

5.5.1 Activities:

- A. Ensure that the highway traffic do not exceed 40 km/hr speed within the Tikauli forest area.
- B. All vehicles should be checked before and after leaving the Tikauli forest area for sign of accidents, poaching or any illegal activities.
- C. Create a single speed-breaker at the middle of the 3.8 km stretch road. It is pertinent to build road markers about 500 m ahead of the speed-breaker. Without road markers, the chances of running into accidents at the speed breaker site could probably be high. By not having road markers, there would be more accidents than by fatally running over wild animals.
- D. Reflector will be installed at 200 m interval to avoid wildlife accidents in the night.
- E. Develop programs of regular patrolling by the Tikauli forest guard.

5.5.2. Time and Budget:

This will be a year round operation from year 2000 to 2005. Estimated budget US\$ 10,000 (This includes maintenance of reflectors, sign board and road markers).

6 PROGRAM TWO: BUFFER ZONE COMMUNITY FOREST DEVELOPMENT

The community forestry system is an evolution process where policies, rules and regulations are formed to strengthen local communities over local resources. Community forestry has been recognized as a viable strategy to protect and manage forests by linking resource management to both forest conservation and sustainable community development. The main purpose of the Buffer zone community forest is primarily to support conservation and bring economic benefits to the local community through sustainable use of forest resources and the conservation of biodiversity.

6.1 BUFFER ZONE COMMUNITY FORESTRY FRAMEWORK

The provision of BZ was introduced around the legal boundary of protected areas to facilitate community development of local people by sharing up to 30 - 50% of protected area revenue with local people. The BZ of RCNP was declared in 1997 under the fourth amendment of the National Parks and Wildlife Conservation Act (NPWCA) 1993. The Rules empowers the warden, to encourage works related to the conservation of wildlife; natural environment; natural resources; biodiversity; development and construction works. The Rules provide provision for hunting in the BZ areas, as determined by the DNPWC according to the existing legislation. The Rules provide for the community development and wildlife conservation within the BZ through the formation of

- BZ community forests
- BZ religious forest to the religious groups or community with no detriment to the traditional rights of the users
- BZ private forests in order to promote private forests for their conservation, management and development.
- BZ forest.

6.2 Step One: Community Forest Area Delineation

Five community forests are in existence; Ganga Nagar at the south west end of Barandabhar is in the process of establishment, totaling six community forests. The MPBF recommends that a joint forest management approach be undertaken for the management and conservation of the Barandabhar. With this concept, community forest area will have a width of 300 m from the edge of Barandabhar that will buffer the core area with a fireline. For such area delineation, following activities will be undertaken.

6.2.1 Activities:

- A. Delineate community forest areas (refer to section 5.1. Step One: Identification of Core Area & Its Buffer Area) and establish boundary pillars (refer to section 5.2. Step Two: Boundary Demarcation & Infrastructure).
- B. Areas of Barandabhar that are in use by communities will become community forest areas.

6.2.2 Time and Budget:

This community forest area delineation will begin after the completion of core and buffer area delineation. It will begin from April and be complete by December 2000. The estimated budget will not exceed US\$ 20,000.

6.3 Step Two: COMMUNITY FORESTRY – FUGs & JFM

Community forestry program since its inception in 1977, has strategies for rural development, which enhance rural economy while maintaining biodiversity. A community forestry program requires initial funding from the government or from donor agencies for its establishment. FUGs in the community forests will be entitled to grass/fodder, firewood, leaf litter and small timber for making agricultural implements and for construction purposes. Two types of stake-holders are present in managing community forests in Barandabhar. The first type (three community forests area) belongs to farming households from nine wards, while the second is the municipality. The FUGs from each ward needs forest resources for their subsistence, whereas, the two municipality manage community forests can be considered as opportunities in tourism while maintaining biodiversity.

6.3.1 Activities:

- A. The formation of FUGs and training them on their rights and duties.
- B. Training workshop on how to prepare community forest management plan.
- C. Preparation of a community forest management plan and the sustainable use of forest products.
- D. Training workshop on the preparation of an operational plan for managing community forest with the support of the line agencies.
- E. Development of the operational plan with detail work including activity schedule.
- F. Training FUGs to implement sustainable conservation and development activities. e.g. minor forest product collection, grass cutting, firewood and fodder collection.
- G. To emphasize joint forest management, monitoring of the status of the forest and wildlife will be conducted by both government and non-governmental agencies on an annual basis. For this, indices need to be identified and methods for analysis be developed by the line agencies.

6.3.2 Time and Budget:

Community forestry program is an ongoing process and will continue from 2000 to 2005 and beyond. The estimated budget will not exceed US\$ 25,000.

6.4 Step Three: Income Generating And Skill Development

Substantial source of income is generated from forest products, provided resources are utilized on a sustainable basis. Communities play a pivotal role in the maintenance of biodiversity. Various income generating and skill development can be achieved through the following activities.

6.4.1 Activities:

- A. Develop provision for seed money and establish micro credit facilities program for establishing at least six micro enterprises with emphasis on the six FUGs.
- B. Conduct training on collection of honey, herbs and spices for all FUGs once every two years for four days. The first day would be theoretical classes. Second and third day practical and the last day would be evaluation.

