

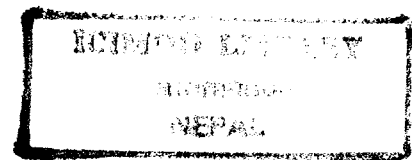
**ENVIRONMENTAL MANAGEMENT AND
SUSTAINABLE DEVELOPMENT
IN THE ARUN BASIN**

**VOLUME 12
TOURISM**

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TOURISM

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For

King Mahendra Trust for Nature Conservation

Arun III: Management of Basinwide Environmental Impacts Study

October 1991

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KING MAHENDRA TRUST FOR NATURE CONSERVATION

Patron : HIS MAJESTY KING BIRENDRA BIR BIKRAM SHAH DEV

Chairman : HIS ROYAL HIGHNESS PRINCE GYANENDRA BIR BIKRAM SHAH

PREFACE

The Arun River basin is the gateway to heaven: four of the world's five tallest peaks tower above the valley's northern reaches. This mountainous, "vertical" world contains a number of bioclimatic zones to which plants, animals and man have adapted over millennia, producing an amazing diversity of interdependent ecological communities and human cultures. Here, the biological and cultural diversity has remained largely intact due to the basin's remoteness and rugged terrain.

In this isolated land, His Majesty's Government of Nepal (HMG/N) and the World Bank plan to undertake one of the most ambitious infrastructure projects in the country's history. The Arun III (Access Road/Hydropower) Project will require at least 10 years to complete and will include a 192 km road. The project will have far-ranging effects, both positive and negative, on the basin's people and environment.

The King Mahendra Trust for Nature Conservation (KMTNC) was commissioned to undertake the Arun III: Management of Basinwide Environmental Impacts Study to address the long-term environmental and socioeconomic impacts which may result from the Arun III project. This represents a milestone in the planning and implementation of major development projects in Nepal. It marks the first time that a comprehensive environmental and socioeconomic study has been prepared prior to the initiation of major construction activities. However, it is not an environmental impact assessment as such, since the road alignment and dam site were already decided, and the study team did not have a mandate to change these decisions. Nonetheless, this study represents a pro-active rather than a reactive approach to dealing with problems associated with large infrastructure projects. It also gives HMG/N, the World Bank and other concerned agencies a head start in developing initiatives to maximize project benefits for local residents and thus for forests, pastures and other natural systems upon which they depend. In short, the study aims at balancing ecology with economics.

This study was an 18-month undertaking, beginning in May 1990. Our focus over this period was to gain knowledge from studies within the basin itself and to translate this knowledge into workable action programs to mitigate anticipated project related problems while also maximizing potential benefits.

A hallmark of the study was the close and continuous interaction among study team members and the people of the Arun Basin. A wide-ranging household survey was undertaken to learn from local residents their expectations as well as to tap their knowledge and experience. Over 70 man-months were devoted to studies in the Arun Basin itself. The study began and ended with two major workshops in the basin at which representatives from local HMG/N offices, local NGOs, village leaders and the public gave us their opinions and ideas on how the study should best proceed and, finally, feedback on our proposals for action programs. It is with satisfaction that we have received widespread local support for our proposed action programs, a strong indication that we are on the right track.

This volume is one in a series of 13 reports prepared by consultants to KMTNC. It is intended to provide detailed information to those readers who require in-depth knowledge about this sector, especially to individuals who will be charged with implementing the study's recommendations. The views expressed in this volume are those of the authors and do not necessarily reflect the opinions of KMTNC.

Publication of this report is only the start of a continuing process. The challenge now is to convert the words contained in this report into action. Unfortunately, Nepal is littered with reports which have never been put to use. Now that this study report has gained the support of local officials and residents for our recommended actions, there is a need for early follow through with on-the-ground implementation. Given the regional development nature of this study, I believe implementation can be undertaken with justification almost immediately.



HEMANTA R. MISHRA
MEMBER AND SECRETARY TO THE
GOVERNING BOARD OF TRUSTEES
Kathmandu
October 1991

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The project's negative effects on tourism potential are primarily short term, during the construction phase. Dust and noise of road-building equipment will drive trekkers away from the main trekking corridor between Tumlingtar and Nurn. This damaged appeal will result in either a reduction in the number of visitors to Makalu Base Camp or in the use of alternative trek routes; the latter would require publicity of other trails and infrastructure development. Upon completion of the road, with improved speedy vehicle access, the number of tourists is expected to again rise and to diversify into new areas. This will again require promotion and preparation for the demands and by-products of a larger visitor population.

With the anticipated long-term increases in tourist numbers and diversification, both in types of activities and areas of use, greater pressures on the natural environment, traditional cultures and subsistence economies can be anticipated. Present low levels of tourist use in the Project Area generate relatively minimal littering, pollution and demands on natural resources, particularly firewood, compared to Nepal's heavily used trekking and mountaineering areas. Waste and subsistence requirements will naturally increase with a rising visitor population. Superficial exposure of locals to the behavior and views of other cultures tends to undermine traditional values and mores, and change life patterns which can affect natural resource use. The introduction of outside economies contributes to inflation and a cash economy, which can bring on nutritional deficiencies when food has greater value for earning cash than feeding family members.

In order to maximize the positive and minimize the negative aspects of Arun III and the anticipated tourism growth, resource and land use management and education of all participants, as well as development of tourism infrastructure, are key to assuring a net positive outcome. This Tourism Study puts forth recommended policies and implementing actions with emphasis on local management and self-sustaining economic development, as the basis of a tourism management scheme.

1.4 OBJECTIVES OF STUDY

The primary objective of this Tourism Study is to assess the potential for tourism growth in the Arun Basin and surrounding hill areas proximate to the proposed road; and to recommend means of mitigating the effects of increased tourist use on the natural, socio-economic and cultural environment. An important aspect of the study is to identify specific ways and places that local inhabitants can benefit from tourism, with an underlying aim of maintaining native traditions and cultural heritage.

1.5 STUDY METHODOLOGY

This report is based primarily on information collected during a month-long field study walking the described Study Area. Along with first hand observation, extensive interviews were undertaken with local residents, government representatives including the CDO (Chief District Office) of Sankhuwasabha District, police in Khandbari and other checkposts, lodge-owners, shop-keepers, business-people, farmers, porters, herders, schoolmasters, foreign-project health care workers, trekkers, etc.

A valuable source of information were tourism reports produced for the Makalu-Barun National Park Management Plan (Banskota and Upadhyay, 1990). A survey of trekking agents with offices in Kathmandu (*Trekking Survey*, see Appendix) was carried out. A report entitled *Environmental Management of Mountain Tourism in Nepal* by Dr. Harka Gurung (presented at ESCAP Symposium on Tourism Promotion in the Asian Region, 12-15 November, 1990) was an excellent source of current tourism data and statistics. Interviews with Project Director of the Annapurna Conservation Area Project contributed to program implementation ideas and the suggested building cost estimates.

1.6 LIMITATIONS OF THE STUDY

All major tourist centers and trekking trails in the Study Area were visited during field work, however because of weather and limited time some spots on the periphery could not be reached.

Estimates of construction costs for local tourism infrastructure are somewhat sketchy given the lack of comparable facilities in the area. Estimates were primarily based upon suggested costs for like-construction in the Makalu-Barun NPCA, however, costs may be higher there to meet national park standards. Cost estimates were compared with those provided by the Annapurna Conservation Area Project (ACAP).

Another limitation of this report is the lack of identified management authority to implement recommended policies and actions. Without a source of funding and training for many of these programs, the identified negative impacts of tourism growth in the Project Area will go unmitigated and the natural and cultural resources -- the very attractions to tourists -- will be spoiled.

CHAPTER 2: MOUNTAIN TOURISM IN NEPAL

Tourism is the primary source of foreign exchange earnings in Nepal, generating US\$68,343,000 in convertible currencies in 1989 (Department of Tourism, 1990). Trekkers and mountaineers account for about 26% of all visitors; the duration of their stay in Nepal is longer than urban sightseers' and their contribution to the economy is significant. As an industry, mountain tourism employs tens of thousands of people in both urban and rural areas.

2.1 TOURISM GROWTH

Nepal officially opened its doors to tourists in 1949, when the first foreign mountaineering teams came looking for a route up Mount Everest. Between 1966 and 1970, the number of tourists quadrupled to 46,000, and by 1976 it had passed 100,000. Today roughly a quarter million tourists visit Nepal each year. The greatest proportion (20-25%) are Indians who come for religious, shopping and city sightseeing purposes. Others come from USA, UK, West Germany, Japan, France, Italy and Australia (in descending order, 1988, 1989; Ministry of Tourism).

Though mountain tourism was the original draw, it brings in only one-quarter of the total tourists. In 1988, of 265,943 tourist arrivals, 61,273 (or 23%) were issued trekking permits to trek or climb in the Himalaya (*Nepal Tourism Statistics, 1988, Ministry of Tourism*). The percentage of trekker/mountaineers jumped to 26% in 1990 (62,998 trekking permits issued; Department of Immigration, 1991); 32% if Indian tourists are excluded.

Table 1: Growth in Number of Trekkers 1980-1990 (according to trekking permits issued)

Year	Everest	Langtang/ Helambu	Annapurna	Kanchenjunga	Dolpo	Other	Total	% +/-
1980	5,836	4,113	14,332			3,179	27,460	
1981	5,804	4,488	17,053			2,155	29,500	+ 7.4%
1982	6,240	4,535	19,702			1,855	32,332	+ 9.6%
1983	6,732	4,030	21,119			417	32,298	-0.1%
1984	7,724	4,792	25,422			3,268	41,206	+ 27.6%
1985	8,347	4,610	18,960			813	32,730	-20.6%
1986	9,900	5,250	33,620			805	49,575	+ 51.5%
1987	8,998	6,107	30,914			1,256	47,275	-4.6%
1988	11,366	8,423	37,902	87		3,495	61,273	+ 29.6%
1989 1)								
1990	11,314	7,826	36,361	620	585	6,292	62,998	+ 2.8%

Average annual growth rate: 10.32%

Note: 1) Trekker counts for 1989 were not yet published by the Ministry of Tourism and not kept according to Western calendar year by the Department of Immigration for 1989.

Source: 1980-88: Ministry of Tourism, Nepal Tourism Statistics, 1988; 1990: Dept. of Immigration, 1991.

2.2 TREKKING

2.2.1 Primary Destinations

The vast majority (88%) of trekkers visit three mountain areas: Annapurna (58%), Everest (18%) and Langtang-Helambu (12%). The Annapurna and Everest regions were made famous by early Himalayan mountaineers and much publicized in trekking guide books. The Langtang-Helambu region is popular due to its easy access from Kathmandu. Secondary trekking routes are Kanchenjunga and Dolpo (2%), and the Arun Basin, Gorkha-Manaslu region, Jumla-west Nepal and other miscellaneous areas which together constitute 6.5% of trekking permits issued. Of the remaining, 1.5% are issued to members of climbing expeditions (who also require trekking permits) and 2% to foreign diplomats for non-specific trekking areas (1990, Department of Immigration).

2.2.2 Seasons

Trekking is extremely seasonal, limited by the cold winters and rainy monsoon summers. Winter is harsh at high elevations from mid-December to early March. The monsoon brings heavy rains from June to September. October is the peak trekking month in all of the three major trekking areas with November a consistent second; March/April is the third most visited period, December/February next. September is a peak month in the secondary trekking areas. Those regions that fall within the Himalaya's rain shadow have a slight turnout in May through August (ibid).

2.2.3 Group and Individual Trekking

For the purposes of this report, trekkers are categorized as either "group trekkers" or "individual trekkers."

2.2.3.1 Group trekkers

Group trekkers are those who are accompanied by a full Nepalese staff, including *sirdar* (guide), cook, several *sherpas* (or assistant guides) and generally two to three porters per client (see Table 5). Group trekkers are also referred to as "Inclusive," "Agency Operated" or "Organized" trekkers. The "group," which can consist of as few as one person, is totally self-sufficient. Porters carry all food needed for the trip, camping equipment including sleeping, dining and toilet tents, stools, and the members' personal belongings. The group either carries its own kerosene as cooking fuel or relies on local wood supplies (see 2.5.a Firewood Use). Some group treks which are organized overseas provide a Western group leader who is familiar with the Nepalese language, culture and first aid, etc. to serve as a liaison and company representative for the members' sense of security.

Most group trekkers arrange for a package "inclusive" trek with an overseas travel company which contracts with a Nepalese agent for trekking services. Others make arrangements directly with a trekking agent in Kathmandu, or with a freelance guide they've personally contacted. Treks organized overseas cost from US\$60 to \$100 + per day; those organized directly in Kathmandu cost from US\$20-50 per day, depending upon the size of group and trekking area. Groups usually range in size from 4 to 16 persons, average 10 for the purposes of this report.

An "FIT" group -- sometimes called "Free and Independent Trekkers" -- is a group that has designed its own custom itinerary or schedule. FITs often constitute a group of friends, relatives, company employees, friends of the organizer, or unacquainted travellers who have joined together to reduce costs or satisfy government regulations for a minimum number of trekkers. Non-FIT groups sign up individually for a fixed date departure-fixed itinerary trip, as advertised in the operator's brochure.

A few trek organizers are selling "Tea House Treks" for groups, particularly in the Solukhumbu area, wherein members stay in up-standard lodges rather than tents. Some such group tea-house trekkers take their own cooks and food; others eat the lodge-prepared food. This category falls under "Group Trekkers" as they are accompanied by a significant number of Nepalese staff organized by an overseas or Nepalese trekking agent, and are priced considerably higher than the normal "individual" tea-house trek (Group Tea House trek cost: US\$60-\$80/day vs Individual cost: \$5-20/day).

2.2.3.2 Individual trekkers

Individual trekkers, sometimes called "tea house trekkers" are do-it-yourself travellers who eat and sleep in lodges or homes along the trek route. They either trek without a Nepalese staff or hire a guide and/or a porter or two for a daily wage. The guide or porter is usually hired in Kathmandu off the street or at the trek trailhead; others are employed by trekking agents who ask a service charge (\$25-50) for staff insurance and overhead. Individual trekkers unaccompanied by guide or porter pay US\$5-10/day for their own food and shelter, and an additional \$5-10 for a porter or guide's wages and food.

The mushrooming of small lodges or "tea houses" along popular trekking routes, many converted from homes or inns that once served trans-Himalayan traders, has sped tourism's inroads into Nepal's mountain areas. Most lodges are simple shelters offering wooden cots and a hot meal, while others, particularly in the Annapurna and Solukhumbu areas, are more elaborate, patterned after an alpine ski hut. Conveniently spaced several hours to a day's hike apart, tea houses enable the individual trekker to travel light, with just clothes and essentials, sometimes even without sleeping bag.

Very few individual trekkers backpack, that is carry all their own food and shelter and camp wilderness style as they might in national forests or parks of their home country. Those that do are categorized herein as "individual trekkers" as even though they are self-sufficient, they are not accompanied by a team of Nepalese staff.

2.2.3.3 Group vs Individual statistics

The number of trekking permits issued in 1990 shows that 43% of trekkers in Nepal are group trekkers vs 57% individual trekkers (1990, Dept. of Immigration). In 1989, 36% were group trekkers and 64% were individual (Harka Gurung, 1990).

Despite government efforts to encourage group trekking, as a more controlled form of tourism and more lucrative on a national level, tea house trekking has become more popular because of its affordability and the growing availability of lodges along main routes.

2.2.4 Trekking Trends

Since 1976, when trekking permit statistics were first collected, the number of trekkers has grown by a factor of 4.5, from 13,891 to 62,998 in 1990 (Ministry of Tourism and Department of Immigration). The relative ranking of the three primary trekking destinations -- Annapurna, Everest and Langtang-Helambu -- has remained unchanged since at least 1980 (Harka Gurung, 1990).

While most trekkers still visit the big-name places associated with the highest peaks and the much documented Sherpa people, a growing contingent of mainly returnee trekkers wants to get off the beaten track into areas unaltered by tourism. Since the opening of two previously restricted areas, Dolpo in west Nepal, and Kanchenjunga in the east, the number of trekkers has grown.

Table 2: Growth in Trekkers in Dolpo and Kanchenjunga Areas Since 1989

	<u>July '89-July '90</u>	<u>July '90-Feb '91</u>	<u>Jan-Dec '90</u>
Dolpo (1)	274	428	585
Kanchenjunga	624	461	620

Notes: (1) Trekking in Dolpo has only one season per year: end of April to early September, thus figures for July '90-Feb '91 represent only half a season.

