a result of changing course of rivers and streams.

#### ***Bhutri forest village: A threat of dislocation***

Bhutri is basically a uni-ethnic village, inhabited mainly by the Nepali community, with dominance of Chetri, Sharma castes. They have been residing in this village since 1932. The Forest Department has provided 1.5 acres of land to 23 families and also wooden departmental quarters to most of the families as per agreement holders<sup>2</sup>. Now, 49 families are present in this village. So the rest 26 families are non agreement holders or *faltu* as per rules of forest department. The settlement pattern is linear in nature. The total cultivable land is about 40 acres with homestead land forming about 10 acres. Villagers cultivate maize, mustard, chillies, gingers, cereals on their land. There are no drinking water and sanitation facilities. People have to go to nearby *Jhora* (1km.) for fetching drinking water. People regard domesticated animals like cattle as an asset, which is a useful source of income during events like diseases, marriages, festivals, disasters.

Bhutri, a forest village, is now almost an 'island' like area due to changing course of rivers. On the northwestern part of the Reserve is the Pana river which originates in the Bhutan hills. One part of the river flows through Bhutri forests and another flows through Pana forests. Both courses merge with the Gaburbasra River above Gudamdabri block creating an 'island' like formation . It has damaged lot of forest tracts of Bhutri and Pana blocks. Gaburbasra originates from the Bhutan hills. It flows through Rangamati, Bharnabari, and Godamdabri blocks. It receives discharges of Pana river in its upper catchment. About 20% of the total cultivable land has been washed away by changing course of Pana River since 1973 onwards. Villagers' fear of further damage has increased due to the construction of *Hatibandh* (dyke) over Pana River on the north-eastern side of the Reserve.

What does the case study reflect? Villagers can perceive risk or

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2. They were entitled to get 1 Ha in plains and 0.6 hectares in hills per family for cultivation and for homestead . Each household was also allowed to keep not more than two plough cattle, two milk cows & four calves. Two goats/ sheep were also provided that they were always stall-fed (Anon 1970).



are fully aware of the risks of habitational destruction they are facing due to changing course of rivers and their channels. But they have no choice other than to live in such a vulnerable area, as claimed by them. They are caught in two extreme situations. At one end, they do not want to move to other place by cutting their ancestral links with the forest for generations. On the other hand, if they are forced to move, then where are they going to move? They do not have the means to purchase safe land outside forest area as they belonged to the lower strata in economic scale. They are living under anxiety and trauma of uncertain future. That means villagers compelled to live here survive not due to 'lack of information or inefficient land use planning but to control of land by market forces that do not permit low income groups access to safe land for residence' (Maskrey 1999).

When the threat of dislocation becomes a reality, then what happens? The following case study reflects how the changing course of river actually destroyed huge tracts of plantation area and homestead as well as cultivable land of forest villagers, turning fertile land into unproductive one due to huge siltation of sands and bed materials. In turn, villagers are forced to relocate themselves in another area by clearing plantation area of the Reserve.

***Bangdoba forest village : Forced displacees due to flood disaster***

Bangdoba, another forest village of BTR, is a multi ethnic village, inhabited by Nepali, Santal, Rava communities. There were 25-agreement holders in this village before 1969. Now, a total of 47 families are present in this village, rendering 22 families as non-agreement holders as per forest rules. Out of 47 families, 22 families belong to Nepali, 16 families to Santal and 9 families to Rava community. The total population of this village is 238.

The Sankosh, the perennial river, originates from Tibet and passes through Bhutan. It started eroding in 1921 into the Bholka forests. Since 1922–23, the river moved westwards cutting across the north Bholka and south Bholka forests. Due to inundation of the area, teak and other trees were lost in patches leading to invasion by tall grasses over the area. Its principal tributary is the Gholani on its west bank. In 1998, Gholani shifted its course westwards and

damaged all agricultural and homestead land badly and deposited huge sand and silt on the agricultural land of Bangdoba forest village. This has also caused the drying of teak plantations of nearby forest compartments. Moreover, the villagers were forced to move to other areas. They stayed in temporary camps at a primary school premise from June 1998 to August 1999. During this period people repeatedly appealed and demonstrated against the forest and civil administration for resettlement, but with no results (Das 2009). Affected forest villagers of Bangdoba forcefully encroached on and settled in the plantation areas of Ghoramara beat in Volka Range under the East division of Buxa Tiger Reserve after displacement. They are residing on encroached land of about 20-22 acres. By doing this, they have already damaged the whole of 1998 plantation, partially 1997 and 1989 plantations (ibid).