- C. Training of farming on non-timber forest products and finding market for forest products. Conduct at least two training programs for all FUGs for seven days each. Orientation, identification and theory classes two days, five days practical and on the spot field visit classes.
- D. Provide primary veterinary training and services for livestock management. At least select two people from each FUGs and conduct programs once every two years. Support could be sought from the ongoing Veterinary Project of London Zoological Society and DNPWC, Livestock Services of Chitwan District and Rampur Campus.
- E. Provide training on community's hygiene (health care) and post-harvest grain storage techniques to members of each FUGs biannually.
- F. Provide various technical know-how (farming, fishing, irrigating, etc.) at least once every two years and support local communities. Consultation and support from the Department of Agriculture will be sought for these activities.
- G. Promotion and establishment of nurseries and demonstration plots by FUGs to produce seedlings for distribution. As most community forest area is in close proximity with each other, it would be sensible to have a common nursery. Two nurseries will be established. One for Baghmara, Chitrasen, Milijuli and Tikauli and the other for Bandevi and Gitanagar. For the establishment of the demonstration and nurseries, the best would be Milijuli and Ban Devi community forest area as they are within reach from their respective communities forest areas.

6.4.2 Time and Budget:

The project will commence from 2000 and will continue beyond 2005. The estimated budget will not exceed US\$ 50,000.

6.5 Step Four: Agroforestry In Community Forest

The agroforestry will complement community forest program. It increases the yield of the land, combines production of crops, forest on the same unit of land, and is compatible with traditional uses of forest resources. There are 7 types of agroforestry in existence. In Barandabhar, five could be implemented. They are: 1) agri-silviculture – growth of trees and agricultural crops; 2) Silvipastoral – trees with pasture and livestock; 3) Agrisilvipastoral – combination of both (1+2); 4) silvientoculture – apiculture (trees and

bee-keeping for honey production); and 5) Multipurpose trees – Planting of trees for fodder, fruits, nuts, gum, fiber, chewing stick and for timber and fire wood. If properly implemented, agroforestry programs can substantially help in poverty alleviation. The activities for agroforestry are:

6.5.1 Activities:

- A. Selection of Conservation farmers from FUGs on the basis of their willingness to practice and implement agroforestry in their private and community forest.
- B. Provide and conduct training at least once every year to conservation farmers of FUGs on agroforestry. It would be prudent to conduct these type of activities under one umbrella. Circular regarding annual program activities must be sent before the onset of program, so that FUGs will determine the name of participants who can contribute to the development of agroforestry in their community forest and in private land as well.
- C. Identify fodder, timber, fruit and nuts trees and encourage plant them in private and community forest areas through conservation farmers.
- D. Initiate stall-feeding for livestock to relieve pressure from forest and
- E. Plant dalle grass and fodder trees plantation in private and community forests.
- F. Decrease unproductive livestock through natural selection and introduction of hybrids (cross between local cow and buffaloes for milk and draft power e.g. Jersey, Holstein, Haryana bull and Murrah buffalo). This program could be achieved through the support of the Department of Livestock, who has been conducting pilot programs and have been successful.
- G. Prepare agroforestry manual in Nepali and demonstrate the success of such through one pilot project.

6.5.2 Time and Budget:

Agroforestry program in community forest and private land is an ongoing process. The agroforestry program will commence from 2000 and shall continue beyond 2005. The estimated budget will not exceed US\$ 50,000.

7 PROGRAM THREE: DEVELOPMENT OF CONSERVATION EDUCATION

Conservation education has been one of the key factors in the conservation of natural resources. One of the parameters in conservation education is a well-designed conservation education program, activities supported by wildlife experts, managers, and actively participated by local people. Activities that relegate conservation issues through dissemination and awareness have been successful only when the community at large are put in the main stream. To develop conservation awareness program, the operational plan proposes the following:

7.1 Step One: Visitor Center

A visitor center to be constructed at the entrance of the Barandabhar Forest. The main hall should have at least fifty visitors capacity at a time and a separate hall with a seating capacity of 100 people for meetings, workshops and conferences. The visitor center must have an aesthetic concept. Local materials are to be used, corrugated sheet if used for roofing, must be camouflaged by tiles and building walls must have mud plaster. The visitor Center must have a separate entrance and exit, spacious, with well ventilation and atrium could be built for additional sunlight. A cafeteria should be build for providing refreshments to visitors. Washrooms will be constructed near the center and minimum charge will be levied for the use of these facilities.

The center should provide a display of brief history of the local inhabitants, culture, traditional practices, tourist maps of the core and buffer area. Trails, hiking routes and probable wildlife sightings should be highlighted. Short profiles and photos of endangered species, along with its prey species and its important role in maintaining ecological balances. A brief overview of the wetland ecosystem and its role in biodiversity can also be displayed. Negative aspect of tourism must be highlighted, as the tourists are unaware of such in the environment.

7.1.1. Activities:

- A. To provide information on Barandabhar and RCNP through exhibits.
- B. Conduct seminars and meetings once every year to schools and colleges. All conservation awareness classes and trainings will be conducted in this center.

- C. Conduct learning center for students and visitors. The first Sunday of every month, the Visitor center will provide an audio visual program on wildlife and conservation activities.
- D. Recreation.
- E. Souvenir shop will be established.

For upkeeping of the Visitor center, two people will be hired to clean and maintain the center. The center will be opened from 7.00 AM till 5.00 PM during summer and in winter 8.00 AM till 4.00 PM. The visitor center will also issue tickets for elephant ride, camping and for the entrance to Barandabhar.

7.1.2 Time and Budget:

The Visitor center can be completed by January 2001. The estimated budget will not exceed US\$ 35,000.