Source: Trekking Agents Association of Nepal, TAAN, February 1991 and Department of Immigration

In the *Trekking Survey* (March 1991, see Appendix), trekking agents report that groups on the Arun Basin trek like the area for its remoteness, being away from over-treked trails, and for its traditional culture (see below, 3.4 Trekking Trends in the Project Area).

At the same time, novice trekkers -- the elderly, families with children, or first time campers -- are looking for short, easy treks to test their abilities and tolerance. According to trekking operators, there has been an increase over the last few years of three to four day treks in the Kathmandu and Pokhara hills.

Adventure companies now combine scientific, religious and cultural study or hobby lessons with a trekking holiday. Tour leaders double as instructors in yoga, mountain medicine, photography, sketching or painting, language or cultural study, Buddhism, bird watching or wildlife tracking in an experiential educational forum. Some university programs offer credits for research or tutorial projects carried out in Nepal. Pony treks are conducted out of Pokhara, for those who don't wish to or can't walk. A group of blind trekkers recently set a world record climbing 6,654 meter (21,830 foot) Mera Peak. Clubs and associations are beginning to organize litter clean-up treks or to spend time building schools or monasteries as a cross-cultural outreach program.

2.3 MOUNTAINEERING

According to HMG regulations on mountaineering, there are two types of climbing expeditions depending upon the peak's height.

2.3.1 Trekking Peak

Trekking peak regulations apply to 18 specified mountains which fall below 7,000 meters. Group A peaks are generally above 6,000 meters and Group B are under 6,000 meters. Foreign climbers wishing to climb a Trekking Peak need apply to the Nepal Mountaineering Association (NMA). These peaks can usually be climbed more quickly than Expedition Peaks -- some are climbable in one to three days -- however, the technical difficulty can be as great. The number of Nepalese support staff is small, usually two to three "climbing sherpas" depending on the group size.

2.3.2 Expedition Peak

Expedition peak regulations apply to all other "open" peaks higher than 6,000 meters and are administered by HMG Ministry of Tourism, Mountaineering Section. Climbs on expedition peaks usually involve a large Nepalese staff, sometimes hundreds of porters who ferry equipment and food to base camp, plus special high altitude porters, "climbing sherpas" (trained Nepalese mountain guides) and a full-time base camp staff. The expedition can take one to three months. The average number of foreign climbers in a group is ten (Harka Gurung, *ibid*).

2.3.3 Mountaineering Trends

The popularity of mountaineering expeditions in Nepal's Himalaya was further enhanced by the opening of new peaks for climbing in 1978, and a revision of regulations pegging climbing permits to seasons (three seasons per year, no permits are issued during June- August) and by granting permission for specific routes on a peak.

Table 3: Mountaineering Expeditions, 1979 and 1988

Year	# Exped.Teams	# Foreign Climbers	# Nep.Employed	(in NRs)	
				Royalties Collected	Local Expen.
1979	48 (1)	488	9,016	577,000	11,761,000
1988	92 (2)	936	10,839	4,979,146	42,600,000

(1) The average number of climbers in an expedition team is 10. (2) The average number of Nepalese employees per team has decreased from 188 to 118 between 1979 and 1988.

Source: Harka Gurung, 1990

The decrease in the number of Nepalese staff employed per team indicates a growing trend toward alpine style climbing with smaller support staffs. In 1990, there were a total of 906 expeditions (other information not available).

2.4 OTHER LEISURE AND RECREATIONAL TOURISM

2.4.1 Rafting/Kayaking/Boating

Five rivers in Nepal are rafted commercially: the Bheri, the Gandaki including the Marsyangdhi, Seti and Kali Gandaki, the Trishuli, the Sunkosi and the Arun. Rafting is growing in popularity among tourists, especially in combination with trekking and jungle safari trips. The Trishuli runs right into Royal Chitwan National Park, where clients disembark for wildlife viewing with one of the lodge operators. Individual kayakers and expeditions occasionally shoot the rapids as well; some rafting companies arrange for day or longer kayak rentals. Row-boating on Pokhara's Phewa Lake is also a popular sport. Windsurf-boards and sail boats are occasionally to be found.

2.4.2 Fishing/Hunting

Fishing is not a big tourist attraction in Nepal. Streams and lakes are not stocked and local fishermen usually catch what is available. But the avid fishermen enjoys the challenge and the scenery. Like trekking and rafting, spring and fall are the best seasons for sport fishing in lowland lakes and rivers.

Sport hunting for wild goat and sheep, boar, deer, pheasant and other game birds is permitted with a licensed guide in designated areas of the mid- and low elevations.

2.4.3 Jungle Safari

Private wildlife camps/lodges are licensed to lead wildlife safaris within Royal Chitwan and Bardia National Parks. Visitors to Koshi Tappu Wildlife Reserve in east Nepal can also go out on elephants in search of wildlife, although there are no tourist support facilities such as lodging or developed campsites (see below, 8.3).

2.4.4 Gliding/Ballooning

A few tourists now hang-glide or para-glide off hills or small peaks in the Himalaya. Hang-gliders, with fixed aluminum frames, are bulky to carry up the hill limiting the sport to road accessible places. Para-gliders have no frame but are given structure when the wind fills their pockets. They can be carried in small backpacks. Para-gliding has been tried off peaks near Manang (Annapurnas) and Thyangboche (Khumbu) and holds much potential than hang-gliding. So far, no permit is required.

Ballooning has been attempted in Khumbu, but due to wind conditions the balloonists either never released the ropes, or on loftier attempts such as a Japanese ballooning expedition over Everest in 1990, called the effort off. Like gliding, ballooning has great potential for scenic sport but because of possible interference with aviation or military exercises, is regulated and prohibited in certain places.

2.4.5 Mountain Biking

Touring Nepal's backroads, and some trails, by mountain bikes has gained the attention of avid bikers but not the casual recreationist as trekking has. Organized day and overnight tours follow dirt roads around the Kathmandu Valley and visit hill stations on the Valley rim (see below, Hill stations). Tours include use of mountain bikes, meals and accommodations, a trained guide and a "sag wagon" to carry gear.

2.4.6 Hill stations/Mountain Resorts

There are several "hill stations" or tourist resort lodges in rural areas of Nepal, where the non-trekker can experience village life and enjoy mountain scenery. The most spectacular of these is located at Shyangboche, above Namache Bazaar (Khumbu). It is a luxury hotel (Japanese built) at 4,000 meters (13,500 feet) with its own airstrip and full-frame views of Everest, Nuptse, Lhotse and Ama Dablam. Prices run approximately US\$300/double per night, not including the flight on a charter plane from Kathmandu. The Hotel Everest View was closed for some years due to the hazards of quick ascent by plane to high altitude. They have now re-opened with oxygen and a compression room.

Pokhara, Nepal's second tourist destination after Kathmandu, is much visited for its mountain views. It is also easily accessible with daily flights and road access. Boating, fishing, shopping, sightseeing and relaxation are its tourist attractions. There is one luxury resort in Pokhara, and several others in the planning.

There are other mountain viewing stations with budget to upgrade tourist lodging in Dhulikhel (35 km east of Kathmandu), and around the Kathmandu Valley rim at Nagarkot, Kakani and Hatiban. Tansen is a pleasant hill town located between Pokhara and Butwal in west Nepal, but not heavily visited by tourists because of the long drive to reach there and a lack of publicity. There is only simple lodging there.

The popularity of these hill resorts appears to have increased over the last 5 years, judging by the continued construction of new facilities (Pokhara, Hatiban, Nagarkot). As Kathmandu has now become part of many Asia tour circuits, it is increasingly becoming a stop-over (4-7 days) for non-trekkers, many of whom want to get out into the countryside and see the mountains but without leaving the comforts of a well managed hotel.

2.5 TOURISM'S IMPACTS ON NATURAL RESOURCES

Mountain tourism's primary impacts on the natural environment are the cutting of trees for firewood, and litter and pollution; secondary impacts limited to certain areas are trampling or disturbance of fragile vegetation. Indirect impacts are the increased local consumption of natural resources (building timber, firewood, fodder, etc.) and the generation of non-biodegradable garbage by local inhabitants as their incomes grow from tourism.

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2.5.1 Firewood Use/Alternative Fuels

2.5.1.1 Firewood

Figures of tourists' daily and annual consumption vary widely. Besides variations in use according to the recreational activity, region, season, weather and type of food cooked affect levels of fuelwood use. An estimate made in 1987 shows an average consumption rate per tourist trip of 138 kg, broken down as following:

Table 4: Average Consumption Rate of Firewood Per Tourist (1987)

Rafters	9 kg
Individual trekkers	55 kg
Group trekkers	186 kg
Mountaineers	1,116

Source: Environmental Resources Limited, 1989)

Mountaineers consume vast quantities of firewood due to their extended (one to three months) stay at high altitudes and to supply their huge support staffs (average 118 porters per team, 1988). In recognition of the firewood issue, some mountaineering teams provide cylinder gas or kerosene for their climbers' cooking, but porters must fend for themselves and are forced to cut whatever will burn, often denuding the land of fragile alpine vegetation.

Group trekkers are the second greatest consumers of fuel wood, with average daily use of 18.6 kg per person (Harka Gurung, 1990: Fuelwood Consumption by Mountain Destination, 1987; ERL). National Parks and ACAP regulations now require all group trekkers' to be self-sufficient in kerosene (in ACAP, above Chhomrong only), reducing the fuelwood demand among the trekking members but their porters still rely on wood for cooking. Porters buy or collect firewood even in protected areas, or eat in local homes or lodges where firewood is burned. The amount of firewood consumed by porters is considerably less than that for trekkers as they eat very simply, however in colder climates they often keep warm by huddling around a fire all night.

Thus, even with regulations preventing use of firewood use in protected areas, the steady and anticipated increase in numbers of mountain tourists and porters is actually fueling higher rates of firewood use on a national level. The total tourist demand for firewood in 1987 constituted 0.14% (6.4 million kg) of the country's entire highland fuelwood use. This is a relatively minimal proportion, however because of the seasonal nature of mountain tourism and demand being concentrated in a few areas, tourist demand for firewood has already had major ecological impacts. With 55,500 trekkers visiting the Annapurna, Everest and Langtang areas each year, almost entirely within the span of four months, the harvesting of firewood to feed them and their staffs is far beyond the annual rate of tree growth. Add this demand to local needs in a cold climate: tourists' demand adds 4.7% to 85.2% to that of an average local household. The depletion of biomass will lead to lower rates of growth which in turn will lead to faster depletion of stock (ERL, 1989).

Individual trekkers are totally reliant upon local wood supplies, except where lodges use kerosene: about 20% of lodges in Sagarmatha use kerosene (Banskota and Upadhyay, 1990) and all lodges above Chhomrong in the Annapurna Sanctuary are required to use kerosene. Otherwise, most trekking lodges burn wood, at an average of 220 kg per day (Harka Gurung, 1990), or 7 kg/day per individual trekkers. Even if chopping of green wood for fuel is prohibited inside protected areas, just outside the parks trees are cut freely.

2.5.1.2 Alternative fuel sources

So far, kerosene is the only practical and affordable alternative to firewood. The uncertain supply of kerosene, however, and the cost and logistics of transporting it to remote regions are real constraints to more widespread use among group trekkers and lodges. There are kerosene depots at Jorsale (Khumbu) and at Chhomrong (Annapurna) which supply fuel for treks into these areas.

Some trekking agents report that it is cheaper to cook with kerosene than wood, or within a dollar or two of the cost; and that is it preferable because it can be sent from Kathmandu in a calculated amount and is a known cost. On average one liter of kerosene is used per day per trekker. Kerosene costs NRs

8-22 + per liter, the higher figure when it is not available except on the black market. The unsteady supply, however, has scared many agents away from committing the resources (stoves, carriers) to using it. As long as wood can still be bought or collected for free along the trekking routes there will be resistance to converting to kerosene. Some trekking staffs reportedly turn in "padded" firewood bills in order to supplement their low salaries; they are hesitant to voluntarily use kerosene because there is no chance to make such pocket money.

Other alternative energy sources are presently not available for widespread use among trekkers: hydro-electrical energy where it exists in the hills, is not of sufficient wattage for cooking. Slow cooking *bijuli dekshi* systems are in a few rural households and lodges in the Annapurna region, and progress is being made on the development of a energy storage unit which will allow quick frying of foods. But neither is capable of replacing firewood for trekking groups who venture into remote and diverse regions.

Reforestation projects have only begun to revegetate denuded slopes but might someday provide a renewable fuel resource. Growth rates are very slow however at high elevations: 40-60 years for a tree to mature. In the national parks, policies supporting the planting of native trees prevent the introduction of fast growing species that could be cultivated as a fuelwood source.

An indirect impact of tourism in the more prosperous mountain communities such as Solukhumbu and Ghandruk is the increased demand for timber for construction of trekker lodges and bigger private homes. Timber must be cut and carried from outside Sagarmatha National Park (except for marked trees authorized for felling by the park authorities) contributing to the deforestation problem outside the park. The lovely rhododendron forests near Ghandruk are falling to the axe and had so been above Ghorepani until the local community declared Poon Hill a conservation zone and forbade cutting of trees.

The outlook on tourist-related deforestation remains bleak without enforced controls of mountaineer, trekker, porter and lodge use of firewood and the provision of realistic alternatives. Lodge owners have learned through ACAP Lodge-owner training courses to price the cost of kerosene into their standardized menus. All the arguments against widespread kerosene use -- except for its availability -- have been overcome in the Annapurna area. A reliable supply of kerosene in hill depots close to trekking areas may well be the answer to the fuel problem.

2.5.2 Litter and Pollution

Litter and pollution have become serious health and aesthetic concerns in heavily trekked regions of the Himalaya. Lands nearby campsites are strewn with wads of toilet paper and fecal matter left under bushes and behind rocks. Even where trekking groups set up toilet tents, half-buried pits create a minefield out of seasonal farm terraces or village playgrounds. Lodge latrines hang precariously over running streams and are often so polluted that tourists prefer the great outdoors.

Careless disposal of wastes is out of hand. Even if litter is collected in bags by "green trekkers" there are no proper disposal sites. So far, the improper treatment of wastes has not dissuaded tourists from coming to Nepal, but at some point it may, particularly when unsanitary conditions become a serious health hazard. Villagers and tourist lodge cooks wash vegetables in polluted streams, contributing to the high incidence of intestinal infections among children and tea house trekkers. The spread of an epidemic could wipe out tourism.

The causes of the littering and pollution problems are: 1) a lack of awareness about bacteria and hygiene among the local population, 2) the unconscionable tourist and trekking staff who don't properly bury, burn and carry out litter, 3) the lack of proper disposal or treatment systems for non-biodegradables, 4) the cold conditions at high altitude settlements and camps which retard any natural break-down, and 5) the lack of regulations and enforcement thereof controlling litter and human wastes.

There have been some efforts to clean up, provide disposal facilities and teach proper hygiene along the trekking routes; some are effective, some not, primarily due to a lack of follow-up maintenance. In Sagarmatha National Park, when donated latrines were built at Thyangboche monastery, there was no one of the right caste to clean them so they quickly fell out of use. ACAP has succeeded by providing small loans and demonstration projects to private lodge-owners to build and maintain toilets. Similar efforts including education are needed to instill good hygiene practices in the minds of all mountain users.

2.6 SOCIO-ECONOMIC IMPACTS OF MOUNTAIN TOURISM

Trekkers and mountaineers spend a greater number of days in Nepal than non-trekkers: 16 days vs 4 days (J.B. Singh, Kathmandu Review, 1989), and thus contribute more than their share in tourism revenue. Mountain tourism has been a boon to many of Nepal's hill economies, providing seasonal jobs to hundreds of skilled guides, thousands of subsistence farmers as porters, and a much-needed source of cash income to villagers with the ingenuity to set up tourist lodges.

2.6.1 Employment

The trekking and mountaineering industry employs an estimated 46,000 to 72,000 Nepalese (Harka Gurung, 1990). Banskota and Upadhyay (1990) estimate that trekking alone generates 536,935 to 1,115,345 man-days of employment per year (1988).

Group trekkers generate 82-85% of those man-days though they constitute only 35-45% of total trekkers. Assuming that group trekkers spend an average of 10 days on the trek, one group trekker annually generates approximately 20-40 man-days of employment (Banskota and Upadhyay, 1990).

Table 5: Employment of Trekking Staff

For a group of average 10 trekkers, the support staff usually consists of an average of 2-4 staff per trekker:

1 <i>sirdar</i> (head guide)
1-2 cook
2-4 kitchen boys
2-4 "sherpas" (assistant guides)
1.5-3 porters per trekker
21-41 total staff

Group treks employ all Nepalese staff in Kathmandu; porters are hired at the trailhead. Many porters are from lowland or distant regions, and gather at the trailhead for employment. In some areas, particularly Sagarmatha National Park, pack animals are used to carry loads instead of porters.