In effect, tribal and other marginalised groups become more impoverished after displacement. These powerless groups are more exploited even by the powerful group of the same village. It is revealed that during land distribution among themselves in the new site, the dominant group within the village will try to occupy land of improved category and with better communication facility. In the post-displacement period, the affected people sustain their livelihood with the help of assets created in pre-displacement period in the absence of alternative stable economic activities (see Das 2009 for further details). There is a general tendency among the villagers to adhere to existing economic activities and social relations. Furthermore, a number of young members (about 40%) have migrated to north western part of India for working in companies and factories as daily labourers or doing some petty jobs (ibid).

What is evident is that the displaced people are forced to 'encroach' other area within the park destroying plantation region? As forest villagers have no legal right over ownership of land (Anon 1970) but reside in ancestral place as per agreement stated earlier, they become more vulnerable in new areas after flood disaster. They are more marginalized in newly settled areas as they lose lands, shelter which earlier they possessed as per agreement with forest department. This is even worse in the case of non-agreement holders( Das 2009). They are treated as 'encroacher' by forest managers without any

right over land. They have become a kind of 'environmental refugee'. They have the fear of forceful eviction from the reserve by forest authority due to changing perception and attitudes of the authority towards forest villagers.

## **DISCUSSION**

The Himalayan mountain ranges, one of the richest natural heritage sites in the world, are facing increased pressure from various agents of global change including climate change (Nogues-Bravo et al 2007). In the Eastern Himalayas, ecosystem fragmentation is evident due to increased pressure from migration, economic development, and population growth as well as from climate change (Beniston 2003). It leads to loss of vegetation, loss of biodiversity, loss of wildlife habitat and soil erosion (Sarker and Lama 1986; Tiwari 2000). Moreover, natural conditions like steep mountain slopes and a continuous four month rainy season aggravate the problem. Government interventions in the name of 'development' lead to deforestation of the Himalayan region. This in turn causes soil erosion, landslides and creates other geo-ecological problems (Tiwari 2000). Again, soil erosion, mass wasting and landslides with intense monsoon rainfall lead to frequent flooding in the foothills and downstream and cause huge damage to forest habitat and livelihood, often displacing the local people.

It has been observed that flood disaster is an inevitable phenomenon in BTR, which will increase in future with increased environmental degradation and population growth as well as climate change in the Eastern Himalayas (Beniston 2003). This incidence has caused considerable damage to high forests and plantation areas of the reserve. Accumulation of flood water and deposition of sand and silt on forest surface area reduces moisture holding capacity of the soil (Management plan of BTR 1999-2009). This leads to drying up and death of standing trees and invasion of tall grasses. As a result, floral diversity will be reduced and eco system will be changed. Analysis reveals that as this national park is located in the foothills of Eastern sub-Himalayan West Bengal bordering Bhutan on the northern side, numerous rivers and streams which originated from the Eastern Himalayan region, intercept the reserve. These rivers and streams change their course almost frequently causing

recurrent flood. This becomes the source of further impoverishment of the local people. Their forest habitat and settlement area including cultivable land are completely destroyed, making ecosystem even more fragmented. Furthermore, continuous erosion of banks and intermittent landslides add to the misery as more and more boulders, stone particles and trees are dumped in their beds. As a result, the riverbeds become silted and are almost at the level with the adjoining settlements or roads or even rise above the settlement or road level causing severe floods and loss of cultivable land of villagers, wildlife habitat and plantation areas.