7.2 Step Two: Conservation Education In Schools, College And Communities

Environmental education to schools, college and local communities will help promote and understand interdependence of people and environment and support ideas on environmental protection and sustainable development. As there are 18 primary and higher secondary schools and 1 college in close proximity of Barandabhar, conservation education will be a priority. Motivation, training and education should be an integral part of conservation education. In schools and college, conservation awareness programs will be based upon debates, essay competition, lectures and quiz contests.

7.2.1. Activities:

- A. Prepare conservation education material in Nepali regarding the importance of conservation and generate wider participation on conservation and development activities.
- B. Distribute and disseminate conservation education materials in all 18 schools and 1 college and in adjoining areas.
- C. Conduct an annual workshop for local school children in developing and identifying wildlife and birds through photo library and various other activities in their areas and the importance of conserving them.
- D. Conduct excursion and camping for school children and FUGs to core and buffer areas and also to RCNP every year.

- E. Conduct 3-day teacher training on conservation issues every year to local schools and college. Primary and lower secondary school teachers will have a moderate training course on conservation awareness, while the higher secondary and college will devote and deliberate conservation issues that would support conservation awareness for them to disseminate during their class room lectures.
- F. Conduct and mobilize resources for workshops regarding sustainable natural resource conservation, management and importance of local participation in conservation education.
- G. Facilitate and organize regular meetings (at least once a year) amongst various HMG line agencies, NGO's and other related institutions to review conservation education program.
- H. Conduct at least one adult literacy programs in each FUGs that will incorporate conservation education.

7.2.2 Time and Budget:

Conservation Awareness programs is an annual program and will begin from 2000 till 2005. The estimated budget will not exceed US\$ 60,000.

7.3 Step Three: Training To Barandabhar Personnel In Conservation Education, Public Relation And Information Dissemination

One of the most important aspects in conservation education is developing public relation. To implement conservation awareness program effectively, Barandabhar personnel must develop good relation with the communities and FUGs. Dissemination of information on a cordial environment is more effective than in a formal gathering. The personnel must be able to adapt and seek ways of constantly pushing conservation awareness at all times.

7.3.1 Activities:

- A. Conduct at least three formal training in 5 years for the Barandabhar staff on conservation education.
- B. Orientation on conservation education program to be participated by Barandabhar personnel every year on an annual basis.
- C. Mobilize FUGs to conduct conservation awareness program through

educational field trips such as Annapurna Conservation Area Project (ACAP), Ilam District and other areas where conservation has not been successful. This will provide a better awareness and opportunities to compare level of successes.

- D. Provide incentives and awards to hard working staff for his/her contribution in conservation awareness program on annual basis.

7.3.2 Time and Budget:

This is an ongoing process, will commence from January, 2000 till December 2005. The estimated budget will not exceed US\$ 30,000.

8 PROGRAM FOUR: DEVELOPMENT OF ALTERNATE ENERGY

Over 70,000 people living around the Tikauli forest are its primary and secondary users of forest products. This has led to the depletion of forest resources. The alternate energy program seek ways and means to reduce the use of fuel wood by the hoteliers and the local communities at large. Alternate energy is necessary to substitute traditional sources of energy and minimize fuel wood that would substantially reduce pressure on forests. The initial phase in introducing alternate energy, may be cumbersome as people are used to using traditional method of using firewood for their cooking. However, once the knowledge and know-how of the alternate energy is passed on to the communities and FUGs, they will response quickly by adapting quick, efficient and cheap technology.

8.1 Step One: Gobar Gas & Smokeless Stove

Gobar gas has been successful in the Chitwan Valley. The gobar gas plant capacity are 4, 6, 8, 10, 15 and 20 m³. For small cottage industries such as a bread industry, may require 20 m³ plant for their operation. For household purposes , 6 m³ is sufficient enough. The Biogas Support Program supported by the Dutch government provides subsidies of NRs. 7,000 per gobar gas installation. In the three VDCs and two municipalities of Barandabhar, installation programs of gobar gas and improved stoves could be initiated through incentive packages to FUGs (individuals and groups). A 6 m³ unit installation will cost NRs. 21,850 and a 20 m³ will cost NRs. 44,666. Establishing of gobar gas will initiate household in the making of toilets, which will improve sanitation and ensure better family health. The by-product of the gobar gas will yield high quality fertilizer.

For the poor farmers who are unable to use gobar gas, smokeless stove are the best option. These farmers will initiate fodder trees plantation, which will support fodder for their livestock and also firewood for cooking purposes in the fuel efficient stoves.

8.1.1 Activities:

- A. Demonstrate, distribute and install improved stoves and gobar gas plants for each FUGs and to community at large through subsidies program.
- B. Select and train members of each FUGs and local people who have shown alacrity to provide back-stopping support in the installation and maintenance of the improved stoves and gobar gas once every year.

- C. Establish nursery in two sites (refer section Activities 6.5.1.G) for providing fodder plants, dalle grass and fruit trees to community.

8.1.2 Time and Budget:

It is an ongoing process and will continue from 2000 till 2005. The estimated budget will not exceed US\$ 70,000.

8.2. Step Two: Electricity

Rural electrification has been a priority. All of the Barandabhar VDCs will have electricity by 2002. But most of the farmers may not be able to use electricity for their cooking as it is expensive. But the community at large will avail themselves of the opportunity for cooking in electricity.