Many individual trekkers hire no staff at all, and others hire a guide and sometimes a porter. On average, two individual trekkers hire one to three support staff (*ibid*), or 0.5-1.5 staff per trekker. Assuming that individual trekkers spend an average of 10 days trekking, one trekker generates 5-15 man days of employment per year (1988). Individual trekkers generated 79,475 to 238,425 man-days of employment in 1988.

Employment generated by mountaineering is also significant, but like group trekkers, expeditions hire most porters at the trailhead, thus from outside the region. Most high altitude staff and porter are from the climbing locale, however others come from Khumbu or the Annapurnas seeking work. Mountaineering teams (92) employed 10,839 persons, at an average of 11.6 employees per climber in 1988, down from 14 employees per climber in 1980 (see above, 2.3.c Mountaineering Trends).

Porters earn an average of NRs 60-80/day, working roughly 120- 180 days per year (4-6 months), depending upon the area. Thus, he or she will earn between NRs 7200 and 14,400 per year (US\$240-480). A high altitude staff porter may earn twice or more that daily rate (NRs 120-250/day) and is likely to be employed for a greater number of days considering the longer mountaineering season (September through May).

Group trekkers generate an annual trekking staff employment income of NRs 30,649,820 to 61,299,640 compared to NRs 5,324,825 to 15,974,475 for individual trekkers (*ibid*). Mountaineering teams generated incomes of NRs 42,582,638 in 1988.

2.6.2 Food, Lodging and Souvenir Purchases

Mountain tourists and their staffs buy snacks, drinks and sometimes meals along the trail, and thus contribute significantly to hill economies in popular trekking regions.

Individual trekkers consistently spend the most as they are dependent upon local food and lodging for survival. On average, an individual trekker will spend NRs 150-300 on food and lodging per day, depending upon the region and his or her budget. Sherpas of Solukhumbu, and Gurungs, Manangis, Thakalis of Annapurna have moved up the economic ladder largely because of individual trekkers' purchase of lodging and food. Unfortunately, however, because of a proliferation of tea houses especially in the Annapurnas, over-competition keeps prices so low that some lodge-keepers barely make a profit (ACAP study, 1989). ACAP has now introduced Lodge Owner Committee and Training to help set minimum prices and standards, and to teach lodge operators to account for non-tangible expenses such as their or their family members' labor and the costs of raising poultry and growing vegetables.

Group treks like mountaineers benefit the villagers to a lesser degree than individuals because they bring in the vast majority of their food from Kathmandu. Trekking cooks re-supply however with fresh vegetables and fruit, poultry, eggs and other staples (rice, oil, *dal*, salt, etc). According to the *Trekking Survey*, trekking agents report spending an average of 8-10% of total food expenses locally.

Trekking staffs also buy firewood, beer or *raksi* and often pay a charge for use of the campsite (NRs 5-10 per tent, or NRs 15- 50 per campsite). Of the total trekking budget, 5-25% is spent locally on either firewood purchased from villagers or kerosene bought at shops or at trailhead depots.

Although handicraft sales are not well developed in the hills, in some places such as Ghorepani in the Annapurnas or Namache Bazaar in Khumbu, shopkeepers and traders offer jewellery, "yak bone" artifacts, religious souvenirs, etc. and frequently take in from NRs 50 to 2000 from one trekker. There are few cottage industries set up that produce handicrafts which tourist might buy. However where they do exist (weaving centers, brass making, wood carving, etc.) visitors enjoy seeing the production process and often make purchases.

2.6.3 Firewood Sales to Trekkers

Sales of firewood to trekkers and trekking lodges are a significant form of revenue for villagers along popular trekking routes. Generally three to four *bhari* of wood are needed per day to cook breakfast, lunch and dinner for an average trekking group of eight to ten, at lower elevations (Source: trekking cooks' experience; see below, 2.6.a Firewood Use). One *bhari* (30kg) of firewood costs approximately NRs 20-30. Thus, a villager living near a camp or cooking site can expect to make NRs 20-60 per day; over a two month season, one seller could earn NRs 1200-3600. The price of firewood is escalating due to the longer distance and time taken to collect it, i.e., a thinning of forest resources near settlements and along trekking routes. Trekking lodges also purchase wood from local suppliers or send their lodge staffs/family members to collect it.

Most kerosene for trekking use is brought from Kathmandu. Except for depot operators, kerosene sales minimally benefit local economies.

2.6.4 Inflation of Local Prices

Tourists and their trekking staffs often pay higher prices for commodities such as poultry, eggs, food staples, bottled drinks even *dal bhaat* and lodging than do local customers. Soon prices go up for local inhabitants as well, contributing to inflation. In Khumbu, Sherpas with tourist lodges can afford eggs, fruit, meat and good quality rice carried up from the lowlands, as inflated rates are passed on to the trekkers. Other Sherpas who don't sell to tourists cannot afford such "luxuries" for their families. In some trekking areas, chickens fetch up to NRs 500 during peak trekking season, way beyond the means of locals who usually pay NRs 50-100.. Some merchants maintain a dual pricing system, for locals and tourists, but especially in high elevation settlements the price is whatever the market will bear.

2.6.5 Changes in Land Use

Land uses along major trekking corridors have changed as a result of or under influence of tourism. These are primarily conversion of agricultural land for the construction of lodges or tea stalls, abandoned cultivation to permit camping, and changes in crop production, for example rice, corn, millet or other subsistence grains to cash crops such as fruit trees and vegetables, often with a resultant increase in water need. Forest lands are also cleared for cultivation, however more often to supply local needs.

In Sagarmatha National Park and Tatopani and other settlements in the Annapurna area, agriculture has gradually become secondary to tourism-related activities: operating trekker lodges, working as trekking guides or porters. Many men leave the farm in search of cash income, leaving the women to look after farming as well as household and child-raising functions. Where this results in a shortage in labor, agricultural production has waned and lands are left uncultivated. Also, the productivity of some crops has declined when people choose planting times according to off-tourist season when men are home and women not busy in the lodges.

Changes in livestock composition brought on by tourism can be harmful to the ecology. In Khumbu, many households have purchased *zopkios* (yak-cow crossbreeds) to hire out as pack animals and the result has been increased pressure on grazing lands. Among the Thakali peoples of the Kali Gandaki valley, many have brought in donkeys as pack animals and abandoned the herding of traditional livestock.

Other land use changes which can be attributed to tourism are the construction of infrastructure facilities such as airstrips, park headquarters, hotels, trekker lodges, tea stalls and tourist souvenir shops or outside vending sites. Architectural changes in terms of the size of lodges relative to private homes, building styles and materials, signs, outdoor sitting areas, use of glass and paint and displacement of private quarters for tourist accommodation also occur.

2.7 CULTURAL IMPACTS OF TOURISM

It is difficult to assess how social and cultural evolution is influenced by tourism. Tourists are not the only people bringing in new ideas and behavior: traders and travellers have always introduced change. Each village or ethnic group is effected differently. Drawing from various studies and observations, a general picture is painted of how tourism might influence remote peoples' behavior, dress, lifestyle, family and social structure, values and expectations with exposure to tourists.

The traditional architecture and use of home-made implements, clothes and household items change as incomes increase with tourism-related work and modern manufactured items become affordable. Village architecture often evolves toward a commercialized look with signs and unplanned additions to houses to accommodate tourists. The unifying look of a community is sacrificed to serving outsiders. Home-owners replace thatch with metal roofs, bamboo or mud water jugs with plastics, homespun cloth with Western clothes, etc.

Tourism offers hill communities the chance to earn much needed income without having to migrate to urban or lowland settings for employment. This is key to addressing the unbalance in availability of resources and living space, pollution and loss of cultural identity which occur when large numbers of rural residents move to employment centers. Therefore, increased tourism offers a positive future for its people, but at the same time introduces changes which if unchecked can destabilize communities.

Lifestyle changes related to an increase in tourism might include adjustments in man-wife roles (usually giving greater burden to women in performing heavy field work as well as tending the home, animals and children), abandonment of agricultural work or school attendance for employment in tourism, accidents or death of a family member involved in mountaineering or trekking work, etc. Such changes can alter the fine tuned balance of communities with nature and undermine village and family mutual support networks which are the pillars of Nepalese society. Education, including adult education and skill training, can help combat some of these impacts on society, as well as introduction of improved agricultural techniques to lessen labor demand and increase productivity. Trekking and mountaineering regulations require payment of insurance for staff accident or death, however the amount of coverage is sadly outdated and only applies to tourists handled by a registered company, not individuals.

Exposure to outsiders also inspires greater interest in education and travel which can economically and socially benefit a family or community. Other potential benefits come when tourists take interest in sponsoring individuals or communities and provide support for medical and health care facilities, schools and education scholarships, or small businesses.

2.8 TOURISM MANAGEMENT

2.8.1 Protected Areas

Eight percent (11,001 square kilometers) of Nepal's land area is protected in seven national parks, three wildlife and one hunting reserve. Of these, five are highland parks: Sagarmatha, Langtang, Shey Phoksundo, Rara and Khaptad. The most visited and developed park is of course Sagarmatha, home of Mount Everest and the Sherpa people. Except for Rara, local peoples inhabit the parks and carry on agriculture, livestock herding and some provide tourism services.

There are no restrictions on numbers of tourists who visit the parks. Trekkers register at the park entrance and are informed about regulations and natural and cultural resource systems. Most protected areas have museums or interpretive centers with information about the park. A fee of NRs 250 is collected from each foreign visitor and goes into the general national fund.

The Makalu-Barun National Park and Conservation Area (2,330 sq km) is the newest protected area (1990). A management plan spells out an innovative approach to resource conservation incorporating traditional local management techniques and income generating opportunities, balancing socio-economic development with environmental protection and natural resource sustainability.

The Annapurna Conservation Area, 2,660 sq km of protected area in the Annapurna Himal, is administered by the King Mahendra Trust for Nature Conservation, a non-government organization or NGO. It is the most popular trekking area in Nepal: 36,361 trekked here in 1990. ACAP collects a NRs 200 fee from visitors to implement conservation programs set up by ACAP staff together with villagers in the area. ACAP regulations require that all group trekkers, their staffs and even trekker lodges burn kerosene for cooking above Chhomrong in the Annapurna Sanctuary.

The Nepalese government has also imposed regulations on trekkers entering Kanchenjunga and Dolpo regions. Both previously restricted areas were opened conditionally to trekkers in 1988. Trekkers must be accompanied by a registered trekking agency, and demonstrate self-sufficiency in kerosene and food. The application form asks trekkers to promise to keep the environment clean.

2.8.2 Trekking Permits

All foreign tourists are required to carry a valid trekking permit in Nepal's back country. The Departments of Immigration in Kathmandu and Pokhara issue trekking permits for specific trekking regions: Annapurna, Solukhumbu, Langtang-Helambu, Dolpo and Kanchenjunga. Trekking in all other areas, including the Arun Basin east to Milke Danda, Gorkha region, west Nepal and anywhere else falls under a miscellaneous category.

The Department of Immigration categorizes trekkers as either "Agency Operated" or "Individual" for permit processing, payment and statistical analysis. In order to encourage group trekkers (see below, 2.8.e Group vs Individual Impacts) the Department charges a slightly lesser fee for group trekkers than for individuals.

Trekking permits are usually issued for up to four weeks, but may be given for longer if requested. They can only be extended in Kathmandu or Pokhara. Fees charged for individual trekking permits are: NRs 90 per week for the first month, and NRs 112.50 per week for the second and third months. Fees are slightly less for group trekkers (or individuals who go through an agency): NRs 60 and 75.

2.8.3 Restricted Zones

Foreign tourists are not allowed in designated Restricted Zones along Nepal's northern border with Tibet. Police Checkposts prohibit entry without special permission from the Home Ministry.

2.8.4 Mountaineering Permits and Royalties

Foreign climbers must obtain permission and pay a fee to climb Trekking and Expedition Peaks. Nepal Mountaineering Association grants permits for Trekking Peaks. The fee is US\$300 for Group A peaks (generally those higher than 6,000 meters) and \$150 for Group B (those less than 6,000 m). Additional charges are made for groups of more than ten persons. The permit is ready within a few days.

Expedition Peak regulations apply to all other "open" peaks higher than 6,000 meters and are administered by HMG Ministry of Tourism. Some peaks are closed to foreign climbers, others are open subject to certain conditions. Climbing fees, called royalties, are significantly higher than for Trekking Peaks -- NRs 35,000 to 84,000 and for some of the highest, most popular peaks, expedition teams have to wait for several years before receiving permission to climb. A government-appointed Liaison Officer must accompany the expedition, but usually doesn't go above base camp, if that far.

2.8.5 Other Tourism Management Concepts

2.8.5.1 Regulated tourism

There have been numerous tourism studies and management strategies developed for Nepal, but besides the National Park and Conservation Area plans, little has been implemented on a community, regional or national level. One recently released tourism management report recommends establishing a ceiling on the number of trekkers to visit the most popular trekking areas in order to limit their negative impacts. To encourage redistribution of trekkers into other areas, trekking permit fees would be set high in highly used areas during peak months and low in less used areas. Trekking areas would be categorized for general (open) use, to groups only guided by an agency, and as controlled areas for groups with royalty and supervision (Harka Gurung, 1990).

2.8.5.2 Group vs individual impacts

The issue of balancing the costs and benefits of group vs individual trekkers on the environment, cultures and rural economies has been debated extensively in trekking circles. Most agree that trekkers organized in groups accompanied by a professional trekking staff are subject to greater control over firewood use, litter and cultural "pollution." Individuals are dependent upon locally available cooking fuels and sanitary facilities, which are difficult to regulate among private trekking lodges.

The reality of the situation is not so simple. Some trekking agencies educate clients on how to minimize their environmental and cultural effects, however others fear that such impositions will scare away business. In fact, many campgrounds are left filthy from trekking groups; and the large teams of porters employed to carry tables, chairs and loads of canned and bottled goods use huge amounts of firewood. Individual trekkers stay in existing settlements some of which have garbage disposal means, and travel with minimal support staffs. Often, however, they bargain so hard for services that lodge-keepers make no profit. Without a guide to point out *faux pas*, they are sometimes offensive in dress or behavior (choosing a toilet spot), and by their closer interaction with villagers often leave a stronger impression.

On the economic side, individual trekkers definitely contribute more income to rural economies by their dependency on local food, fuel and lodging. Group trekkers primarily benefit trekking agents and staffs in Kathmandu.

In conclusion, both group and individual trekking have good and bad sides. To try to restrict individual trekkers (as some people in the trekking industry would do) would cut deeply into the majority (57%) of trekker numbers; many individual trekkers cannot afford to travel in groups. Mountain village economies like Khumbu and Jomosom now dependent upon tourists' rupees would dry up. Instead, we must look for ways to minimize each others damaging behavior.

2.8.5.3 Opening and cleaning up mountain areas

Opening up of more Trekking Peaks in the less visited east and west parts of Nepal has been put forward in Dr. Harka Gurung's report as a means to draw climbers into these areas and relieve the pressure on overused routes. One suggestion put forward to deal with mountaineers' trash is to require a clean-up deposit refundable (minus a small contribution to a clean-up fund) once a team's litter is removed from base and upper camps.

CHAPTER 3: TOURISM USE IN THE PROJECT AREA

3.1 TREKKING: NUMBERS OF TREKKERS IN THE PROJECT AREA

Approximately 250 tourists (trekkers and mountaineers) visited the Makalu-Barun area each (fiscal) year between 1986 and 1989 (Banskota and Upadhyay, 1990). The number has gradually increased, from just 34 in 1983/4 to 286 in 1987/88; 243 entered in 1988/89 up to April only. These figures were collected at the Khandbari Police checkpost and measure only tourists following the main route to Makalu Base Camp.

For other parts of the Project Area outside of the Makalu-Barun area, there are no exact counts of tourists. Judging from responses to the *Trekking Survey* (1991), an estimate of 130-190 trekkers visited areas other than Arun Basin -- Makalu-Barun Conservation Area in 1990. This estimate is broken down as follows, recognizing some overlap in areas visited:

Table 6: Estimated Number of Tourists in the Project Area Outside of the Makalu-Barun Area, 1990

Chainpur	60-80 (average 70)
Milke Danda-Jaljala Himal	(total 50-70)(1) 20-30 (average 25)
Salpa Pass	(total 110-220)(2) 40-60 (average 50)
Bhojpur	10-20 (average 15)
Total	130-190 (average 160)

Notes: (1) Most trekkers bound for Milke Danda-Jaljala also visit Chainpur, therefore to avoid double counting a fraction of the actual total on Milke Danda is used. (2) Likewise, most trekkers using the Salpa Pass route also visit Makalu-Barun.