Despite heavy destruction of plantation areas and habitats as well as settlement areas, forest authorities are not interested in taking measures for management and control of original river courses as they have no permission to withdraw boulders, debris, trees from river courses caused by continuous erosion of river banks and intermittent landslides. In fact, the Ministry of Environment and Forests (MOEF) released a handbook containing rules and guidelines for forest conservation in protected areas based on Supreme Court Orders for banning the removal of dead, diseased, dying or wind-fallen trees, drift wood and grasses. In addition, rights and concessions of forest communities have been curtailed. Actually, Supreme Court had issued such an Order in the context of a proposal by some governments to allow the removal of timber from protected areas, under the guise of it being dead, dying or diseased (Kothari 2005) to stop some destructive activities for commercial profit in the protected forest. But the MoEF misinterpreted this order and issued rules and regulations to be applied to all protected areas of India. These rule and regulations actually threaten the lives and livelihoods of the forest villagers as has been observed by us in this situation where frequent and devastating flood occurs with continuous changing courses of rivers and streams. In effect, forest villagers are facing continuous threat of destruction and forced displacement from original settlement as revealed by the two cases described here.

It is worth mentioning here that the consequences faced by flood victims are effects rather than causes of failure of existing policy of biodiversity conservation and protection of wildlife. Enforcement of

existing general rules and regulations in a park like BTR affects forest ecosystem in two ways. Firstly, huge tracts of plantation areas are being destroyed every year due to flood, erosion and landslides reducing forest biomass within the protected area. Secondly, with continuous change of courses of rivers, devastating floods cause huge damage to homestead as well as cultivable lands. Forest villagers are forced to relocate themselves in new encroached area destroying plantation areas of the forest. Furthermore, impoverishment risks inflicted on flood disaster displacees due to ill-conceived conservation policy make these forest villagers the most vulnerable, poorest category of people with increased threat of forest resource-dependency. But unfortunately, these outcomes are completely ignored by the policy makers, conservationists and forest managers.

This gloomy situation could have been avoided, at least mitigated, if the forest managers showed positive will. Moreover, forest managers' insensitivity is evident from continuous appeals and demonstrations by the forced displacees to overcome losses and avoid risks of impoverishment, which did not evoke any response from them. Actually, forced displacees become the 'encroacher' in the eyes of forest managers without any right over land as they enjoyed earlier as agreement holder. This evokes continuous threat of forced eviction from the Reserve. They are under tremendous anxiety and trauma of forced exclusion. The forest managers are now ignoring legitimate rights over this ancestral land. The negative attitudes of the forest managers alienate forest villagers who are residing for more than 100 years in these areas and this contributes to unsustainable resource use. This alienation from the forest by local people may turn these forest lands into 'open access' areas (Bromley and Cernea 1989). In this context, should we treat these disaster victims as 'encroacher'? However, this debate is beyond the scope of this paper. Besides, increasing policing for the protection of forest may increase unsustainable level of investment especially by the developing countries. Even then, there are several instances of cooperation (like giving information of poaching, identification of year of plantation during preparation of management plan etc) extended by the forest villagers in the management of the park (personal observation) as evident elsewhere (Pathak and Kothari 1998).

It is evident from government records that degraded areas are available in reserved forest area as well as in protected forest areas (Table 2). About one fourth of the total protected forest is degraded while it is about 7.5 percent in reserve forest areas. Villagers who are either at risk of forced dislocation or displaced can be resettled in those degraded areas of the national park.

**Table 2: Different categories of forests at Buxa Tiger Reserve**

	East Division	West Division	Total
Total area under JFM( ha)	32866.0	25595.8	58461.8
Reserve forest ( ha)			
Dense	26682.0	24946.8	51628.8
Open	65.0	240.0	305.0
Degraded	3540.0	314.0	3854.0
Protected forest ( ha)			
Dense	561.4	5.1	566.5
Open	1.5	–	1.5
Degraded	136.0	–	136.0
Other forest (unclassified) [ha]			
Dense	960.7	25.0	985.7
Open	353.0	30.0	383.0
Degraded	1.5	34.8	36.3