8.2.1 Activities:

- A. Develop rural electrification in coordination with Nepal Electricity Authority and other private bodies.
- B. Provide subsidies to communities of Barandabhar in electricity consumption.

8.2.2 Time and Budget:

It is an ongoing process, will begin from 2002 up to 2005. The estimated budget should not exceed US\$ 30,000.

Tourism is an important aspect of park management as long as it supports resource conservation. It is also an important economic activity. Benefits from tourism in Chitwan are scattered over a large segment of the population. It contributes to the economic development and provides employment opportunities. Promotion of diverse type of nature based tourism helps to convert local resources into economic value like local manpower, natural scenic beauty. The proposed buffer zone area of the Barandabhar is at preliminary stage. Hence, eco-tourism should be developed and potentials (wildlife viewing, nature trek, jungle hiking, camping etc.) assessed. Minimum standards should be adopted in order to promote eco-tourism in the Barandabhar forest.

The MPBF has emphasized and developed 7 working policies for eco-tourism. Based upon the policies of MPBF, the operational plan has reoriented and developed eco-tourism plan through following activities:

9.1. Step One: Entrance And Check Post

Construct three entrance and check posts in Barandabhar. The first entrance will be the main entrance of Barandabhar, which will also house the Visitor Center. Second will be Khorshor and the third Dabauli. Entrance ticket to Barandabhar can be purchased in all these three entrances. Jungle drive entrance fee can be purchased only from the main entrance. Jungle drive vehicles will be charged NRs. 350 per trip, private and government cars NRs. 100, buses NRs. 400, motorcycles and bicycles NRs. 50 and NRs. 10 respectively. The reason for implying road taxes is that the road (motorable tract) of Barandabhar needs maintenance. The road can be maintained through the collection of this revenue. The road could also be topped with bitumen and tar, afterwards.

9.1.1 Activities:

- A. Jungle drive will be operated from 7.00 AM till 4. 00 PM so will other vehicles. Barandabhar will remain close after sunset till sunrise. Local people will have the right of way within Barandabhar during the day time i.e., 7.00 AM to 5.00 PM.
- B. One way traffic will be enforced in Barandabhar. It will begin from the Tikauli forest entrance of the Mahendra Highway into Barandabhar and end at the

Khageri canal of the Tikauli forest at Mahendra Highway. As one way traffic is maintained, patrolling and monitoring of biodiversity will be effective.

- C. Speed limit within Barandabhar will not exceed 20 km/hr. Rules will be implemented and those who break the rules shall be liable to a penalty.
- D. Road signs will be posted.

9.1.2 Time and Budget:

This type of program will continue throughout the year. The project will commence from 2000 till 2005. The budget will not exceed US\$ 20,000.

9.2. Step Two: Implementation Of Eco-tourism Plan

The implementation of eco-tourism plan should provide opportunities to enhance local economy by providing job as guides, naturalists and tour operator by developing the skill of local people through training. As to the construction of hotels and lodges outside Barandabhar, it would be appropriate, if the concessionaires follow building code of HMG Nepal. Before construction, an internal environment examination study should be carried (showing negative impact to the environment) and approved by the line agencies as this area falls within the jurisdiction of the buffer zone. Develop an eco-tourism plan to balance ecological integrity with increase tourist facilities by minimizing negative impacts. Fragile areas must be off limit to eco-tourism development.

9.2.1 Activities:

- A. Prepare and implement eco-tourism plan with stakeholders and liaison with other agencies with a focus on how to make tourism in Barandabhar a viable scheme.
- B. Conduct an eco-tourism survey and prepare a minimum code of conduct.
- C. Promote Barandabhar tourism through Immigration Office, Tribhuvan International Airport and major tourist centers by providing tourists with free brochures and information on Barandabhar and Beesh Hazari Tal. A marketing strategy would be to invite tourism-related people and provide them with incentive packages if they could market Barandabhar.
- D. Conduct and provide appropriate training to local community of the 3 VDCs and 2 municipalities of Barandabhar on hotel management and nature guide once a year by NCRTC with the support from line agencies.

9.2.2 Time and Budget:

Construction of lodges and hotels can be started at any time of the year. This activity will continue from 2000 to 2005. The estimated budget will not exceed US\$ 40,000.

9.3 Step Three: Elephant Ride

Elephant is one of the highlight of RCNP for observing rhinos and other mammals and has been a major attraction to visitors. For Barandabhar visit, elephants will be used from the RCNP stable. The tickets can be purchased at the Khorsor entrance. When the demand for elephants cannot be met by RCNP stable alone, local elephants will be allowed but with a fee.

9.3.1 Activities:

- A. The safari will begin from Khorsor to Beesh Hazari Tal and back. For the elephant ride, each tourist and local tourist (Nepali) will be charged NRs. 650 and Rs. 100.
- B. The elephant ride will begin at 7.00 AM and end at 9.00 AM for recess and will again continue its services from 3.00 PM till 5.00 PM in the evening.

9.3.2 Time and Budget:

This is a year round activity, which may slacken during the rainy season. It is an ongoing activity from 2000 till 2005. The estimated budget will not exceed US\$ 5,000.

9.4. Step Four: Jungle Drive

The jungle drive around the Barandabhar will provide an opportunity to see the forest and also Beesh Hazari Tal.

9.4.1 Activities:

- A. Invite private parties to undertake jungle drive management.
- B. Maximum of ten to twenty vehicles will be allowed per shift per day for jungle drive to ferry passengers in and out of Barandabhar. This will protect the environment.
- C. To encourage local employment, all vehicle drivers and their assistants must be local residents.