Source: Estimates are based upon responses to the Trekkers Survey, 1991

For comparison, two estimates are given of total tourists visiting the Project Area in 1990 (Table 7 and Table 8). Estimate #1 (588-630 total tourists) is the preferred figure as it is based upon an actual account of visitors to the primary destination. Estimate #2 is based on rough estimates.

Trekking permits for the Project Area are issued under a "Miscellaneous" category, which includes other areas as well (west Nepal, Gorkha, and elsewhere) and therefore cannot give an accurate count. One Immigration official in Kathmandu estimates that based on a rough percentage (12-15%) of total Misc. trekking permits issued, 350-450 group trekkers (including mountaineers but not individuals) visited the Project Area in 1990. Lodge-keepers in Khandbari and Num estimate that of the total 243 tourists who registered in 1990, 50-100 are individual trekkers. Using an estimated ratio of individual vs group trekkers in other parts of the area, the following estimate of total trekkers is given.

Compared to the number of trekkers visiting the Annapurna, Sagarmatha and Langtang areas in 1990 -- 36,361, 11,314 and 7,826 (Department of Immigration) -- the number of tourists entering the Project Area is relatively few. Dolpo and Kanchenjunga regions, opened to foreigners as recently as 1989, drew 585 and 620 trekkers in 1990.

3.2 GROUP AND INDIVIDUAL TREKKER USE IN THE PROJECT AREA

Approximately 70-75% of tourists in the Project Area are group trekkers and mountaineers; few individuals trek here because food and lodging are not readily available. Simple lodging or accommodating homes can be found along the Tumlingtar-Num trail and in Seduwa and Tashigaon on the Makalu Base Camp trek (see Routes below). Beyond Tashigaon there are no settlements, and along the west side of the Arun River food is in short supply and people are not accustomed to tourists.

A few individuals trek to the Chainpur-Nundhaki-Gupha Pokhari area via Tumlingtar and Basantpur. Food and board can be arranged at travellers' lodges or tea houses along the way. Some continue east from

Gupha Pokhari into the Kanchenjunga area, however regulations preclude their going all the way to Kanchenjunga Base Camp unless accompanied by a trekking agent (see above, 2.8.a Protected Areas).

Table 7: Estimate #1 (Preferred) of Tourists in the Project Area (1990)

Average # Trekkers & Mnteers. to Makalu BC/yr 1986-88 (1)	(256)
Registered # Trekkers & Mntneers. to Makalu BC (1) (1988/89, to April only)	(243)
Forecasted # Trekkers & Mnteers. to Makalu-Barun Area 1990 (1)	(462)
with actual no. mnteers. (2)	458
Estimated # Trekkers to Chainpur, Milke Danda-Jaljale Himal, Bhojpur and Salpa Pass, 1990 (see Table 6 above)(3)	130-190 average 160
#1 Total Estimated Tourists Per Year	588-648

(1) Banskota and Upadhyay, 1990

(2) Banskota and Upadhyay forecasted the numbers of tourists to visit the Makalu-Barun area in 1990 and in each year until 1999. The forecast is based on recorded numbers of tourists registering at the Khandbari Police Checkpost per annum, 1983-1989, with an assessed annual rate of increase of 13.33%. Their projected 462 total tourists for 1990 included 90 mountaineers (calculated before the actual figure was available), when the number of mountaineers issued permits to climb Makalu, Chamlang and Baruntse in 1990 was 86 (Ministry of Tourism)

(3) *Trekking Survey*, 1991

Table 8: Estimate # 2 of Tourists in the Project Area (1990)

Dept. of Immigration estimate of Misc. area Group Trekkers & Mntneers (not individuals) for entire Project Area, 1990 excluding Salpa Pass route (1)	350-450
Lodge-keepers' est. individual trekkers Khandbari-Num (1990) (excluding individuals to Chainpur-Gupha Pokhari & Bhojpur)	50-100
(Plus individuals in excluded areas)(2)	20-30 (Salpa) 30-40 (Chainpur) 5-10 (Bhojpur)
Sub-Total of individuals outside of Arun Basin-Makalu-Barun	(55-80)
#2 Total Estimated Tourists Per Year	455-630

(1) Trekkers crossing Salpa Pass are issued a trekking permit for Sagarmatha National Park

(2) Based on 50-50 ratio of individual to group trekkers (slightly less than the 1990 national average ratio of 57-43 because this area is less well known to individuals than the popular trekking areas whose statistics dominate the ratios). No individual trekkers go to Milke Danda-Jaljale Himal.

There are no village settlements, lodges or tea houses on Milke Danda-Jaljala Himal, therefore trekkers must be totally self-sufficient.

As recently as four or five years ago, only group (self-sufficient) trekkers could cross Salpa Pass as there was not adequate food and lodging available for individuals. Villagers caught on to the opportunity, however, and now there are lodges or homes which host trekkers for every night of the way.

Group and individual trekkers generate different types and levels of impacts and demands on natural resources and local economies. Please see section 2.8.3 for further analysis, and Tables 16 and 17 for a summary of the economic benefits of each.

3.3 ROUTES/DURATION OF TREKS IN THE PROJECT AREA

3.3.1 Makalu Base Camp Trek

- * Hile/Tumlingtar - Khandbari - Bhotebas/Chichila - Num - Seduwa - Tashigaon - Khongma - Makalu Base Camp - and return via the same route
- * Hile/Tumlingtar - Num - MBC - Seduwa - west side of the Arun River via Walung Phedi - Bumlingtar - Tumlingtar/Salpa Pass
- * MBC - Khongma - Navagaon - Seduwa - Bumlingtar OR Uling - Hedangna (?) - Phaksinda - Khandbari - Tumlingtar (or once the project road reaches Pikhuwa, from Navagaon - Seduwa - Pikhuwa - Tumlingtar)

This route (a), known as the Makalu Base Camp trek, is by far the most commonly used among trekking and expedition groups in the area. It takes approximately 22-25 days round trip from Kathmandu, assuming the group flies one way (to/from Tumlingtar) and drives the other (to/from Hile). Most groups trek up and back on the same trail, via Tumlingtar and Num-Seduwa-Tashigaon.

In the *Trekking Survey*, two trek operators reported sending an average of 20-30 trekkers/year on the Makalu Base Camp trek; others send an average of one group, ranging from 3-14 trekkers per year. Some groups just go as far as Num; one group visited Makalu Base Camp and then chartered a helicopter to pick them up in Num.

There are some variations in this route. Some trekking groups return from Seduwa via the west side of the Arun River through Bumlingtar to Tumlingtar ("b" above, 22-25 days); others follow the same return to Bumlingtar and cross Salpa Pass to Lukla ("3.3.c" below, 30-32 days).

Another alternative (c) skirts Seduwa on the return by descending directly from Khongma (above Tashigaon) via Navagaon to Seduwa - Pikhuwa (powerhouse site) and down the west side of the Arun to Bumlingtar (*Makalu-Barun Conservation Project Survey of Trekking and Mountaineering Agencies*). Trekking time is the same as above. This route is likely to see greater use once the project's powerhouse service road is complete as trekkers can begin and end the Makalu Base Camp trek at Pikhuwa and avoid the steep descent and ascent between Num and Seduwa.

3.3.2 Khembalung Trek

- * Tumlingtar - Manebhanjyang/Khandbari - Chandanpur - Tamku - Khanigaon - Chitre - Khembalung - crosses the Arun River - Num - Chichila - Tumlingtar
- * From Khembalung - Arun River - Seduwa - Tashigaon - MBC - Num - Tumlingtar

The Khembalung trek is used by only one or two trekking groups a year. One trekking agent surveyed sending more groups to Khembalung (a) in 1987, but now only one group of 6-10 persons a year in 1988-89. The trek visits the sacred caves of Khembalung and returns via Num to Tumlingtar without visiting Makalu Base Camp. Total trekking time: 15 days.

An extension of this trek (b) not mentioned by surveyed trekking agents reaches Khembalung by the same route, then descends to the Arun River and again climbs to Seduwa, Tashigaon and continues on the Makalu Base Camp on the main trail (Banskota and Upadhyay, 1990). Still another alternative reaches Khembalung directly from Tumlingtar-Bumlingtar (or via Manebhanjyang or Khandbari) and follows the Sankhuwa Khola to Tamku or Sanischare, then to Chitre and Khembalung (ibid).

3.3.3 Salpa Pass Route

- Lukla - Puiyan - Gai Kharka - Bung - Salpa - Bumlingtar - Seduwa - Tashigaon - MBC - Num - Khandbari - Tumlingtar
- Lukla - east to Mera Peak - Hinku Khola - Panch Pokhari - Gudel - Salpa Pass - Tumlingtar

The Salpa Pass route (a) is gaining popularity as a less travelled route to Solukhumbu and an alternative to flying in or out of Lukla. It takes 8-9 days to walk from Lukla to Tumlingtar, crossing Salpa Pass at approximately 3,350 meters. There are lodges or private homes where individual trekkers can stay for every night of the trek. Groups use it as well: one trek operator reports sending an average of 150 trekkers/a year on a 28 day trek beginning in Hile via Salpa Pass to Everest Base Camp, exiting from Lukla.

The alternative (b) makes a diversion to Mera Peak, a popular Trekking Peak. One operator reports sending 3-4 groups to climb Mera Peak per year using this route. Other companies report sending two groups of 2 and 3 trekkers from Tumlingtar over Salpa Pass to Mera Peak and Lukla (1989).

3.3.4 Milke Danda/Jaljale Himal

- Tumlingtar - Chainpur - Nundhaki - Milke Danda - Goru Jure - Phakhumba - Gupha Pokhari - Basantpur
- Basantpur - Gupha Pokhari - Milke Danda - Jaljale Himal - Mewa Khola - Dobhan - Taplejung or Gupha Pokhari - Chainpur - Tumlingtar

Milke Danda ridge, leading north into the higher Jaljale Himal, is not a popular trekking destination and can only be done by self-sufficient groups accompanied by an experienced guide. The Milke Danda trek (a) takes 12-14 days from Kathmandu, or as little as 10 days with some adjustment. One operator reports sending 4-5 groups each year into this area. A deviation from this route takes off north from Chainpur to Lumling and mounts Milke Danda ridge directly to Goru Jure and continues as above (13 days).

Skipping the Milke Danda portion, trek (a) can be done as a "tea house" trek by individual trekkers: Tumlingtar - Chainpur - Nundhaki - Gupha Pokhari - Basantpur (5-7 days).

The Jaljale Himal extension (b) adds another 10 days: 5 days north along a rugged and high (4-4,500 meters) ridge to Topke Gola, then southeast to meet the Mewa Khola, following it down to Dobhan. From here, groups exit either by plane from Taplejung (direct to Kathmandu, or via Biratnagar); or trek via Dobhan west to Gupha Pokhari - Chainpur - Tumlingtar/Gupha - Basantpur.

One operator uses the Milke Danda route as an alternative approach to Seduwa and Makalu Base Camp: from Milke Danda, continuing north along the Jaljale Himal spine to Panch Pokhari, turning west down the Pawa Khola to the Arun River. This route enters restricted zone on Pawa Khola to Hedangna. Groups manage to avoid the checkpoint at Hedangna, and then mount the Kasuwa Khola to Tashigaon and Makalu Base Camp.

3.3.5 Kanchenjunga Trek

- Basantpur - Gupha Pokhari - Dobhan - Gunsa - Pangpema (optional) - Lapsang La - Yamphudin - Gopetar - Phidim - Ilam (drive) to Biratnagar OR Yamphudin - Lalkharka - Taplejung

The Kanchenjunga area is visited by more trekkers and operated by more trekking agents than the Arun Basin/Milke Danda treks. Despite its recent opening, it has quickly gained a popularity as an unexplored region yet with greater accessibility for rescue and availability of supplies than the Dolpo region. It is a long trek, 25-28 days, depending upon the route: a longer trek reaches the north and south base camps; shorter treks just visit the south Makalu-Barun. Most operators enter/exit via Basantpur and either fly to/from Taplejung or drive via the Phidim road. A seasonal road reaches Taplejung but is not a reliable route.

Only group trekkers organized by a registered trekking agency are issued permits to enter the Kanchenjunga area. Government regulations require the trekking agent to guarantee self-sufficiency in food, fuel and to keep the campsites and trails clean. There has reportedly been much abuse of the

regulations and thus the area is already suffering from trekking spoils. Officially, there are no individual trekkers, however, a small number have reportedly snuck in and found adequate food and lodging up to Gunsar or Yamphudin, but not over Lapsang La.

Two survey respondents report taking an average of 20-30 trekkers per year into Kanchenjunga; another took 18 trekkers in 1989 and 2 in 1990. Although this trek is beyond the Project Area, many groups pass through Basantpur en route.

3.3.6 Other Trek Routes

Bhojpur-Dingla: Only a handful of trekkers visit either Bhojpur or Dingla as neither is on a main destination route. Tourists or foreign residents who have heard of Bhojpur, usually as the home of the *khukuri*, may request a custom trip. An estimated one group per year camps at Dingla en route from Bhojpur (fly in) to Salpa Pass. Tumlingtar to Bhojpur takes 2 days; Bhojpur to Dingla 2 days; Tumlingtar to Dingla 1 day. No surveyed trekking agents reports using this route.

Makalu Base Camp-Chhukung (Khumbu) route via Sherpani Col and Panch Pokhari is occasionally used by experienced and hardy trekkers cum mountaineers as it is strenuous and high. No surveyed trekking agents reports using this route.

Khongma to Khumbu via Mera La and Hongu Valley: like the above route, it is only used by strong and well equipped trekkers.

3.4 TREKKING TRENDS IN THE PROJECT AREA

Respondents to the *Trekking Survey* report little change in the numbers of trekkers over the years; 50% have seen a slight increase with an easing of flight availability to Tumlingtar. Trekkers in this area are often returnee-visitors to Nepal who want to see a less-touristy area or who have done their own research and are interested in the area's unique flora and fauna. Agents report an increase in trekking on the Salpa Pass route as alternative access to Khumbu.

When asked what trekkers like and don't like about the Arun Basin and east Nepal region, *Survey* respondents cited:

3.4.1 Tourist Likes

- * Remoteness: getting away from over-trekking routes
- * Culture: interesting dress, bazaars, but some don't like it as much as Khumbu or Dolpo cultures
- * Vegetation: forests are "intact"
- * Mountains: Milke Danda trek has great mountain scenery
- * Chainpur: the town's charm and attractive architecture

3.4.2 Dislikes

- * Walk from Tumlingtar: hot and monotonous
- * Weather can be a problem
- * Mountains: on the Makalu-Barun trek, up until Tashigaon trekkers aren't as impressed with the mountain scenery as on the Everest and Annapurna treks

3.5 MOUNTAINEERING: NUMBERS IN THE PROJECT AREA

There are three Expedition Peaks in the Project Area: Baruntse (7129 m), Chamlang (7319 m) and Makalu (8463 m). Makalu is the fifth highest peak in the world. There are no Trekking Peaks in the Project area, however Mera Peak is accessible from the Salpa Pass route and Island Peak in Khumbu is accessible via Sherpani col (see Routes, above).

In 1988, there were a total of 14 teams with 112 foreign mountaineers on Makalu, Chamlang and Baruntse (Ministry of Tourism, Mountaineering Section); in 1989, 12 teams with 104 mountaineers, and in 1990, 14 teams with 86 mountaineers. Royalties are NRs 35,000 per team for Baruntse and Chamlang, and NRs 71,000 for Makalu.

