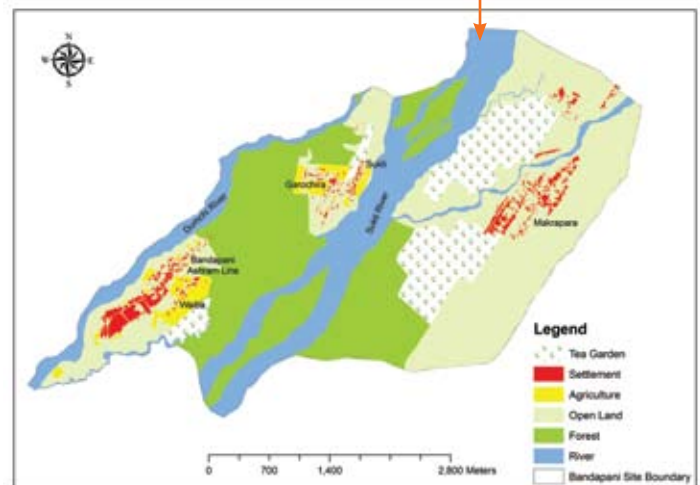
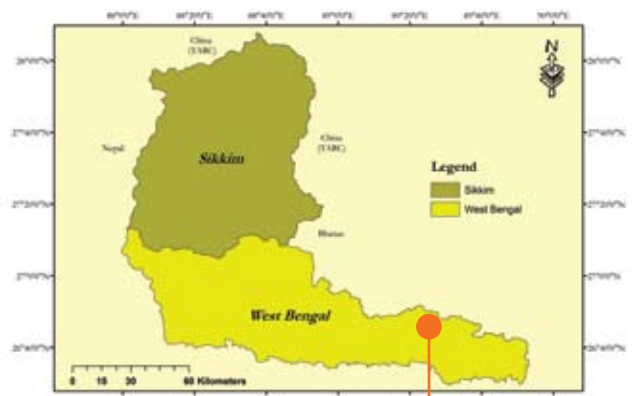


Bandapani

A Potential Transboundary Pilot Site for Conservation and Development Khangchendzonga Landscape Conservation and Development Initiative (KLCDI), India

Bandapani site, situated in the foothills of Khangchendzonga Landscape-India, is recognized as one of the transboundary pilot sites under KLCDI-India. Located along Bhutan border, the site covers 16 Km² spatial area, passing through important elephant corridor in Dooars, and closely associated with tea gardens. From Bhutan hills, Bandapani receives water through Dumchi river and other streams. Towards eastern side, two important markets, i.e. Makrapara tea garden (India) and Gomtu (Bhutan) where people from either countries depend on each other for marketing and other purposes. Bandapani site comprises of four villages, viz. Ashram line, Garochira, Sukti and Waiba, inhabited by Nepali and Tribal including Adivasi communities, from three ethnic groups (Hindu, Buddhist and Christian). Total human population of Bandapani pilot site is 1615 for a total of 324 households, wherein the Garochira comprises highest population (784 persons for 155 households), followed by Sukti (347 persons for 72 households), Waiba (269 persons for 55 households) and Ashram line (215 persons for 42 households).

Khangchendzonga Landscape: A part of one of the global biodiversity hotspots, representing unique biodiversity, bio-cultural and geo-climatic assemblage (26°21'40.49" to 28°7'51.25" N latitudes and 87°30'30.67" to 90°24'31.18" E longitudes), the Khangchendzonga Landscape (KL) covers a total area of 25,085.8 Km² shared by India (56%), Bhutan (23%), and Nepal (21%). The KL offers life support systems to over 7.25 million people (87% in India, 11% in Nepal and 2% in Bhutan). However, Indian part of KL covers a total area of 14,061.7 Km² spreads along the elevation gradients ranging from 40 m in Alipurduar and Jalpaiguri districts of West Bengal to 8586 m asl of Mt Khangchendzonga, the third highest peak of the world, in Sikkim. The state of Sikkim, and northern parts of West Bengal state (three districts, viz. Alipurduar, Darjeeling and Jalpaiguri) are included in delineating the KL- India, which is located along 26°29'13.56" to 28°7'51.6" N latitudes and 87°59'1.32" to 89°53'42.96" E longitudes. Indian part of KL represents 16 protected areas, including the World Heritage Site - Khangchendzonga National Park in Sikkim, which is recently inscribed by the UNESCO, in July 2016.





Significance of the Bandapani Site

Transboundary Nature

As an international transboundary region connected with Bhutan, the Bandapani pilot site is the part of Alipurduar district of West Bengal state. The site offers opportunities to the communities of both the nations for continuing maintaining their long-term biological, socio-cultural and economic relationships. The site further offers opportunities to strengthen common conservation measures by respective area management systems. However, the site partially dependant on the natural resources available in Bhutan hills

Socio-economic Flexibility

Complex cultural and social assemblage is largely dependent on the agriculture, tea gardens, off-farm labour works (especially in the dolomite extraction factories of Bhutan and collection of sand and stones from the rivers), and natural forest resources for their livelihood. These community people are fragmented from the mainstream of the nation; they need empowerment to improve their livelihoods. In addition, the out migration of people from the area is observed, which indicates limited livelihood options in the area.