D. Older vehicles (7 years and beyond their manufacturing date) will not be allowed in the jungle drive.

9.4.2 Time and Budget:

It is a year round operation. It will begin from 2000 to 2005. The estimated budget will not exceed US\$ 5,000.

9.5 Step Five: Boating & Canoeing

At the south east and south of Barandabhar runs the Buddhi Rapti River and the Rapti River, canoeing and boating can be allowed. Private sectors can be permitted to run small boats to ferry tourists across RCNP and for sight seeing.

9.5.1 Activities:

- A. A tender bidding will be called locally by the line agencies and whoever has the highest bid, shall be awarded to run small boats and canoe.
- B. Boating will be allowed at 7.00 Am till 5.00 PM.
- C. Maximum of three boats will be allowed at one time in the river.
- D. Locals will be hired as oar-men and guides.
- E. To monitor and patrol the river, a few boats will be made.

9.5.2 Time and Budget:

This activity will continue from 2000 to 2005. The estimated budget will not exceed US\$ 8,000.

9.6 Step Six: Jungle Walk And Camping Facilities

Tourists wanting to hike in Barandabhar should be accompanied by a trained guide and should hike on permitted trails only. New trails could be built in Barandabhar for tourists. Camping will be allowed in Barandabhar in specific areas. For camping in Barandabhar, NRs. 100 should be charged per two-man tent per night.

9.6.1 Activities:

- A. Camping sites around Beesh Hazari Tal should be near posts (for security reasons) and should have an area at least to accommodate minimum of 10 tents.

- B. Latrines with optimal hygiene could be built around these sites.
- C. Use of plastics will be forbidden in Barandabhar. Biodegradable materials if used, are to be put in waste bins, thus discouraging environment pollution.

9.6.2 Time and Budget:

This activity will be maintained throughout the year. It will begin from 2000 till 2005. The estimated budget will not exceed US\$ 20,000.

9.7 Step Seven: Proposed Trails

New trails could be built around Barandabhar for allowing tourists to stay longer and spend more time. One of the new trails that could be explored is at the Beesh Hazari Tal (Fig. 8). This new trail will be divided into three sectors. Eastern (2.554 km), central (2.81 km) and western (1.645 km) sectors. These trails measuring a distance of 7.009 km will circumvent Beesh Hazari Tal so that it will allow the tourists and visitors to enjoy and see more of Beesh Hazari Tal.

9.7.1 Activities:

- A. Construction of new trails.
- B. Tourism will be promoted and new camping sites will be made.
- C. Provide protection of Beesh Hazari Tal through patrolling and monitoring.

9.7.2 Time and Budget:

This is an ongoing program from 2000 to 2005. The estimated budget will not exceed US\$ 25,000.