Table 9: Mountain Expeditions in the Project Area, 1988-90

	1988			1989			1990		
	Spring	Aut.	Wntr.	Spring	Aut.	Wntr.	Spring	Aut.	Wntr.
Baruntse									
Teams	2	2	0	3	1	0	1	2	0
# Mntneers.	14	12	-	25	9	-	2	11	-
Nep. Staff	8	8	-	18	5	-	3	11	-
Porters	244	63	-	262	42	-	30	68	-
Royalties (in NRs)	58,390/58,572			88,262/32,211			32,211/71,220		
Chamlang									
Teams	1							1	
# Mntneers.	7							6	
Nep. Staff	5							5	
Porters	130							50	
Royalties (in NRs)	26,635						35,040		
Makalu									
Teams	4	5	0	2	6	0	3	61	
# Mntneers.	21	58	-	24	46	-	17	46	4
Nep. Staff	13	26	-	15	26	-	30	40	2
Porters	315	478	-	224	440	-	460	641	25
Royalties (in NRs)	212,972(S)			117,130(S)			193,263(S)		
	414,056(A)			436,840(A)			70,872(W)		
							425,280(A)		

Source: Ministry of Tourism, Mountaineering Section, March 1991

3.6 OTHER TOURIST DESTINATIONS/ACTIVITIES IN THE PROJECT AREA

3.6.1 Mountain Views, Vegetation and Wildlife

Compared to Sagarmatha National Park and the Annapurna region, the Arun Basin is not known for its mountain views until one makes the final approach to Makalu-Barun. There are some good views of Makalu and Chamlang from Chichila and Chainpur, and from Num the rugged range of Jaljale Himal stands to the north and east. On the Makalu Base Camp trek, not until crossing Khongma La and the other high passes are views of the Makalu range spectacular, on par with those in Khumbu or the Annapurnas.

Besides here, the best mountain views in the Project Area are from Milke Danda where the first, third, fourth and fifth highest peaks in the world are all visible at once (Everest, Kanchenjunga, Lhotse and Makalu). One looks east on Kanchenjunga massif, with Kumbhakarna's prominent peak and other lesser peaks extending north into Tibet. To the west, Makalu and Chamlang dominate a wide scope of snowy peaks. In clear weather, Everest's black summit can be seen peaking behind Lhotse. To the knowing eye, other notable Khumbu peaks are identifiable (Ama Dablam, Thamserku, etc). Even from Chainpur, the Makalu-Chamlang range is impressive, and from Gupha Pokhari, both the Kanchenjunga and Makalu massifs paint the skyline.

Besides mountain views, the landscape is varied with natural and cultivated, hilly sometimes steep terrain. The forest is spectacular below Chichila and again near Hurure (Khandbari-Num route), with a variety of ferns, vines, trees and plants and many singing birds. The forests between Num and Hedangna near the dam site are interesting botanically -- lush tropical vegetation with screw pines -- and much bird life.

Along the west side of the Arun River (from Seduwa to Bumlingtar) the jungle is made up of thick tropical vegetation with drooping creepers, heavy underbrush, ferns, waxy leafed trees and moist soil. Pelicans with black bodies and white heads frequent the lower Arun.

Milke Danda ridge is an amazingly rich botanical environment, with rhododendrons of some 10-12 species. It has been studied by Nepalese and foreign botanists for its variety and unique species. There are several ponds along the ridge which attract wildlife. Local people report the presence of goral, tahr, leopard, bear and deer. East of the ridge to the Mewa Khola are some superb forests of oak, fir,

rhododendron. North of Milke Danda lie the rugged Jaljale Himal, with a series of high altitude lakes (reportedly some 15-20).

3.6.2 Rafting, Kayaking, Fishing, Swimming and Hunting

The Arun River is not well used by rafters, largely because of limited access. A few companies run 3 day trips from Tumlingtar to Chatara. Upstream of Tumlingtar the Arun has wilder waters but rafts are heavy to carry, requiring three porters each. The first day out of Tumlingtar, the water is calm but once the Mongmaya Khola joins the Arun, there are good rapids. From Chatara, rafting groups drive two to three hours to Dharan or all the way to Biratnagar and fly to Kathmandu; some drive all the way to Kathmandu. A few kayakers, mostly independent, follow the same itinerary.

Koshi Tappu Wildlife Reserve (175 sq km) is within a short drive of Chatara and could be visited by tourists at the conclusion of a rafting trip. There are simple accommodations and visitors are able to go on walks or elephant rides to see wild buffalo (the only population in Nepal) and much waterfowl. A three part trekking-rafting-wildlife viewing vacation could be developed in this area, as is so popular in the Pokhara area (see below, 8.3).

Fishing is not developed as a tourist sport but has some potential. A few tourists fish on the Arun, Sabha and Hinwan Kholas, assisted by local fisherman guides. Locals fish at Num as well. Fish reportedly in Arun River include: *asala*, *kotle*, *kabre*, *tite*, *torak*. *Asala* is best tasting; *kotle* is largest. Fishing is best in August-October. The locals use bamboo poles with *chipha* (insect) bait.

There are many places to swim along the lower Arun River where the water is slow. At Bumlingtar, a beautiful swimming hole on the Sisuwa Khola is ideal for tourists, with nearby campsites. There is also good swimming on the Chirkhuwa Khola.

In the Upper Arun hills (near upper Ecuwa at 2500 meters), bear, deer, goral, tahr, many leopards, monal, and danphe are reported. Locals admitted hunting pheasant.

3.6.3 Cultural/Sacred Places

3.6.3.1 Village character

The architecture and village character of east Nepal is of particular interest to visitors. Chainpur is one of the most charming hill-towns in Nepal. White-washed buildings with wrought iron or carved wooden railings face wide, neat flagstone walkways, giving a New Orleans or French feel; flowers are profuse and orange trees add color to the scene. The Friday *haat* bazaar is a regional -- and tourist -- attraction. The brass industry is famous and unique in Nepal. Visitors can watch the brass workers making wax molds on a lathe, and see the mud-cased molds drying in the sun; then see the finished products stacked in numerous shops.

Pangma, between Khandbari and Chichila, is a small village with two distinctive styles of house construction: elevated homes of red mud built on bamboo stilts with open decks of bamboo slats where vegetables and clay pots dry in the sun; and traditional two-tone white and ochre mud, thatched roof houses as seen in central Nepal.

Bumlingtar is another pleasant village with attractive bamboo and wooden houses and carved wooden window frames. It is an active farming settlement spread across a large meadow site on the lower Arun. It is a good overnight stop for trekkers with a lovely campsite next to a great swimming hole.

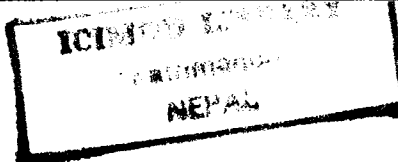
Barabise (northeast of Khandbari, on an alternative route from Khandbari to Num), also has some interesting architecture, cultural features and temples.

3.6.3.2 Haat bazaars

Haat bazaars, or weekly market days, are unique to east Nepal and provide an excellent opportunity for tourists to see different peoples of various dress, facial features and customs. Some treks are planned specifically around the weekly bazaar in villages. Here is the schedule for the largest market days:

- * Fridays: Chainpur, Tumlingtar, Below Tashigaon
- * Saturdays: Khandbari, Dingla

- Mondays: Barabise
- Thursdays: At Palwa Khola, below Nundhaki



In addition, Num has a *haat* Bazaar the 15th of every Nepali month (15 *gate*) and an annual *mela*. Seduwa has *haat* bazaar every 15 days (*gunsi*) and every full moon.

3.6.3.3 Temples, sacred places, caves and lakes

Khembalung is one of Nepal's best known *beyuls*, sacred hidden valleys noted as places of "Shangri-la-like" retreat in ancient Buddhist texts. There are "power places" known to local Sherpas around Khembalung; one is the cave where the results of magical feats performed by Padmasambhava are supposedly visible. Pilgrims come here for meditation, which has heightened effects because of the supreme sacredness of the spot. Also, the water here is said to have purifying powers and the "white" clay at the mouth of the cave is considered potent medicine. The Sherpa name for Makalu is "Surakaya", protector deity of Khembalung (Insight Guide, 1991).

Dingla has temples for Ram Chandra, Kailash and Pashupatinath and a *mela* in October and March-April for "Ram Naomi". In Tumlingtar, there is a Manakamana temple where Ekadasi festival is celebrated.

There are several temples in or nearby Chainpur: Sidal Kali is one hour away off the main trail to Nundhaki. There are also several caves near Chainpur: Waleswor is the largest, located one hour to the south of the main bazaar grounds.

From Chainpur, trails lead to Sabha Pokhari, a sacred lake high (approximately 4,500 m) in the Jaljale Himal. During Janai Purnima festival in August, thousands of pilgrims go to Sabha Pokhari from Chainpur, Khandbari and Gupha Pokhari, reaching there in 3 days on an arduous journey. At the same time, pilgrims visit Panch Pokhari (Five Lakes), and Banduk Pokhari (Gun Lake) where people say that limestone in the middle of the lake gets heated by the sun and explodes like a gun. Although some of the local people and even leaders would like to develop the trail to Sabha and Panch Pokhari for tourists, it appears to be quite rough and thus would not be as popular as pilgrimage lakes such as Gosainkund. In September-October, Chainpur observes a two day Newari *mela* (similar to Gai Jatra) in which people dress in costumes.

Nundhaki lies along the historic trade route connecting Kathmandu with Darjeeling and Sikkim. There are several sacred and historic spots here. Between Pokhari and Nundhaki, a *pipal* tree and stone are worshipped as a *Devi* (goddess). In Nundhaki, there is a water source for seven streams that is reportedly some 100 years old. Many *yogis* and *sadhus* gather here for Balu Chaturdasi festival. A 500-1000 year old vertical stone marks where Tibetans once tied their horses during Tibet-Nepal wars. Above the town along the main trail, there are numerous old stone *chhortens* some with inscriptions, and several cemeteries with upright stone gravestones.

Gupha Pokhari was once a Limbu graveyard and a sacred place associated with the lake and meditation cave on nearby Mencham Danda. People still consider the lake sacred as it has no visible source. During Janai Purnima, when people go on pilgrimage to Sabha Pokhari, they stop in Gupha Pokhari to do rituals and the townspeople organize a *mela*.

3.6.3.4 Festivals

Festivals which are celebrated publicly (rather than privately inside the home) are much enjoyed by tourists and if dates are known in advance can be a center-piece in the itinerary. These festival were noted in the field work:

- Magh Sangranti: celebrated in the Barun Valley (?)
- Baisaki Dande: celebrated at Pangma Danda, with bazaar, games, etc. on the full moon.
- Dasain, Tihar, Chaite Dasain: celebrated throughout the area
- Yawe: celebrated by Sherpas 15 days after Tihar, with dance, dramas, deusi
- Losar: celebrated in Sherpa communities

3.6.4 Shopping for Handicrafts/Souvenirs

Few settlements in the area are set up to sell souvenirs to tourists, but if one looks in the shops or is able to visit a *haat* bazaar some nice handicrafts can be picked up. Chainpur is the best shopping

locality, but purchases are limited to primarily brassware (antique and new) and *khukuris*. The brass pieces are beautiful and very popular with tourists, but are heavy to carry on the trek. Antique items sell the best and for the most money. Authentic *khukuris* can also be purchased in Hile and Bhojpur, the well known home of *khukuri* production, and in smaller supply in Tumlingtar and Khandbari. Khandbari, Dhankuta and other settlements also sell the colorful hats, *topis*, and some handwoven *dhaka* cloth of which the *topi* is sewn. Throughout the area, bright woven bags (*jholas*) are used by local men and women and can be bought in shops, although they are not produced specially for tourists. In Gupha Pokhari, woven aprons worn by Sherpa and Tibetan women called *pangden* can be purchased as well as some yak wool clothe items or blankets.

3.7 TOURISM INFRASTRUCTURE IN THE PROJECT AREA

As the Project Area is not a major trekker destination, local residents derive minimal economic benefits from tourism and thus there is little in the way of tourism infrastructure set up. Furthermore, there is no overall management as there exists in the national parks and conservation areas of Everest, Langtang and Annapurna. Unlike the problems faced in these heavily trekked regions related to overuse of facilities, the situation here is a near-total lack of infrastructure and management even for these small numbers of tourists.

3.7.1 Campsites and Support Facilities

Virtually all trekking staffs stop at the same sites for camping, where there is water and adequate tent space. Generally, school grounds, *haat* bazaar grounds, unplanted agricultural terraces, pastures and open space/community land serve as campgrounds. There are no "officially" designated campsites; campsites have become "established" by use but are sometimes hard to find along less trekked trails. Some sites are unofficially overseen by the land owner or representative -- the schoolmaster or village head. But there is little or no management involved; only a few campsites appear to be periodically cleaned. Some of these de facto overseers had previously collected fees from group trekking *sirdars* to raise money for school construction or to hire campsite cleaners, but have stopped on request of the CDO. Apparently, some of the moneys were being misallocated.

Trekking groups use village water taps or take water from a nearby stream for cooking and cleaning. Where water is in short supply (see below 5.6.a Constraints: Water), trekking staffs must compete with residents for limited supplies. Where there is no tap, the staff sometimes must carry water for 20-30 minutes from the nearest source (as on Milke Danda).

Campsites in the area have no support facilities in terms of latrines, cooking and refuse pits. Where campsites are associated with a lodge or a school that has its own latrine (at Manebhanjyang, Tashigaon only) stationary latrines are available. Most trekking groups bring their own toilet tents. At Num, Tashigaon, Gupha Pokhari and elsewhere, shallow garbage holes overflow and the contents have been blown or dragged out by dogs and children. In Chainpur, local residents throw trash over the hillside.

3.7.2 Lodging and Food/Supplies

Tumlingtar, Khandbari, Manebhanjyang and Num each have two to three lodges of widely varying sizes and standards. There is one lodge each at Seduwa and Tashigaon and one or two homes in Chichila where trekkers might sleep and eat. There are two lodges in Hedangna. Most lodges are simple with primitive and often dirty latrines. Most need considerable upgrading of kitchen sanitary conditions, room and bed cleanliness and menus. One or two better standard hotels (with electricity, toilets, and showers) exist in Tumlingtar and Khandbari.

There are no lodges along the west side of the Arun River between Seduwa and Bumlingtar. There is one one-room lodge in Chirkhuwa (no latrines) and a few teashops in Dingla that could accommodate budget travellers. Along the trail to Khembalung, there are no lodges but a few tea stalls serving noodles and crackers. Chainpur has four small lodges, primarily used by Nepalese travellers, but also trekkers. Nundhaki has one home cum lodge, Gupha Pokhari has two "hotels", and Basantpur and Hile have several travellers' inns each. There are no lodges on Milke Danda. Between Hile and Tumlingtar there are several tea stalls. Over the Salpa Pass route, there are now lodges or homes where trekkers can stay for every night. There are reportedly four lodges in Bung.

Wherever there are lodges, food is available for trekkers, usually *dal bhaat* in the simpler places with a choice of some Western dishes or slightly higher standard fare in Khandbari only. At tea stalls along the way, instant noodles, tea, biscuits and sometimes soft drinks are available.

Food staple supplies (grains, vegetables, cooking oil, etc.) are sold in shops in main villages. The towns with the best choices are Tumlingtar, Khandbari and Chainpur besides those at roadheads at Basantpur and Hile. Medicine supplies are available in these same places only. In the upper Arun Basin and along the western banks, food is in short supply and demands by tourists could result in serious food shortages to feed local populations. In the Chainpur and Nundhaki area, food is abundant, however at Gupha Pokhari trade has supplanted agriculture and most food must be carried in.

3.7.3 Cooking Fuel

There are no requirements for trekking groups to use kerosene in this area and because there are abundant trees in places, many groups use wood. Only those trekking companies who are committed to using kerosene to reduce dependency on firewood bring in kerosene from Kathmandu or Hile. There are no depots, although some shops in Tumlingtar, Khandbari and Chainpur sell it when available.

Groups and their porters bound for Makalu-Barun often carry in enough firewood for several days' to a week's cooking from Tashigaon; and when the porters run out they cut and collect whatever vegetation will burn. For extended stays, mountaineering groups often bring in cooking gas or kerosene, but reportedly also use firewood in large quantities.

Tumlingtar and Khandbari have electricity but not in sufficient levels to allow cooking. Besides, it is expensive for them (NRs 300 + /month) just for lighting purposes. Lodges thus use exclusively firewood to cook for trekkers.

3.7.4 Air/Road Access to the Area

Most group trekkers entering the Arun Basin area fly between Kathmandu and Tumlingtar, either directly or with a touch-down in Biratnagar. Royal Nepal Airlines operates Twin Otter (19 seats) four to five flights a week, depending upon the season, direct from Kathmandu to Tumlingtar, and another four to five via Biratnagar, for a total of 8-10 flights/week. A total of 380 foreigners flew from Kathmandu to Tumlingtar during the year of mid-June 1989 to 1990. Royal Nepal Airlines has authorized Avro (44 seats) landings at Tumlingtar airport, however will not begin scheduling flights until the "demand warrants it," either from trekkers or Arun III project staff (RNAC spokesman).

As an alternative to flying, groups drive from Kathmandu to Hile, or fly to Biratnagar and drive to Hile, and walk from Hile to Tumlingtar (three days). This adds a total of four to five days to the trek. Others walk in or out over Salpa Pass (nine days) via Lukla and fly between Kathmandu and Lukla (Khumbu).