*Source: Office of the Field Director, BTR, Dept. of Forests, Govt. of West Bengal*

This intervention may improve the situation in many ways. Firstly, resettlement of villagers who are under the threat of forced displacement in these degraded peripheral regions will help in reducing destruction of forest habitat. Secondly, this intervention may create open grasslands that may prove beneficial for endangered native herbivores including deer and antelope as reported by others (Rangarajan 1996; Schaller 1967/1998). In fact, studies revealed that some degree of human use has positive impact in terms of faunal diversity at the landscape level by creating heterogeneous mosaic so that some floral and faunal species are better adapted than

others in different patches (Tiffen et al 1993; Pimbert and Pretty 1995). Most importantly, this will help to inculcate faith in forest and its management which has shown a downward trend as a result of enforcement of various Conservation Acts. This strategy is extremely important as National Forest Policy (1988) of India in line with the international agreement under the Convention of Biological Diversity has categorically reiterated active participation and involvement of local villagers for maintenance of protected areas. The cost of intense policing is often huge (Leader-Williams and Albon 1988); for the developing countries it is sometimes unmanageable. This co-management strategy will help in a situation marked by lack of human resources for protection as well as large population as is represented by countries like India (Wright and Andramihaja 2002).

This study reveals that existence of a number of rivers, streams and their changing course have devastating effect on the biodiversity of the park as well as on the forest villagers' life and livelihood. Therefore, time has come to rethink and reassess the blanket use of conservation policies and rules and regulations to prevent ecological risks as well as impoverishment risks of the inhabitants. In other words, to achieve successful conservation objectives for the parks policies should be developed in such a way that sustainability of precious biodiversity as well as people's livelihood can be assured, which is often termed as 'double sustainability' (Cernea and Schmidt-Soltau 2006).

#### **CONCLUDING REMARKS AND POLICY RECOMMENDATIONS:**

From the above discussion based on two case studies some issues emerge : Firstly, flood disaster is an inevitable phenomenon in this park as it is located in the foothills of Sub Himalayan Mountain ranges in Eastern India, causing serious damage to biodiversity and wildlife habitat as well as destruction of human settlements.

Secondly, villagers are facing threat of displacement due to flood disaster and river bank erosion. When this perception of threat becomes a reality, villagers are relocated to other areas within the reserve destroying biodiversity. The consequences are aggravated impoverishment and marginalization of the flood displacees.

Thirdly, park managers ignore the magnitude of environmental losses as well as impoverishment of forest villagers caused by changing

course of rivers and river bank erosion, expressing inability to do anything in the face of existing conservation Acts meant for the park management. In addition, it would be unfair to treat flood disaster caused displacees as 'encroacher' as it creates a sense of alienation from forest and thereby, a source of conflict disturbing sustenance of forest resources.

Fourthly, implementation of the same rules and regulations in every national park and sanctuaries in all geographical areas and their ecosystems seems to be based on wrong assumptions as confirmed by the observations made on this park located in the foothills of Eastern Himalayan ranges where topographical and climatological regimes differ.

Therefore, the question arises what would be best the way of solving the problem? It is widely accepted that conservation cannot be successful without the support and participation of local people, and that livelihood issues and future development initiatives need to be at the centre of any viable conservation strategy that involves local people (Pimbert and Pretty 1995; Barrett et.al 2005). A lot of empirical evidence indicates that the imitating protectionist paradigm of conservation approaches in developing countries has led to food insecurity and declining status of livelihood of people residing in and around the reserve (Wells and Brandon 1992; Kothari et al 1989; Pathak and Kothari 1998). Access to forest resources for food gathering, grazing, fishing, and collection of wood has been curtailed with the creation of PA. In some cases, local communities have been removed from their habitat without the provision of alternative means of livelihood and income (Pimbert and Pretty 1995). It causes the exacerbation of poverty as well as contravention of legal or human rights (Brockington 2002). The net effect is people in and around PAs become further impoverished and marginalised. However, World Park Congress 1993 recognised that the mostly poor local communities bear major cost of the so-called conservation initiatives (Wells 1993; Roe and Elliot 2004; Arjunan et al 2006). In fact, there are numerous examples where local communities fought against destructive activities in forest areas. For example, in Sariska Tiger Reserve, local communities fought against illegal mining to save forest areas; in Nagarhole National park, tribals and activists legally



stopped the construction of a hotel which could have caused considerable disturbance in forest areas (Pathak and Kothari 1998).