Eco-climatic Similarity

Eco-climatic zone encompasses tropical and sub-tropical forests and grass lands, manipulated with bio-geographical range of Bhutan hills.

Corridor Connectivity among Protected Areas

Bandapani site is partially connected with Jaldapara National Park (West Bengal); which is recognized as an elephant corridor across the dooars foothills, it further connects with Gorumara National Park and Chapramari Wildlife Sanctuary.

Unique Issues' Centric

There are many vital issues in the area, such as, Human Wildlife conflicts (especially human elephant conflicts), dolomite siltation, limited socio-economic opportunities, closed tea gardens, weak tourism management and coordination, overdependence on natural resources, unorganized grazing, scarcity of drinking water including irrigation, high illiteracy rate and poor health facilities, and other transboundary problems, etc.

Biodiversity

Floral: The site encompasses rich tree diversity representing *Aphanamixis polystachya*, *Aesculus* spp., *Acacia* spp., *Albizia* spp., *Bridelia* spp., *Tectona grandis*, *Terminalia* spp., *Wendlandia* spp., *Crateva unilocularis* and *Ziziphus mauritiana* as the dominant species. Some of the important shrub species like, *Anemone rivularis*, *Artabotrys hexapetalus*, *Elaeagnus* sp., and *Zanthoxylum acanthopodium* dominate the area, and the common herbs include, *Anaphalis* spp., *Anemone* spp., *Centella asiatica*, *Cinnamomum* spp., *Eupatorium odoratum*, *Oxalis corniculata*, *Triumfetta bogotensis* and *Cryptolepis dubia*.

Faunal: Amongst important mammals, Asian Elephant (*Elephas maximus*), Leopard (*Panthera pardus fusca*), Indian Bison (*Bos gaurus*), Sambar Deer (*Cervus unicolor*), Wild boar (*Sus scrofa*), Spotted Deer (*Axis axis*), Barking Deer (*Muntiacus muntjak*), Wild Dogs (*Cuon alpinus*), Hodgson (*Cuon alpinus primaevus*), and Indian Fox (*Vulpes bengalensis*) are the integral part of the ecosystem in Bandapani area.

Agrobiodiversity: People grow a variety of agricultural crops namely Paddy, Maize, Ginger, Mustard, Beetle nuts, Guava, Beans, Radish, Spinach, Cabbage, Pumpkin, Bitter gourd, Papaya and Carrots, etc. Livestock in the area includes Hen, Cow, Horse, Pig and Goat.

Offering Transboundary Tourism

Bandapani site is closely connected with the transboundary location with Bhutan hills, offering transboundary tourism, which may provide a promising livelihood opportunity to the people of Bandapani. Further, wildlife expedition and exposure is one of the attractions of the site.

Resource Mapping for Bandapani Site

Participatory Rural Appraisal (PRA) tools helped assessing the natural resources and their use pattern by community people in Bandapani. In PRA studies, farmers, local groups like Forest Protection Committee, Self Help Groups, Forest Officers (West Bengal Government), team of Himalayan Nature and Adventure Foundation (HNAF) Siliguri, GBPNIHESD- Sikkim Unit and ICIMOD-Nepal actively participated in the process. PRA ensured community participation as priority in the overall and in planning process for developing participatory based nature resource management plan of the area. Different PRA tools and techniques such as Focused Group Discussions (FGDs), Natural resource mapping, Venn diagram, Mobility mapping, Trend lines, Historical timelines, Seasonal calendar, Pair wise ranking, Matrix ranking, Problem tree analysis and Forced field analysis were exercised with the local people and other participants.

For Bandapani site, the natural resource map developed using PRA tools exhibits all the natural and man-made resources, with the help of local people (informants). The map displays forest cover, indicating lesser diversity of forest resources under the Teak (*Tectona grandis*) dominated forests. Here, the villagers envisage that the Teak plantation in the forest is largely responsible for the low water table and poor under-storey vegetation. As well, some wild animals like Asian Elephant (*Elephas maximus*), Leopard (*Panthera pardus*) are quite frequent in the area.