3.7.5 Trail and Bridge Conditions (For route descriptions, see above, 3.3 Routes/Duration of Treks)

Having well maintained, safe, not too steep trails is a big factor in selecting and promoting a trekking area, not only as a safety factor but for client enjoyment. Likewise, bridges must be sturdy to the point of supporting trekkers and porters with loads.

Makalu-Barun trail via Tumlingtar-Num-Tashigaon-Khongma La is heavily used by trekkers and in generally good condition. It is a steep, sometimes slippery descent from Num to the Arun River and again steep up the other side to Seduwa. The only bridge crossing on this route is below Num, and the bridge is fairly good. The trail beyond Khongma is reportedly somewhat dangerous in certain sections, such as along the Barun River between Mubuk and Nahve Kharka, where landslides and frequent rockfalls occur (Banskota and Upadhyay, 1990).

The trail along the west side of the Arun River from Seduwa to Bumlingtar is very up and down with rocky terrain and jungly, muddy and overgrown conditions in places. It is not a well used trail by either trekkers or local traders, thus is confusing to follow in places, and tiring. From Mangtewa to Bumlingtar, the trail negotiates a somewhat dangerous, steep ascent through high rock cliff. There are excellent suspension bridges (built by HMG and CARE) on the lower Issuwa, Apsuwa Sankhuwa/Sisuwa Kholas and a log crossing bridge above and below Mangtewa Phedi. The trail needs some improvement (brush

clearing, drainage) and building of bridges where lacking before trekkers should be encouraged to use this route. The alternative trail which parallels the river at the top of the hills is in even worse condition.

The Bumlingtar to Chirkhuwa Khola trail is very good, gentle and mostly through hillside forest above the river. Near the intersection with the Salpa Pass trail, it crosses the Irkhuwa Khola on a good bridge and again at Chirkhuwa crosses a good bridge.

From Chirkhuwa to Dingla, it is a three to four hour steady climb (800 + meters) on a very good trail with shady rest stops; easy to follow. The trail from Dingla to Bhojpur follows a ridgetop and is reportedly somewhat rugged.

The Chirkhuwa to Khandbari/Manebhanjyang trail follows the Arun for one to two hours, crossing an excellent suspension bridge before climbing steeply three to four hours (1000 + meters) to the Khandbari ridge. One trail goes directly to Khandbari, another to Manebhanjyang; both are well maintained though not commonly used by trekkers except for those heading to Khembalung.

The Tumlingtar-Salpa Pass-Lukla trail conditions for the nine day trek over the pass (3,350 meters) to Lukla are reportedly reasonable, but some bamboo bridges require improvement. Another trail connecting Solukhumbu with the Arun Basin goes from Lukla to Mera Peak via Naulekh Kharaka. A high route, Chhukung-Sherpani Col to Makalu-Barun is icy and rugged. A slightly lower route goes via Bhakkam Kharka through Chheskam and Bala Panchayats (Banskota and Upadhyay, 1990).

The Tumlingtar to Khembalung route crosses a new suspension bridge at Bumlingtar and is in fair condition with some segments in need of improvements: after crossing the Sankhuwa Khola and entering Salleri village, and between Chitre and Deorali (Banskota and Upadhyay, 1990).

Tumlingtar to Chainpur trail is in good condition, a steady climb but not steep. There are no bridges over the Sabha and Hinwan Kholas outside of Tumlingtar, necessitating wading across two rivers. Sometimes a boat is available to carry passengers in high water. Unless the road will provide bridge crossing, two footbridges are much needed here.

Khandbari to Chainpur trail and bridges are good and the scenery interesting; a good trail to develop for tourists.

Continuing from Chainpur to Nundhaki and Milke Danda or Gupha Pokhari the trail is in good condition and easy to follow, with only one bridge crossing on a sturdy bridge at the Piluwa Khola. Access onto Milke Danda is steep by any of several trails; a two day climb from Pokhari to Goru Jure (3,800 meters) is somewhat rough and bushy. Nundhaki to Milke Danda requires seven to eight hours of climbing, though the trail is in good condition. A newly constructed trail connecting Nundhaki to Gupha Pokhari appears to be a preferable, gentler means of attaining the height to Milke Danda (one day).

Along the Milke Danda and Jaljale Himal ridge, the trail gets increasingly rugged, with much up and down over rocky terrain at elevations up to nearly 5,000 meters in Jaljale. It would be difficult to improve the trail however, because of the natural conditions. Trails down the eastern slopes of Milke Danda to Phakhumba are quite steep and overgrown and difficult to follow without a guide. The Jaljale trek exit route via Topke Gola and the Mewa Khola is somewhat better. Another exit occasionally used turns west and follows the Pawa Khola to the Arun and Kasuwa Khola and on to Makalu-Barun. Both pass through restricted zones.

Chainpur to Sabha Pokhari (approximately 4,200 meters) trail goes via Muyam, Jaributi, Jaljale, Salere-Phalere and is reportedly somewhat treacherous in places. Significant trail improvements would be needed before it could be opened to tourists.

The Hile/Basantpur to Gupha Pokhari trail is a main thoroughfare for trade porters and trekkers bound for Kanchenjunga. The trail is wide and easy to follow, although when icy sometimes slippery.

Hile to Tumlingtar through Pakhribas is another main trade and trekker corridor. It descends from 1,960 to 937 meters, and crosses the Leguwa and Piluwa Kholas.

3.8 TREKKER CHECKPOSTS IN THE PROJECT AREA

There are police posts at several locations along the trekking routes, however only at Khandbari and Hedangna to the police check visitors for trekking permits. At Khandbari, even though a sign informs

trekkers to check in, many go by unaccounted for. The Hedangna post stops trekkers from going further up the Arun Basin into the restricted zone.

Upon arrival and departure at the Tumlingtar airport, police ask foreigners to sign their name and passport number, arrival and departure dates, but they do not do a trekking permit check.

3.9 EMERGENCY CARE AND EVACUATIONS

3.9.1 Hospital/Health Posts

There is no good medical care available for trekkers in the Project Area. In Khandbari, the British-Nepal Medical Trust has a tuberculosis and leprosy hospital associated with a general hospital which will treat trekkers but services are basic to poor. Chainpur has a health post but emergency care is not up to standard for trekkers. Seduwa also has a Health Post with a male nurse who reportedly is willing to treat tourists but with very limited facilities and medicines. There is an ayurvedic health care post in Hedangna but it is often without adequate medicine and doctor.

3.9.2 Rescue Evacuations

Trekkers or mountaineers who require emergency evacuation can call to Kathmandu for helicopter rescue by wireless radios located at police and army posts at Khandbari and Dhankuta. Khandbari police have called for rescue three times in the last five months. A German project installed a radio and weather station at Tashigaon, for operation commencing March 1991, in conjunction with the HMG Dept of Hydrology and Mineralogy, Snow and Glacier Hydrology Project. The radio is primarily to give weather information but can be used for rescue calls. Helicopters can land at Tashigaon to pick up sick trekkers or climbers but as the helicopters cannot go higher, patients must be carried four to five days down from Base Camp. The alternative to helicopter rescue is to be carried to Tumlingtar and flown to Kathmandu. At Tumlingtar, there is a good chance of encountering a trekking group's doctor. Reportedly, there is radio contact station at Kimathanka and Hatiya in the upper Arun River basin.

For emergencies that occur high in the Milke Danda-Jaljala Himal, messages must be sent by runner to Basantpur and then by vehicle to Dhankuta where there is an army health post and radio; the alternative is by runner to Tumlingtar and by plane to Kathmandu.

3.10 CONSTRAINTS TO TREKKING/MOUNTAINEERING TOURISM

Trekking agents surveyed identified these constraints to operating treks in the Project Area:

3.10.1 Lack of Publicity/Awareness

Overseas sales agents do not promote the Arun area for lack of understanding of its attractions. They have discounted its interest for tourists because it is not "famous". When it has been offered very few trekkers sign up. For comparison, other "remote" regions, such as Dolpo and Kanchenjunga, have been heavily promoted by both the government and overseas travel agents as new, unexplored and untouched. In addition, popular reading books such as Peter Matthiessen's *The Snow Leopard* and travel accounts such as George Schaller's *Stones of Silence* and David Snellgrove's *Himalayan Pilgrimage* have helped build interest in Dolpo. Trekking guide books give minor mention to the Arun Basin and primarily peg it as a naturalist's destination.

3.10.2 Access, Duration/Difficulty and Seasonality

The unreliability of flights to Tumlingtar is a major constraint in the minds of both trek operators and trekkers. The alternative access available requires either a costly flight to Biratnagar (\$77) or an 18-20 hour drive to Hile, followed by a three day walk to Hile. The latter adds four to five days to the trek, both a time and cost factor. On the other end of Milke Danda/Jaljala Himal treks, flights from Taplejung are notably unreliable, and the roadhead at Phidim is a day's drive from Biratnagar and is in a restricted zone.

The duration of the Makalu Base Camp Trek (22-25+ days) is long and thus costly for many tourists who are on a limited vacation or budget. Other treks in the area are shorter but not as well known.

Season is another limiting factor. The Makalu-Barun trek entails extremes in elevations from a tropical 937 meters at Tumlingtar to a frigid base camp (4,500 m) and crossing several 4,000 meter passes. Thus, the period in which trekking is both safe, dry and comfortable is narrowed to a 6-7 weeks period in spring (mid-March through April) and 7-8 weeks from late September to mid-November in autumn. As there is only one route into and out of Makalu-Barun, it becomes difficult and dangerous to get out when the passes get heavy snow, likely from December through mid-March. The lower Arun Basin gets unbearably hot and/or rainy from May to mid-September.

Treks to mid-elevations such as the Chainpur area and up to Num/Tashigaon can be done in December-February, with some chance of snow at the extreme high points (2,500 meters). Salpa Pass might be crossed during winter, but with likelihood of snow. Milke Danda ridge can be attempted in December, but further into the Jaljale Himal or later into the season, this area is also snowed over and very cold. Kanchenjunga treks run mid-March to mid-May and late September through November.

3.10.3 Cost and Logistics of Transporting Goods

The cost of a Kathmandu-Tumlingtar one way flight is US\$44 for foreigners, NRs 620 for Nepalese. The flight to Biratnagar costs \$77 and NRs 1015. Passengers are allowed only 15 kg baggage. All trekking equipment, food, and staff are sent by road to Hile/Basantpur and carried in by porter rather than pay costly freight charges. Transport and staff wages for extra travel days adds considerably to the operational cost. Even so, some surveyed agents say that the operational cost is not as high as in Dolpo.

Unlike established trekking areas such as Khumbu or Annapurna, there are no supply centers for kerosene, rental equipment (tents, mountaineering equipment), and quality trekkers' food en route. As water is in short supply in many places, vegetables cannot be grown for sale. Thus all members' trekking food must be brought in from Kathmandu and Hile.

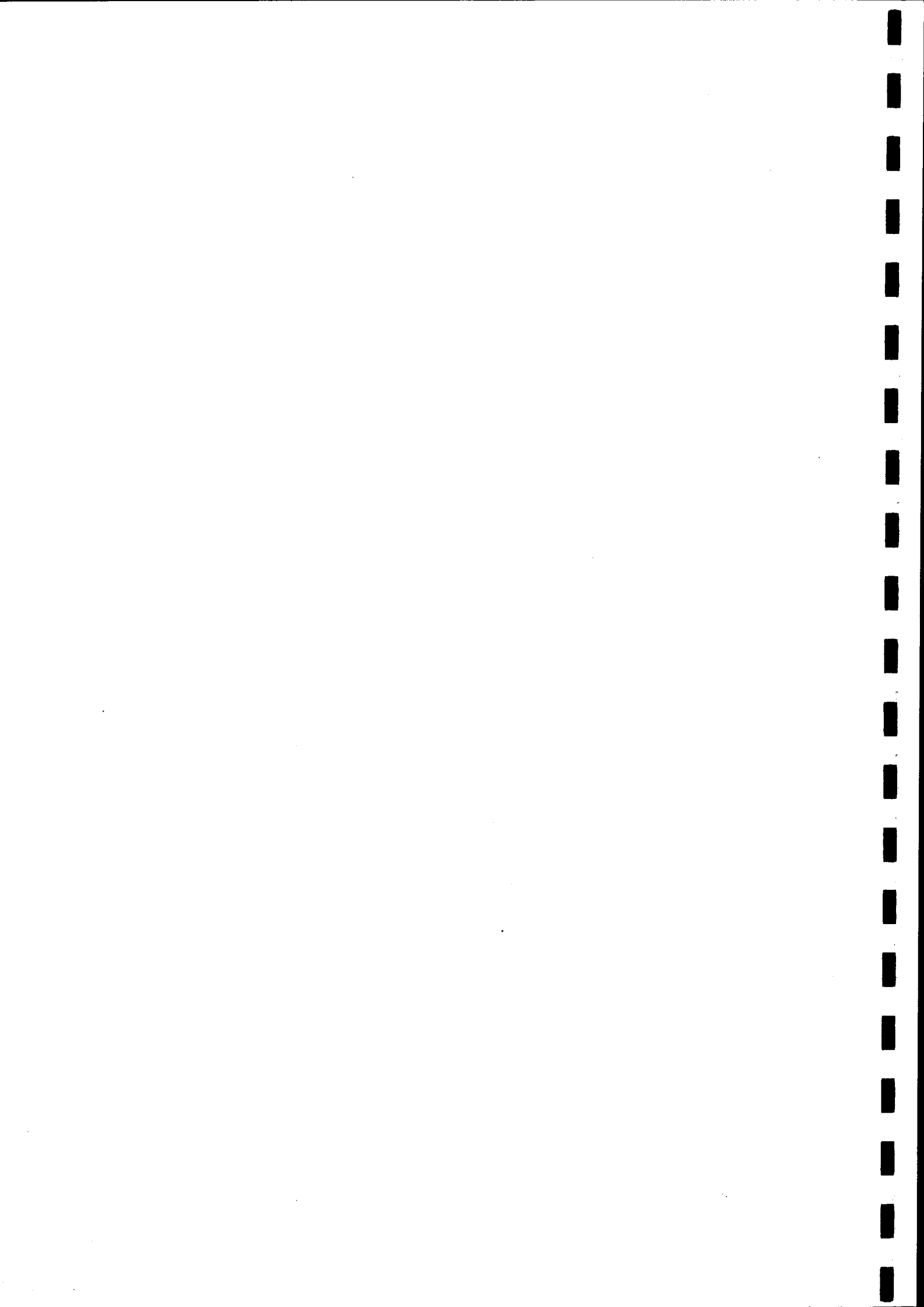
Table 10: Total Operational Cost per Trekker in the Area

Average Cost: US\$20-30/day, with ranges from \$15 to \$38. Operators report that the cost is 10-20% higher than in the Everest and Annapurna regions.

Break-down of costs (as percentage of total operation cost) are:

Food: 20-35% (max. 8-10% spent on local purchases)

Porters: 25-55% Other Staff: 15-25% Fuel: 5-25% Transport cost: 25-35% of operating cost



CHAPTER 4 IMPACTS OF THE ARUN III PROJECT ON TOURISM DEVELOPMENT IN THE PROJECT AREA

4.1 SHORT TERM IMPACTS OF THE ARUN III PROJECT ON TOURISM

Short term impacts are defined herein as those to occur during construction of the project dam, road and associated facilities/activities. Grading of landforms and removal of vegetation are the primary activities that will effect trekkers' enjoyment of areas proximate to construction. Not only will the bared landscape appear unaesthetic but grading and construction activities will produce significant amounts of dust, noise and refuse which is antithetic to the trekker's sought after wilderness experience.

The main tourist route to Makalu BC via Tumlingtar and Num will be most affected. Trekkers will not want to walk so close to construction activities so will seek alternative trails, or else not come at all. In other major trekking areas of Nepal where a new road has come in, trekkers have gradually shifted to new routes (eg, from Birethane to Pokhara, avoiding the Lumle-Naudanda road).

Trekking agents surveyed have stated that they will abandon the present route and use an alternative trail to reach Tashigaon. The most logical alternative would be the trail along the west side of the Arun, although it is a rugged trail and without good campsites or supplementary food supplies. Before it can be used by even the present number of trekkers who visit Base Camp, improvements are needed. Other alternative routes are via Barabise (from Khandbari or Chainpur) to Num, or via Milke Danda-Panch Pokhari and the Pawa Khola, but this enters a restricted zone. Both of these routes need improvements as well (see 6.1.b).