But the existing rules and regulations under WLPA 1972 (with minor modification in 1988) ban any kind of human intervention within national parks and sanctuaries in India. These laws restrict permission to withdraw boulders, debris, trees, even in the form of dead, diseased, dying from river courses caused by continuous erosion of river banks and intermittent landslides as evident from this study. It leads to continuous threat of dislocation of local inhabitants as well as fragmentation of the ecosystem. Forest villagers who were hired by the Forest Department as skilled labour of conservation forestry have become disaster displacees should not be treated as 'encroacher'. They should get better deal for rehabilitation. In addition, rights and concessions of forest communities, who are residing for years and sustain livelihood from forest resources, have been curtailed, making people more vulnerable and marginalised.

Current management strategy of biodiversity by creating protected area networks all over the world has been designed to protect static (rather than dynamic) patterns of biodiversity (Lovejoy 2005; Scott and Lemieux 2005). The performance of static networks at conserving biodiversity in the face of population growth, environmental degradation, as well as current climate change remains largely untested (Zacharias et al 2006). Existing laws and policies related to wildlife management, natural resource management, and biodiversity conservation should be assessed to ensure that their provisions are consistent with the needs of managers dealing with environmental degradation in the Himalayan regions and consequent flood disasters in the foothills. Most of these laws and policies are decades old, and most were implemented before increased rate of ecosystem fragmentation as well as climatic change became a significant concern. Many of these regulatory tools and approaches need to be revisited in the light of the significant changes. Static approach of biodiversity conservation has to give way to new and dynamic understanding of changing ecosystems and changing climates (Lovejoy 2005). New legislative tools or regulations may be necessary to reduce the impact of global change including climatic change on a specific geographical situation.

International law always speaks of generalities, that is, a form of abstraction based on experiences in diverse contexts around the world (Lustig and Kingsbury 2006). India has borrowed international conservation models to protect wildlife and forest resources by creating national parks and sanctuaries. Ecologists and conservationists always look for universals, not local realities (Lewis 2003). Imposing one model of conservation developed for one area with one set of conditions on other area with different conditions might not work. Only a diverse strategy considering site specific ecology, geographical location, and socioeconomic realities can be a viable option. In the words of G Shahabuddin, *"It is clearly time to go into specifics, not continue to hover in the diffuse realm of generalities( 2003)"*.

What is actually needed now is an amendment of existing forest rules and regulations to be applied in particular context, which need not be universalised because each situation is different from others. Apart of the area, particularly the degraded or destabilised area, can be denotified from the existing conservation laws of national parks so that villagers who are forced to leave their ancestral place can be resettled. In fact, there are evidences that the state governments are increasingly denotifying protected areas for commercial purposes, such as Narayan Sarovar sanctuary in Gujarat for cement production and Darlaghat Sanctuary in Himachal Pradesh for the same purpose (Pathak and Kothari 1998). To win local people's confidence and ensure their active involvement in the protection and conservation of biodiversity and wildlife as well as prevention of further degradation of forest resources, a well-designed resettlement strategy should be developed for flood disaster displacees after taking into consideration the level of impoverishment of the dispossessed population as well as accommodating people's choices on relocation area as far as possible. Policy should be evolved in such a way that resettlers actively participate in every stage of relocation process from planning to implementation to monitoring and evaluation (Mathur 2011). This 'functional participation' creates trust and confidence and reduces conflicts with forest authority which go a long way in preserving bioresources. On the other hand, existing laws banning removal of boulders, riverbed materials, debris should be modified to stop the changing course of rivers and streams that cause recurrent floods.



Otherwise, the whole intention of preservation as well as improvement of biodiversity by creating national parks and sanctuaries in India would be of little avail.

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