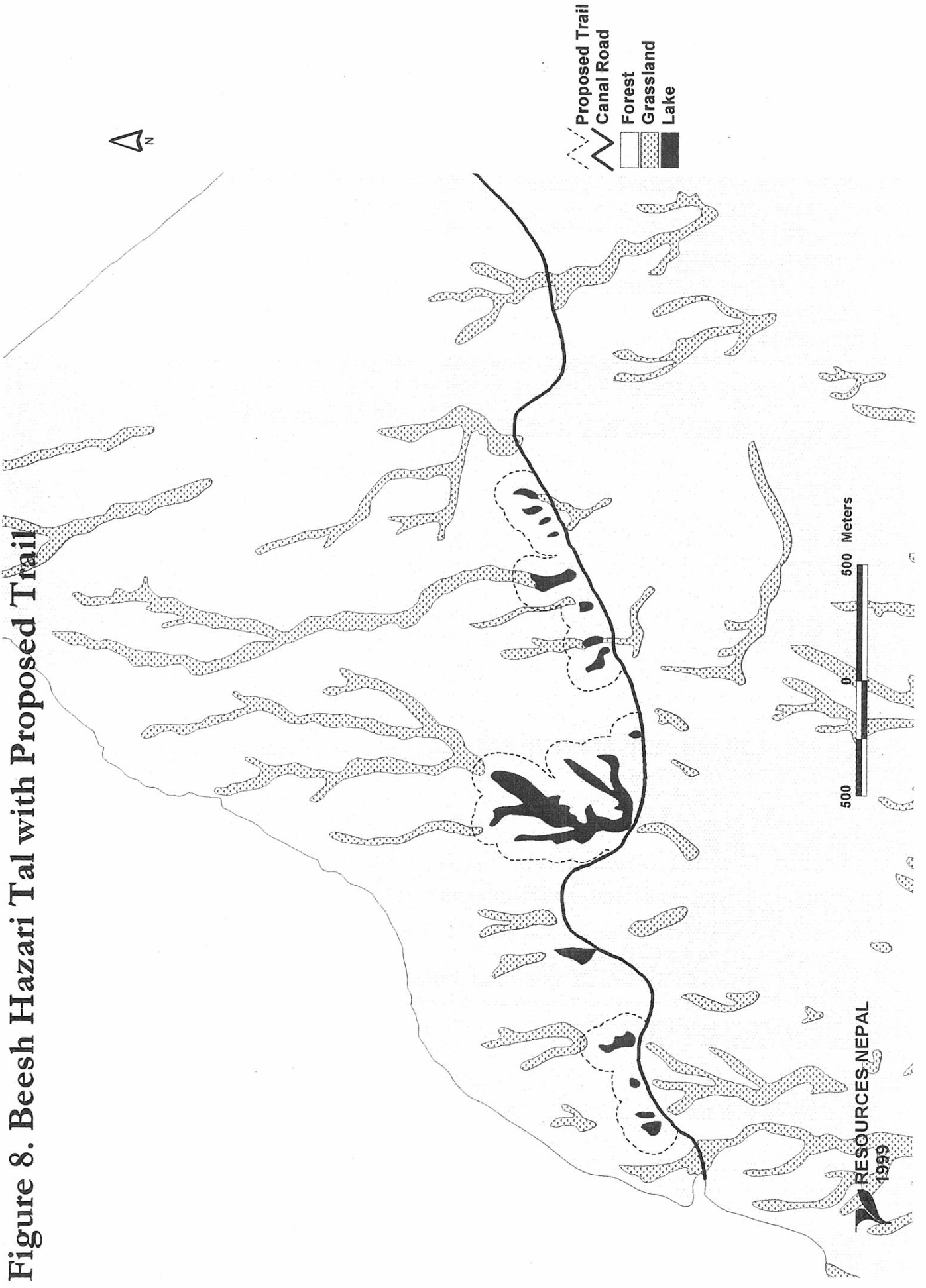
9.8 Step Eight: Watch Tower

One of the observation point to see wildlife will be, by a machan or a watch tower. A watch tower will be built in Barandabhar.

9.8.1 Activities:

- A. Build a machan (watch tower) to observe birds and wildlife around Beesh Hazari Tal.
- B. The watch tower will also facilitate to monitor wildlife activities and other nefarious activities in the surrounding area.

Figure 8. Beesh Hazari Tal with Proposed Trail



9.8.2 Time and Budget

It is an ongoing process, 2000 till 2005. The estimated budget will not exceed US\$ 10,000.

10. Monitoring and Evaluation

Progress and achievement of a project is to be monitored and evaluated on the basis of the target reached. A yearly monitoring and evaluation program will be conducted in conjunction with RCNP evaluation. Monitoring and evaluation should be oriented around conflict management, research on indicator species, funding mechanism and community development.

10.1 Review of the Operational Plan

Management of a protected habitat is a dynamic process that demands regular review of the operational plan. Review of the operational plan must be evaluated at the end of every fiscal year. Evaluation criteria should be developed to measure progress made during the year. Progress and problems in achieving target goals should be identified and alternate strategies developed.

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Table 1.

Details of VDCs and Municipality's Wards adjoining eastern boundary of Barandabhar

Description	Ratnanagar Municipality			Bachhauri VDC	
	W. no. 5	W. no. 6	W. no. 7	W. no. 1	W. no. 3
1. HH	700	240	350	130	476
2. Total Population	4300	2500	3700	550	1600
3. No. of Animals					
Cow & ox	500	175	244	105	415
Buffaloes	1750	590	301	166	300
Sheep & goats	1080	550	544	290	513
4. Health Post					
5. Schools	1	2	2	1	1
College					
6. Telephone	-	-	11 sets	1 set	1 set
7. Electricity	70.5	75.5	80.5	-	75.5
8. Road	Gravel 405 Tar 1 km	Gravel 505	Highway branch gravel	Gravel 25.5 Not tar 75.5	All gravel Not tar 1 km
9. Irrigation	505	505	Khageri 255 Panchakanya 755		

Source: MPBF Field Survey, 1997

Table 2.

Details of VDCs and Municipality's Wards adjoining western boundary of Barandabhar

Description	Patihani VDC ward nos.					Gitanagar VDC wards nos.				Bharatpur M. Wnos.	
	1	6	7	8	9	1	4	6	9	8	9
1. HH nos.	100	113	104	305	57					NA	NA
2. Total Pop.	532	628	548	1481	386					5100	5800
3. Cattles	431	448	516	1336	320					NA	NA
4. Poultry	221	2056	559	1249	397					"	"
5. Health Posts					1	1		1		1	
6. Schools/ College	1	1		1	2	1	1	1	1	2	1 private
7. Telephone	8	1	-	1	1					60	35
8. Electricity	50%	30%	-	10%	60%	-	50%	90%	40%	90%	70%
9. Road/ Gravel & not gravel	40%	30%	25%	80%	60%	25 %	30%	50%	50%	95%	60%
10. Irrigation	90%	10%	35%	50%	30%	-	90%	60%	60%	30%	30%

Source : MPBF Field survey, 1997

Table 3.

Total Population of the Adjoining VDCs of Barandabhar and Beesh Hazari Tal

	Household	Male	Female	Total
Ratnanagar Municipality	4,578	12,566	12,552	25,118
Bachhauri	1,356	4,241	4,097	8,338
Gitanagar	2,101	5,409	5,764	11,173
Pancha Kanya	1,996	5,177	5,104	10,281
Bharatpur Municipality	10918	28,381	26,289	54,670