Trekkers hiking from Tumlingtar toward Chainpur will also experience close-range disturbances, as will hikers on the first day of the Basantpur-Gupha Pokhari trail. From atop Milke Danda and Jaljale Himal, the scarring will be visible from a distance. Rafters and kayakers too will be disturbed by the construction activities while boating and camping near Tumlingtar.

Lodge- and shopkeepers along the Tumlingtar-Num trail who presently gain some economic benefit from tourists will find that market dried up as trekkers abandon this trail and turn to others to avoid construction disturbances. Some of this loss will be made up by a temporary market created to supply workers (both foreign and local) of the Arun III project.

When trekkers abandon the Tumlingtar to Num route and begin using new alternative routes to Makalu Base Camp, inhabitants of along these new trails will be exposed, many for the first time, to foreigners' behavior, dress and relative wealth. Tourist impacts such as litter, toilet use, firewood cutting and water pollution will likewise shift to the new trail location. At the same time, as alternative trails open up, short term economic opportunities will arise: vegetable and produce sales, lodge and tea stall operation, opening private homes to tourists, etc. Employment in lodges and as supply porters along these routes will temporarily increase. After the road construction is complete, if trekkers again abandon these alternative routes in favor of driving to Num, locals who had invested in tourism infrastructure will suffer a loss. If tourist infrastructure and cultural attractions have been properly developed, however, those trekkers who prefer to walk vs drive in could continue to use these routes.

There is likely to be a shortage of porters for trekking work during project construction as many will take year round jobs with the road project rather than work seasonally for trekkers.

4.2 ANTICIPATED GROWTH OF TOURISM IN THE PROJECT AREA

4.2.1 Factors Affecting Tourism Growth

A number of conditions are likely to affect rates of tourist visitation in the area. Some factors are directly relevant to this project, primarily the construction of a road which will greatly facilitate access, not only to trekkers and mountaineers but to non-hikers and other types of adventure sports-persons. Other factors (discussed below) are beyond the scope of Arun III, any of which could effect an increase in visitor numbers.

4.2.1.1 Increased road access

Increased access to trekking trailheads (below Num at the dam site and at Pikhuwa) will reduce the trekking time for the Makalu BC trek from 22-25 days to 16-18 days. The shorter duration, cheaper trek will draw more trekkers (see above, 3.10 Constraints).

4.2.1.2 Infrastructure for individual trekkers

Project Area residents expressed a desire for more tourist traffic and realize that neither individuals nor non-trekking tourists will come until there are satisfactory facilities available. Lodgekeepers in Manebhanjyang, Num and Tashigaon are already adding rooms and building new lodges. Others are talking about building new lodges and hotels (Chainpur, Nundhaki, Gupha Pokhari).

4.2.1.3 Increased access for non-trekkers

Roughly 70% of tourists in Nepal are non-trekkers (1988 = 77%; 1990 = 68%, Dept. of Immigration). An increasing number of sightseeing tourists want to experience rural environment without having to trek.

With the construction of the road deep into the Arun Basin, and connections to Chainpur, there is much potential for development of leisure tourism. Although it will take a few years for tourist hotels in the Project Area to become part of established travel itineraries, places such as Chainpur or Num could become small scale tourist centers with strong promotion and maintenance of quality standards.

4.2.1.4 Potential for other adventure sports tourism

Development of adventure sports tourism would also benefit from improved access and an increased awareness of the area. Sports-fishing, white-water rafting and kayaking on the Arun River, with put-ins at Pikhuwa or Tumlingtar (see below 5.3)) have much potential as does nature study in areas such as Makalu-Barun NPCA and Milke Danda ridge. Air-bound sports such as ballooning and para-gliding will take some effort to get off the ground but also hold promise at Num or Tumlingtar. Mountain biking, pony treks, and short family treks are other ideas that have done well elsewhere in Nepal and could be developed here: mountain biking along the new road alignment, up to Num or Chainpur; pony treks and family treks from trailheads at Pikhuwa, Hedangna, Tumlingtar and Chainpur. Cultural tourism presents endless possibilities, from living with families to observing religious festivals and local handicraft production (see 5.3).

4.2.1.5 Airport expansion

Royal Nepal Airlines has shown that the 44-seat Avro airplane can land safely at Tumlingtar airstrip and with scheduled flights could more than double the air transport capability. According to a Royal Nepal representative, the Avro will begin scheduled flights to Tumlingtar when the demand warrants it.

At present, there are no plans to expand Biratnagar airport, which too would increase accessibility to the Project Area. It would be approximately six to eight hours drive from Biratnagar to Chainpur and Num via the new road.

4.2.1.6 Appeal of the Makalu-Barun NPCA

The 1,500 km² Makalu-Barun National Park and Conservation Area contains some of the last remaining pristine forests and alpine meadows of Nepal. With biological zones stretching from below 1,000 meters to above 8,000 -- Makalu, fifth highest mountain in the world stands at its center at 8,463 meters -- the proposed NPCA contains a wide diversity of plant types, from tropical to arctic including some of the only "cloud forests" known to exist. Peoples of the region are similarly varied, some descendants of the original peoples of Nepal (Kirantis), with cultural heritages rich in lore, tradition and lifestyle. Khembalung pilgrimage site is a sacred *beyul*, or "Shangri-la retreat" described in ancient Buddhist texts. Once visitors come to know more about the park's assets, tourism is bound to increase.

4.2.1.7 Trekkers' interest in unspoiled regions

Conversations with trekkers on the trail and their visibility on less known routes support what surveys of trekkers and trekking agents indicate: that a growing number of trekkers are seeking to distance themselves from hordes of other tourists.

The Project Area still falls under the description of remote and untouched in terms of traditional architecture and uncluttered natural environment. While the road and dam are under construction with thousands of workers and heavy machinery spoiling its solitude, and even once the project is completed and trekking trails are within ear-shot of noisy trucks and a scaring road, will visitors find the newly developed area appealing? It will take concerted efforts from the beginning to maintain and restore the indigenous values of the region as a long-term investment in sustaining tourism. Other parts of the region, particularly the Milke Danda-Jaljale Himal ridge, will remain unspoiled by the project construction but their wilderness qualities may be threatened by local and tourist demands on resources.

4.2.1.8 Growth of mountaineering and rock climbing

Rock climbing as a casual sport has reached new heights all over the world. The increased popularity of Trekking Peak climbs supports the trend toward short, inexpensive mountaineering adventures. If new Trekking Peaks are to open up in the Project Area (see above, 2.8.e Other Tourism Management Concepts) mountaineers like trekkers will seek out the less trodden path in search of an unclimbed peak or new route.

4.2.1.9 Potential tourism policy

There have been stirrings of developing tourism policy to deal with some of the identified problems related to unregulated tourism. One suggestion (Harka Gurung, 1990) is to implement a trekking permit quota for popular trekking routes and to encourage dispersal of excess numbers of trekkers to less frequented areas. The approaching-crisis situation along major trekking routes may well usher in such an approach. The Project Area, being a less used trekker destination, could become a receiver zone for increased numbers of trekkers.

4.2.2 Forecasted Number of Tourists in the Makalu-Barun Area

Projecting a continuation of annual growth of tourism in the Arun Basin/Makalu-Barun area, Banskota and Upadhyay (1990) have forecasted numbers of tourists to visit the area annually until 1999.

Table 11-A: Forecasted Tourism Growth in the Makalu-Barun Area

	1990	'91	'92	'93	'94	'95	'96	'97	'98	'99
# Trkrs	372	425	486	556	634	724	828	945	1081	1235
# Mntrs(1)	90	100	110	120	120	130	140	160	170	180
actual	(86)									
Total Tourists	462	525	596	676	754	854	968	1105	1251	1415
	(458)									

Source: Banskota and Upadhyay, 1990

Note: (1) Assumes an average team of 10 members.

Based on an assessment of annual growth in visitor numbers from 1983 to 1989, the study team for the Makalu-Barun NPCA forecasts that the numbers of tourists visiting the Makalu-Barun area will increase by 13.33% annually at least until 1999, and that the number of mountaineering teams will increase by 7.6% per year over the same period (Banskota and Upadhyay, 1990). With an estimated total tourist visitors of 458 in 1990 in the Makalu-Barun area, adjusted from the MBNPCA estimate of 462 to reflect actual number of mountaineers in 1990, the approximate number of tourists in the Makalu-Barun area will still be 1,415 by the year 1999.

Non-trekking/mountaineering tourists, ie., leisure (hotel-staying) tourists, mountain bikers, fisher-persons, gliders, etc. will begin coming to the area, slowly at first, once the road is completed and support facilities are built in Num and/or Hedangna. It is difficult to predict how many non-trekkers will visit. Compared to Chainpur, Num/Hedangna is not as well known and hasn't the artistic reputation, therefore a lesser number of leisure tourists can be expected (see below): approximately 70 per year by

1995 and at a growth rate of 20% annually, 122 by 1999. In addition, other adventure tourists might amount to 40 fisher-persons, 30 mountain bikers, and 10 gliders in 1995, increasing (by 20% annually) to a total of 166 by 1999. Total non-trekking tourists therefore might amount to 150 in 1995 and 288 in 1999.

This forecast only addresses the Makalu-Barun Area, however, not the entire Project Area. Without exact numbers of tourists previously and presently visiting other areas (Chainpur, Milke Danda, etc.) it is difficult to forecast a projected growth in numbers of tourists. As factors influencing potential tourism growth are but speculative (see above, 4.2.a Factors Affecting Tourism Growth) and not quantifiable, one can only state that the forecasted numbers of tourists visiting the Project Area (see Table 11-C), based upon a continuation of past growth trends in the nearby Makalu-Barun Area, are *minimum* and could be much greater.

4.2.3 Potential Tourism Growth in Chainpur and Milke Danda-Jaljala Himal

Chainpur can expect to grow with road access both as a commercial-brass production center and a starting point for treks. Group treks will head east to Milke Danda-Jaljala; individual trekkers will follow the availability of lodges via Nundhaki and Gupha Pokhari, exiting via Basantpur. With development of a hotel near Chainpur (see below, 5.2.b), the town could become a major non-trekker tourist destination offering cultural experience, shopping/handicraft production and mountain views. But in order to support its appeal among tourists and encourage multiple day stays, its charm, hospitality and pleasant setting must be maintained in the face of road access and growth.

Whereas the rate of growth in trekkers may not equal that of the Makalu-Barun area because of the latter's historic levels of use, Chainpur can expect to see a broader range of non-trekking tourists and in increasing numbers due to improved access and facilities. Therefore, it is not unreasonable to apply the same rate (13.33%) as used in forecasting tourism growth in the Makalu-Barun Area. It is difficult to estimate the growth rate and future numbers of non-trekking tourists as there are no comparable data for a like area; however, for the sake of predicting demands and impacts on non-trekking tourists, a moderate figure of 150 per year by 1995, growing at 20% per year to generate 311 non-trekking tourists by the year 1999.

Milke Danda-Jaljala likewise can expect to attract wilderness trekkers at a like growth rate in the forthcoming years as it becomes more accessible and more known. Already, over the past few years, noticeably more trekkers are frequenting this area, partially as a result of lying close to the newly opened Kanchenjunga trekking area. In addition, according to the *Trekking Survey*, this route could become an alternative access to Makalu BC (via Panch Pokhari-Pawa Khola, see above, 3.3 Routes). Therefore, an estimated 13.33% annual growth rate, consistent with the above, would be appropriate.

4.2.4 Potential Tourism Growth in Bhojpur and Salpa Pass Areas

Bhojpur is likely to remain off the main trekking routes unless a spur road reaches there, in which case it could become an alternative take-off point for treks westward over Salpa Pass via Dingla. A trek from Bhojpur to Dingla (2 days), along the Sintang Lekh and Mayam Danda (2,680 meters) promises good mountain views of the Makalu range and authentic village life scenes. Well known as the home of the *khukuri* (Gurkha knife), Bhojpur makes an interesting stop-over for tourists, but so far its inaccessibility hampers tourists' visits. Flights to Bhojpur from Kathmandu and Tumlingtar are twice or thrice a week, but are frequently cancelled due to low demand. Given these constraints to trekking tourism, a slightly lesser growth rate of 10%, based on the national average (see Table 1), is reasonable.

In recent years, an increasing number of trekkers, both group and individual, have been plying the Salpa Pass trail as an alternative route into or out of Solukhumbu. It is likely to continue to grow in use as the Arun area becomes more well known and frequented. Trekkers comment that they have chosen the Salpa area because it is less-touristed. The Salpa route gives access to Mera Peak, one of the most popular Trekking Peaks, and the anticipated rise in climbing interest (see above, 4.2.a Growth in Mountaineering and Rock Climbing) will bring more tourists this way. This route can therefore expect to keep up with the Makalu-Barun and Chainpur-Milke Danda areas with a forecasted growth rate of 13.33%.

Table 11-B: Forecasted Tourism Growth in the Chainpur, Milke Danda-Jaljala Himal, Salpa Pass and Bhojpur Areas

	<u>1990</u>	<u>'91</u>	<u>'92</u>	<u>'93</u>	<u>'94</u>	<u>'95</u>	<u>'96</u>	<u>'97</u>	<u>'98</u>	<u>'99</u>
Est. # Trekkers(1)										
Chainpur(2)	70	79	90	102	116	131	148	168	180	204
Milke Danda-										
Jaljala Himal(3)	25	28	32	36	41	46	52	59	67	76
Salpa Pass(4)	50	57	65	74	84	95	108	122	138	156
Bhojpur(5)	15	17	19	21	23	25	27	30	33	36
Total Tourists	160	181	206	233	264	297	335	372	418	472

(1) See Table 6

(2) Total number is estimated to be 50-70, however because many come through Chainpur, the actual number is reduced to avoid double counting. Estimated annual growth rate: 13.33%

(3) Similarly (see 2) most trekkers using Salpa Pass also visit Makalu Base Camp and cannot be counted twice; trekkers annually visiting Makalu Base Camp are recorded in Table 11-A. Estimated annual growth rate: 13.33%

(4) Estimated annual growth rate: 13.33%

(5) Estimated annual growth rate: 10.00%

Table 11-C: Total Forecasted Tourism Growth in the Project Area

	<u>1990</u>	<u>'91</u>	<u>'92</u>	<u>'93</u>	<u>'94</u>	<u>'95</u>	<u>'96</u>	<u>'97</u>	<u>'98</u>	<u>'99</u>
Forecasted # Trekkers in Makalu- Barun Area (Table 11-A)	458	525	596	676	754	854	968	1105	1251	1415
(1)										
Plus # Trekkers in Other Areas (Table 11-B)	160	181	206	233	264	297	335	372	418	472
Total Trekkers	618	706	802	909	1018	1151	1303	1477	1669	1887

(1) Including mountaineers

4.3 IMPACTS OF ANTICIPATED TOURISM ON THE PROJECT AREA

At present, the number of tourists visiting the Project Area (588-648 in 1990, see 3.1 Trekking: Numbers of Trekkers in the Project Area, Estimate #1) is minimal and the impacts of mountain tourism are likewise negligible. With anticipated growth in numbers (an estimated 1,887 by 1999, see Table 11-C) and the introduction of new types of users -- more individual trekkers, fishermen, rafters, kayakers, balloonists, para-gliders, non-trekking tourists, bicyclists, etc. -- the environmental, economic and socio-cultural effects of tourism seen in other more heavily used areas can be foreseen in the Project Area. To what degree depends less upon the actual numbers of tourists who will visit the area than the effectiveness of impact mitigation measures, particularly education and management.

4.3.1 Impacts on Natural Environment

4.3.1.1 Firewood use

Tourists visiting the Project Area are largely dependent upon firewood for cooking, although some agencies report using kerosene or cooking gas. Government policy does not restrict firewood use, as in the major trekking areas; kerosene is not readily available locally and it is costly to transport from Kathmandu.

At present, the vast majority of visitors to the Project Area are dependent upon kerosene for cooking, whether they are individuals eating in lodges or trekkers or mountaineers with their own mobile kitchen. Tables 12 estimates firewood consumed by tourists visiting the Makalu-Barun at near-present.

Table 12: Estimated Firewood Consumption among Tourists in the Makalu-Barun NPCA , 1987

	<u>Group</u>	<u>Indiv.</u>	<u>Mtneer.</u>	<u>Total</u>
No. Tourists	148.0	99.0	80.0	327.0
Avg. # Days	14.0	14.0	63.0	---
Avg. Use/person/day	18.6kg	5.5kg	18.5kg	(14.2kg)
Total Use (kg)	38,539kg	7,623kg	93,240kg	139,402kg

Note: Number of group vs individual trekkers is based on a 40/60 ratio division of actual trekker count at the Khandbari trekker checkpost; average firewood consumed per day is from ERL, 1989. This does not include staff/porter use, but is based on a per "member" average use.