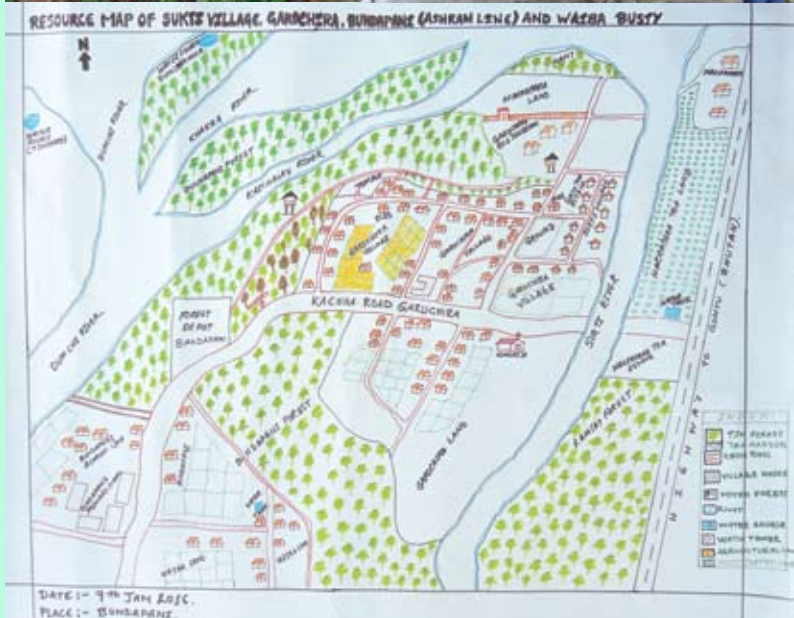
People's dependency on the forest resources for fodder and fuelwood was observed in the villages; people sell and supply fuelwood to the nearby markets. As important water resource, the area has Dumchi, Kaijaley and Sukti rivers but these mostly remains dry except during rainy season, mainly due to mining of dolomites in the Bhutan part, which results in siltation, landslides and poor water availability especially for drinking. People are totally reliant upon drinking water sources from Tindharey spring and Dumchi river of Bhutan. Human life and agricultural productivity has been influenced by the water scarcity.

Bandapani pilot site supports good faunal diversity; one may encounter different species of birds, butterflies and mammals. Studies indicated that the agriculture practices in the area have been declining over the years, particularly owing to frequent crop damages by wild Elephants. The Elephants have also emerged as big threat to the life of the local folk, as Bandapani site falls within the recognized Elephant corridor. Few people are engaged in ecotourism camp, which is situated inside the pilot site established by the West Bengal Forest Department. One forest rest house and Forest Beat Office are located within the pilot site.

A tea garden (Makarapara tea estate) is also located within the site, which has been closed for the long time and the workers are now struggling for survival. In addition, two different churches, one temple, one pre-primary and primary English medium school, and a tank for the water supply to the village are located within this site, as shown in the map. One more temple (called Deorali) is the ethnic symbol. Furthermore, two Integrated Child Development Services (ICDS) centres within area are functional for promoting child development services.

Forest Protection Committee (FPC) having 10 to 12 members from a diversified sections of the society, representing different villages, is there in the area for protecting the forest property.

Bandapani site is quite fragmented with limited resources besets livelihood insecurity.





Income generating sources

The people involve in the nonfarm activities mostly engaged as the labourers in the river beds for sand collection, being workers of the cement factory of Gomtu (Bhutan), and in other laborious works in near and far flung areas, even abroad. Next income source is the livestock rearing and dairy practice, which has also declined over the years due to lack of fodder and wildlife threats. Several people generate some sort of income through liquor selling, as well. The agriculture was one of the main and the only income generating options for the people, now left insignificant. This is mainly due to extremely insufficient water for irrigation, Human-wildlife conflicts, small farm holding, etc. Majority of the households generate income by selling fire woods collected from the forests.

For livestock rearing, people prefer some fodder and forage species like, *Thysanolaena latifolia*, *Litsea* sp., *Lagerstroemia parviflora*, *Mallotus nudiflorus*, *Ficus* spp., *Ailanthus grandis* etc. Amongst all, *Ficus* spp. is observed to be the most preferred fodder because it is found to be of good fodder to enhance milk production. Therefore, the local people showed willingness to grow *Ficus* spp. in larger quantity to support livestock rearing in the region.

Supporting Forces

- ❖ Opportunity for the transboundary tourism and ecotourism development
- ❖ Interest of the women in handloom and handicraft and related marketing of the products
- ❖ Divers cultural flexibility

Opposing Forces

- ❖ Frequent human wildlife conflicts
- ❖ Scarcity of water for drinking and agricultural purposes
- ❖ Lack of mixed forests in the area (present forests are dominated by Teak species)
- ❖ Improper tourism management
- ❖ Poor road connectivity (no bridges, non-metalled roads)
- ❖ Declining agriculture and livestock practices and products
- ❖ Land degradation due to floods in the rainy seasons
- ❖ Transboundary issues (dolomite mining in Bhutan, grazing, trade, Elephant-Human conflicts, limited livelihood options, poor water resource distribution, etc.

Priority activities for Bandapani Site

- ❖ Promote ecotourism and transboundary tourism
- ❖ Encourage high yielding livestock rearing practices
- ❖ Develop nursery for fodder production to minimize overdependence on the forest resources
- ❖ Promote water conservation
- ❖ Increase agricultural productivity through understanding the soil types and good practices
- ❖ Capacity building through exposure visits and trainings
- ❖ Re-introduce endemic/native species to develop biodiversity rich forests
- ❖ Increase outreach of the site

KLCDI, India Programme

Guiding Agency: Ministry of Environment, Forest & Climate Change, Government of India

Facilitating Agency: International Centre for Integrated Mountain Development (ICIMOD), Nepal

Lead Agency: GB Pant National Institute of Himalayan Environment & Sustainable Development, India

National partners: Forest, Environment and Wildlife Management Department, Government of Sikkim and Directorate of Forests, Government of West Bengal

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