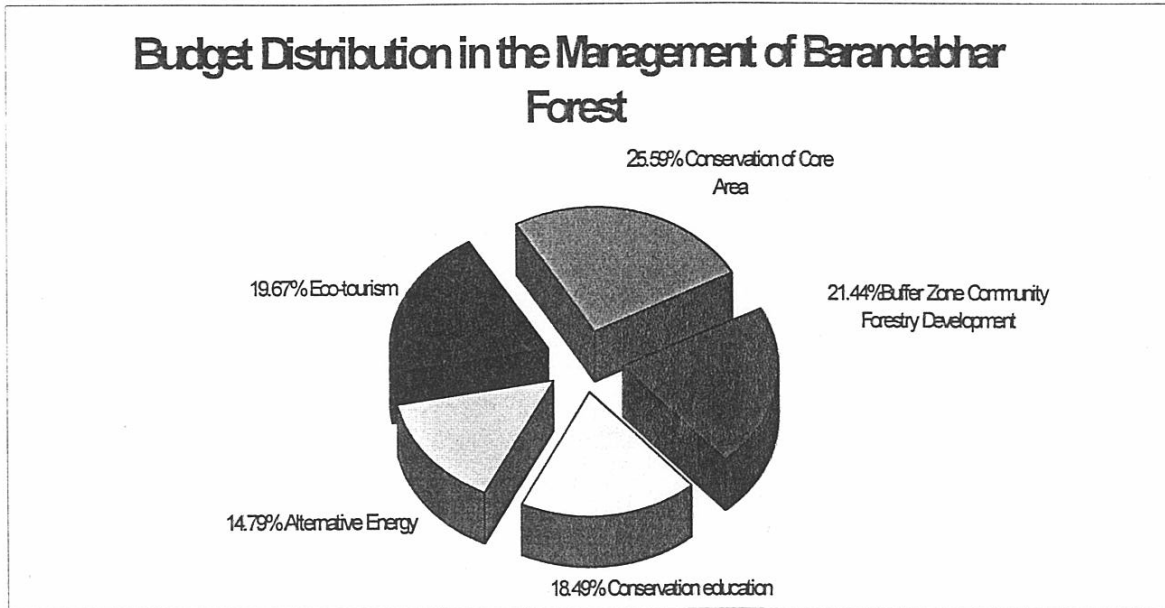
CBS, 1997.

Table 4.

MAMMALS FOUND IN BARANDABHAR

<u>Mammals</u>	<u>Scientific name</u>
Barking deer	<i>Muntiacus muntjak</i>
Common hare	<i>Lepus nigricollis</i>
Common langur	<i>Presbytis entellus</i>
Common mongoose	<i>Herpestes edwardsi</i>
Indian fox	<i>Vulpes bengalensis</i>
Jackal	<i>Canis aureus</i>
Jungle cat	<i>Felis chaus</i>
Large Indian civet	<i>Viverra zibetha</i>
Palm squirrel	<i>Funambulus pennanti</i>
Rhesus monkey	<i>Macaca mulatta</i>
Rhino	<i>Rhinoceros unicornis</i>
Sambar deer	<i>Cervus unicolor</i>
Sloth bear	<i>Melursus ursinus</i>
Small Indian civet	<i>Viverricula indica</i>
Small Indian mongoose	<i>Herpestes auropunctatus</i>
Smooth coated otter	<i>Lutra barang</i>
Spotted deer	<i>Axis axis</i>
Tiger	<i>Panthera tigris</i>
Wildboar	<i>Sus scrofa</i>
Yellow throated marten	<i>Martes flavigula</i>

Appendix 1.



Appendix 2.

STATUS OF FLORAL RESOURCES IN BARANDABHAR

Forest plants	131 species
Trees	32 species
Shrubs and herbs	64 species
Aquatic plants	99 species
Ethnobotanical use	121 species
Families	36

Source: IUCN, 1998

Appendix 3.

SALIENT FEATURES OF TIKAULIFOREST

1. Tikauli forest may perhaps be the only contiguous forest that links Mahabharat Lekh with the inner Terai (29 km long).
2. The total Barandabhar area is 56.88 km² of which 48.02km² is forest, 5.08 km² grassland, water bodies 0.26 km², river .25 km² and shrubland 3.27 km².
3. Provides seasonal refugia and migration for wildlife.
4. This area has 15 wetlands big and small of which Bees Hazari Tal is the second largest in Chitwan, provides refuge for migratory and resident birds, and aquatic wildlife.
5. Currently, 20-25 resident rhinos are found in the Tikauli forest.
6. It has a greater role in the hydrological regime as it is a major catchment area for the Khageri River, which is fed by two perennial streams; thulo Syangdi khola (western sub-watershed) and sano Syangdi khola (eastern sub-watershed) that runs through the dense forest into the Tikauli barrage.

Appendix 4.

BENEFITS OF BUFFER ZONE

A. Biological benefits

1. Provide a physical barrier to human encroachment into the protected areas
2. Provide extra protection from natural calamities.
3. Enlarge the natural habitat of the protected area and reduce species loss through edge effects
4. Extend the habitat and thus the population size of large mammals of wide ranging species
5. Protect watersheds that contribute to climatic regulation in the protected areas.
6. Prevents local extinction of species.
7. Increase the local representation of different types of forest species

B. Social Benefits

1. Establish community forest by forming Forest Users Group.
2. Promote the sustainability of use of minor forest products.
3. Promote agro-forestry for extra source of income.
4. Deliver programs by which the local people can benefit from the existing of the protected areas and thus foster local interest in conserving biodiversity.

Appendix 5.

CONFLICTING MANAGEMENT ISSUES

1. This narrow stretch of forest, approximately 4 km wide, and 11 km in length has endured a tremendous pressure from the residents of three VDCs and two municipalities. This common property has been subjected to severe ecological stress.
2. On an average 300-400 people gather forest products every day.
3. Livestock of adjoining VDCs enter the forest. This has encouraged local hotel owners of Saurah to let their elephants for foraging and browsing in Barandabhar thus causing tremendous pressure.
4. Land encroachment is a regular phenomenon in Barandabhar as Chitwan district has a population increment of 3.17% per annum, while Bharatpur Municipality has 7.07%.
5. Illicit activities like poaching, fishing, collecting of minor forest products, felling of trees and poisoning of wildlife is high.
6. Natural succession and anthropogenic activities have led to the siltation of the Bees Hazari Tal. These water bodies are susceptible to environment changes and may pose a threat to the ecosystem.
7. High frequency of man induced forest fire.
8. Lack of conservation awareness has deteriorated the forest and in fragmenting wildlife habitat.
9. High incidents of wildlife accidents in the (3.8 km stretch of Tikauli forest) Mahendra Highway.
10. Lack of effective enforcement.

Appendix 6.

ACTIVITIES CHART

PROGRAM ONE: Conservation of Core Area

Activities	TIME FRAME 2000 – 2005	Estimated Budget in US\$	Success Indicators
Step 1: Identification of Core Area			
Seek the services of consultative Organization and GIS Expert.		1) 15,000	Quality Output in the preparation of GIS database
Digitization of land utilization Map, stereoscopic interpretation of aerial photos, use of GPS for area demarcation			The two area (Core and Buffer) delineated and identified. Database on Barandabhar prepared.
Ground truthing to identify landuse changes			Areas that require management input (protection and conservation measure) identified.
Step 2: Boundary Demarcation & Infrastructure		2) 40,000	
Construction of cement pillars and barbed wire fencing. Fencing of core and community forest buffer area.			Protection against human onslaught in core area. Protect wild animals entering cultivated lands. Facilitate south north movement of wildlife including rhinos.
A. Two posts at Khorshor and Daubauli are to be constructed and other range posts need renovation		A. 18,000	Effective monitoring and patrolling.
Designate walking trails and tracks in specific areas for monitoring wildlife activities.			Developed network of trails to facilitate patrolling and monitoring movement of wildlife.
B. Maintenance of trails in and around Barandabhar		B. 10,000	

Step 3. Fireline		
Identify fireline area. This will run south to north on a parallel line from both sides of the community forests.		Limit fire that effect wildlife population and damage to plants and trees.
Create a fireline of 6 m wide (devoid of all vegetation).		Controlled human induced and natural fire. Patrolling and monitoring of wildlife effective, poaching curbed.
Step 4. Management Plan for Beesh Hazari Tal		
The wetland may develop into a oligotrophic condition. Cleaning the pond for weed every year.		Weeding rejuvenate marginalise aquatic plants, rich in nutrients for waterfowls and waders.
Ill legal entry and grazing banned.		Penalty on illegal entry and livestock discourage farmers to allow grazing their cattle in the forest.
Fishing and illegal collection of firewood		Illegal fishing and firewood collection controlled.
Siltation control		Substantial revenue collected from sport fishing. Maintained embankment, siltation process halted.
Step 5. Mahendra Highway		
A single speed breaker with road marker 500 m before the speed breaker.		Loss of wildlife is minimized through road-kill.
Ensure that speed limit do not exceed 40 km/hr.		Loss of wildlife is minimized through road-kill.
Check all vehicles before and after leaving Tikauli forest.		Poaching activities (run-over) is checked.
Install reflector every 200 m in Tikauli forest.		Safety created for wildlife movement.
Monitoring and patrolling.		Timber smuggling and poaching activities curtailed.
	3) 40,000	
	4) 40,000	
	5) 10,000	

PROGRAM FOUR: ALTERNATE ENERGY

Activities	TIME FRAME 2000 – 2005												Estimated Budget In US\$	Success Indicators
Step 1. Gobar Gas & Smokeless Stove													1) 70,000	Consumption of fuel wood drastically reduced.
Promote the installation of improved stoves and gobar gas plants through subsidies program														More job created.
Train local people in installing and maintenance of improved stoves and gobar gas														Production of grass, fodder and fuelwood available from private and community land. No degradation of livestock by wildlife.
Establish nurseries for fodder plants, dalle grass and fruit trees and initiate stall feeding to livestock.														
Step 2. Electricity													2) 30,000	Encourage use of electricity for cooking. Usage of firewood is limited.
Develop rural electrification in coordination with Nepal Electric Authority														

Activities	TIME FRAME 2000 – 2005	Estimated Budget In US\$	Success Indicators
Monitor activities of wildlife from boat.			Effective monitoring and patrolling.
Step 6: Jungle Walk and Camping Facilities		6) 20,000	Encourage tourists to stay overnight.
Camping sites to be built around posts for security reasons with adequate facilities			Pollution controlled and checked.
Usage of plastics will not be allowed. However, bottles, canned food and other biodegradable materials are to be put in waste bins.			Create efficient management and frame work for ecotourism management developed.
Step 7: Proposed Trails		7) 25,000	New trail with better viewing of the wetland.
New construction of trails around Beesh Hazari Tal, consisting of 7 Km with 3 sectors, eastern, central and western sector.			Encourage tourists to stay longer.
Tourism promoted and new camping sites developed.			Monitoring and patrolling more effective of Beesh Hazari Tal.
Provide protection to Beesh Hazari Tal.			Tourism developed and revenue generated.
Step 8: Watch Tower		8) 10,000	View wildlife and monitor forest fire and other activities by patrol.
Build a machan for wildlife viewing and for monitoring wildlife activities			