Source: Banskota and Upadhyay, 1990

Using present day levels of per capita firewood consumption, and estimated total number of trekkers visiting the Project Area in the future, Table 13 forecasts the amount of firewood which will be consumed in each of the main trekking areas in the future, assuming no restriction on firewood use or availability of alternative cooking energy.

Table 13: Estimated Future Consumption of Firewood by Tourists in the in the Project Area

	<u>1990</u>	<u>1995</u>	<u>1999</u>
Firewood used by Individuals (kg)	58,121kg	113,118kg	192,956kg
by Groups (kg)	11,458kg	22,299kg	38,038kg
by Mntnrs.(kg)	104,895kg	151,515kg	209,790kg
TOTAL	174,474kg	286,932kg	440,784kg
Fresh Wood(1)	290,790kg	478,220kg	734,640kg

Note: (1) Assuming that 20% of fresh is wasted during cutting and another 20% of wood weight is lost in drying.

Source: Banskota and Upadhyay, 1990

The above projected future firewood consumption is only for the Makalu-Barun area. Using forecasted tourist numbers for the entire Project Area (Table 11-C), an area by area estimate of future firewood demand can be made, see Tables 14-A to 14-H.

Table 14-A: Total Projected Future Consumption of Firewood by Tourists in the Project Area -- Makalu-Barun (Seduwa-Tashigaon-Khongma-MBC and return)

	<u>1990</u>	<u>1995</u>	<u>1999</u>
<u>Group Trekkers</u>	279(1)	507(1)	741(1)
Average # days	14	14	14
Per cap/day use	18.6kg	18.6kg	18.6kg
SUBTOTAL	72,651kg	132,023kg	192,956kg
<u>Individuals</u>	93	217	494
Average # days	4(2)	4(2)	8(2)
Per cap/day use	5.5kg	5.5kg	5.5kg
SUBTOTAL	2046kg	4774kg	21,736kg
<u>Mountaineers</u>	86(3)	130(3)	180(3)
Average # days	63	63	63
Per cap/day use	18.5kg	18.5kg	18.5kg
SUBTOTAL	100,233kg	151,515kg	209,790kg
TOTAL FOR AREA	174,930kg	288,312kg	424,482kg
Fresh Wood Total	244,902kg	403,637kg	594,277kg

**Table 14-B: Total Projected Future Consumption of Firewood by Tourists in the Project Area --
Approach to MBC Area via Tumlingtar-Khandbari-Num**

	<u>1990</u>	<u>1995</u>	<u>1999</u>
<u>Group Trekkers</u>	223(4)	507	741
Average # days	8(5)	1.5 (5)	1.5(5)
Per cap/day use	18.6kg	18.6kg	18.6kg
SUBTOTAL	33,182kg	14,145kg	20,674kg
<u>Individuals</u>	93	217	494
Average # days	8	1.5	1.5
Per cap/day use	5.5kg	5.5kg	5.5kg
SUBTOTAL	4092kg	1790kg	4076kg
<u>Mountaineers</u>	86	130	180
Average # days	8	1.5	1.5
Per cap/day use	18.5kg	18.5kg	18.5kg
SUBTOTAL	12,728kg	3608kg	4995kg
Non-Trekking Tourists in Num/Hedangna (fisher persons, mountain bikers, gliders, etc.)	-----	150(6)	288(6)
Average # days	-----	5	6
Per cap/day use	-----	11kg	11kg
SUBTOTAL	-----	8250kg	19,008kg
TOTAL FOR AREA	50,002kg	27,793kg	48,753kg
Fresh Wood Total	70,003kg	38,910kg	68,254kg

**Table 14-C: Total Projected Future Consumption of Firewood by Tourists in the Project Area -- Seduwa-
Bumlingtar-Chirkuwa-Tumlingtar**

	<u>1990</u>	<u>1995</u>	<u>1999</u>
<u>Group Trekkers</u>	56(7)	203(7)	296(7)
Average # days	4	4	4
Per cap/day use	18.6kg	18.6kg	18.6kg
SUBTOTAL	4166kg	15,103kg	22,022kg
<u>Individuals</u>	-----	87(7)	198(7)
Average # days	-----	4	4
Per cap/day use	-----	5.5kg	5.5kg
SUBTOTAL	-----	1914kg	4356kg
<u>Mountaineers</u>	-----	26(7)	36(7)
Average # days	-----	4	4
Per cap/day use	-----	18.5kg	18.5kg
SUBTOTAL	-----	1924kg	2664kg
TOTAL FOR AREA	4166kg	18,941kg	29,042kg
Fresh Wood Total	5832kg	26,517kg	40,659kg

**Table 14-D: Total Projected Future Consumption of Firewood by Tourists in the Project Area -- Chainpur
(Chainpur-Pokhari-Nundhaki, also Lingling)**

	<u>1990</u>	<u>1995</u>	<u>1999</u>
<u>Group Trekkers</u>	42(8)	66(8)	83(8)
Average # days	4	4	4
Per cap/day use	18.6kg	18.6kg	18.6kg
SUBTOTAL	3125kg	4910kg	6175kg
<u>Individuals</u>	28(8)	65(8)	121(8)
Average # days	4	5	5
Per cap/day use	5.5kg	5.5kg	5.5kg
SUBTOTAL	616kg	1788kg	3327kg
<u>Non-Trekking Tourists</u>	-----	150(9)	311(9)
Average # days	-----	5	6
Per cap/day use	-----	11kg	11kg
SUBTOTAL	-----	8250kg	20,526kg
TOTAL FOR AREA	3741kg	14,948kg	30,028kg
Fresh Wood Total	5237kg	20,927kg	42,039kg

**Table 14-E: Total Projected Future Consumption of Firewood by Tourists in the Project Area -- Milke
Danda-Jaljala Himal**

	<u>1990</u>	<u>1995</u>	<u>1999</u>
<u>Group Trekkers</u>	(25)	(46)	(76)
	60(10)	99(10)	163(10)
Average # days	6	8	8
Per cap/day use	18.6kg	18.6kg	18.6kg
SUBTOTAL	6696kg	14,731kg	24,254g
<u>Individuals</u>	-----	-----	-----
<u>Mountaineers</u>	-----	13(11)	15(11)
Average # days	-----	8	8
Per cap/day use	-----	18.5kg	18.5kg
SUBTOTAL	-----	1924kg	2220kg
TOTAL FOR AREA	6696kg	16.655kg	26,474kg
Fresh Wood Total	9374kg	23,317kg	37,063kg

Table 14-F: Total Projected Future Consumption of Firewood by Tourists in the Project Area -- Salpa Pass

	<u>1990</u>	<u>1995</u>	<u>1999</u>
<u>Group Trekkers</u>	(30) (12)	-----	-----
	69	128	211
Average # days (13):	3	3	3
Per cap/day use	18.6kg	18.6kg	18.6kg
SUBTOTAL	3850kg	7142kg	11,774kg
<u>Individuals</u>	(20)	-----	-----
	46	86	142
Average # days	3	3	3
Per cap/day use	5.5kg	5.5kg	5.5kg
SUBTOTAL	759kg	1419kg	2543kg
<u>Mountaineers</u>	20	37	61
Average # days	3	3	3
Per cap/day use	18.5kg	18.5kg	18.5kg
SUBTOTAL	1110kg	2054kg	3386kg
TOTAL FOR AREA	5719kg	10,606kg	17,704kg
Fresh Wood Total	8007kg	14,848kg	24,786kg

Table 14-G: Total Projected Future Consumption of Firewood by Tourists in the Project Area -- Bhojpur

	<u>1990</u>	<u>1995</u>	<u>1999</u>
<u>Group Trekkers</u>	10	18	29
Average # days(13)	4	4	4
Per cap/day use	18.6kg	18.6kg	18.6kg
SUBTOTAL	744kg	1339kg	2158kg
<u>Individuals</u>	5	10	16
Average # days	4	4	4
Per cap/day use	5.5kg	5.5kg	5.5kg
SUBTOTAL	110kg	220kg	352kg
TOTAL FOR AREA	854kg	1559kg	2510kg
Fresh Wood Total	1196kg	2183kg	3514kg

Table 14-H: Grand Total Projected Future Consumption of Firewood by Tourists in the Project Area

	<u>1990</u>	<u>1995</u>	<u>1999</u>
GRAND TOTAL DRY WOOD DEMAND FOR PROJECT AREA	246,108kg	373,814kg	578,993kg
GRAND TOTAL FRESH WOOD DEMAND FOR PROJECT AREA	344,551	530,339kg	810,592kg

Explanatory Notes for Tables 14-A to 14-H

- (1) Assuming a 75:25 ratio of group to individual trekkers, based upon an average of figures estimated by the Dept. of Immigration, Kathmandu and local residents.
- (2) Individuals cannot go above Tashigaon. Assumes 1 day at Seduwa in either direction, and 2 at Tashigaon. By 1999, assumes more trails will be open within the MBNP, thus 8 days spent.
- (3) Banskota and Upadhyay, 1990
- (4) Estimating that 80% of 1990 Group Trekkers enter and exit via Num
- (5) In 1990, Group Trekkers spend an average of 8 days going in and out between Tumlingtar and Num; in 1995 and 1999, when the road is complete, they will spend an average of 1.5 days, comprising overnight stops at Tumlingtar and Num.
- (6) See 4.2.b above for discussion of tourist numbers.
- (7) An estimated 20% of Group Trekkers use this as an alternate route in 1990. An estimated 40% of Group and Individual Trekkers and 20% of mountaineers will use this route once the road is completed, as a lower elevation extension.
- (8) Forecasting that as lodges and support facilities improve, the ratio of Group vs Individual Trekkers will gradually decrease: Group Trekkers will constitute 60% of the total in 1990, 50% in 1995 and 40% in 1999
- (9) See 4.2.c above
- (10) Many trekkers who go to Milke Danda go via Chainpur. To avoid double counting in the total number of tourists in the area, the figure given for Milke Danda area has been reduced; however, when considering by area demand for firewood, the actual number of annual trekkers should be accounted for.
- (11) Estimate that 10% of mountaineers bound for Makalu peaks will use the Milke Danda-Jaljala Himal route as an alternative one way access.
- (12) As with Milke Danda, many trekkers who go to Salpa Pass will also go or have gone to Makalu Base Camp or elsewhere in the Project Area.
- (13) Chirkuwa to Salpa Pass, one way only

To put these figures in perspective, in 1987 tourists in Nepal consumed 6.4 million kg of firewood, equivalent to 0.14% of the total highland fuelwood demand (ERL, 1989). The projected total firewood consumption for the Project Area by 1999 is 810,592 kg or approximately 12.7% of the total tourist use (1987), and a small amount of the country's presumed highland use at that time. However, as with all of the major trekking areas of Nepal, the demand for firewood is focussed in a small area, compounding its effect on the forest supply. Seventy-three percent (73%) of firewood demand in 1999 (71% in 1990 and 76% in 1995) will be in the Makalu-Barun area, and the remaining (27%) will be spread about the other trekking areas mentioned. Some of these areas, particularly the high altitude forests above Tashigaon on the way to Makalu Base Camp, and along the Milke Danda-Jaljala Himal ridge, are especially threatened because of the slow replacement growth of trees in cold, high conditions.

4.3.1.2 Litter and pollution

With present low levels of tourists in the Area, litter and pollution are not yet widespread and in dangerous proportions. There is, however, a noticeable difference in litter levels between areas moderately used by tourists and those not used at all. Litter at campsites is a bigger problem than along trails: papers and plastics clutter the campground edges to various degrees at nearly every night's stop on the Makalu BC trail; even if pits are dug, the trash blows out into the surrounding bush.

In the preliminary findings of a survey of tourists in the Makalu-Barun area, an average of 22.5% of those polled responded that litter and pollution are "serious" problems along trails, at campsites, near lodges and tea stalls, and in rivers, streams and drinking water sources; an average of 50% felt that such problems are of "moderate" scale, and average 15.5% saw "no problem" (the remaining percentage did not respond; Banskota and Upadhyay, 1990). From the local villagers' point of view: lodge-keepers in Manebhanjyang, Num and Tashigaon expressed dismay over the trash often left behind at campsites but more often blamed it on the porters than tourists.

Like litter, evidence of human waste in the Area is not yet critical but where toilet tents have not been used it is a health hazard and unpleasant sight. As more and more trekkers and mountaineers flock to Makalu Base Camp over the coming years, disposal of human wastes and trash at high altitudes where low temperatures inhibit decomposition will become a significant problem, as it has at other high

altitude campsites in the Himalaya: Lobuche, Gokyo, Annapurna Sanctuary, Thorang Phedi, Khongma La (Makalu BC), etc.

Water pollution is of particular concern where water sources are a standing body, such as at Gupha Pokhari, where the lake serves as the village's and campers' drinking source. Most other places have running sources, streams or taps, but in several places water is in short supply which can lead to unsanitary conditions when inadequate to wash dishes and hands. Water sources on top of Milke Danda-Jaljale Himal are scarce spring sites and thus easily subject to pollution by multiple users.

As the number of users in the Project Area increases, both litter and pollution will become greater concerns which need education and proper facilities/site management to mitigate health hazards.

4.3.1.3 Wildlife and vegetation

The upper Barun Valley is designated as a Strict Nature Reserve to be preserved in an undisturbed state, off-limits to tourists, according to the Makalu-Barun NPCA Management Plan (November 1990). Besides this remote area, already in a restricted zone, there is no pristine wilderness in the Project Area where the present number of tourists threaten a unique habitat. There are significant forest stands, however, worth protecting: near Chichila, below Num and Hedangna, between Tashigaon and Navagaon, along the Arun River west banks, between Khandbari and Chainpur and particularly along the top and flanks of Milke Danda-Jaljale Himal. These forests support to varying degrees a rich and varied bird population and some wildlife despite moderate levels of human traffic. With anticipated growth in tourism these fragile environments will deteriorate from increased activity and foot trampling but more so by cutting for porters' cooking fuelwood. The high altitude scrub vegetative zones en route to Makalu BC already suffer such abuse.

4.3.1.4 Milke Danda-Jaljale Himal under threat

An area worthy of special protection is the Milke Danda-Jaljale Himal range. Milke Danda-Jaljale Himal faces perhaps the greatest threat not only from increased tourism but from local users. There are no permanent settlements atop the 3-5,000 meter, north-south running ridge. During three to four months every summer, however, hundreds of herders tend thousands of head of cow, goat and yak (as well as crossbreeds), staying in *goths*, burning cut wood, primarily rhododendron branches, to cook their food. The rhododendron forests, with more than a dozen varieties, are thinning and at these elevations take decades to grow back. On the eastern slopes, hillsides once thick with giant fir trees are being cut bare for timber use, except at the upper most reaches. Livestock, like their tenders, are increasing in numbers every season and may eventually threaten the grasses' regeneration powers.

Although few trekkers use this route at present, more are expected. The ridge offers rare wilderness qualities and magnificent mountain views just three to four days' walk from a roadhead. Uninterrupted views take in the entire Makalu-Chamlang massif to the west, and the massive Kanchenjunga range extending north into Tibet on the east. High altitude vegetation combined with spectacular rhododendron blooms in spring make this a prime botanical study area for tourists and scientists, and a peaceful retreat for many others.

With the combined demands of local users and tourists for fuelwood in this high, cold environment, the forests on Milke Danda-Jaljale Himal will decline quickly unless some protection is offered governing wood cutting or alternative fuel use. The problem is much bigger than tourism, and must be addressed as a shared local and visitor land use issue.

4.3.2 Socio-Economic and Cultural Impacts of Tourism

Below describes the economic, social and cultural effects of present and anticipated levels of tourism on the Project Area. The economic effects are quantified by locality in Table 16-A to 16-G.

4.3.2.1 Porter employment

Mountaineering expeditions are the biggest per tourist employer of porters followed by group trekkers and individuals.

Table 15: Estimated Porter Employment in Tourism in the Project Area, 1990

<u># of Tourists</u>	<u>#Porters/Tourist</u>	<u>Total Porters Employed</u>
86 Mountaineers (1)	14.8	1,274 (2)
272-322 Group Trekkers in Makalu-Barun(3)	1.5-3	408-966
50-100 Individual Trekkers in Makalu-Barun(4)	0.5-1.5	25-150
75-110 Group Trekkers in Other Areas(5)	1.5-3	112-330
55-80 Individual Trekkers in Other Areas (6)	0.5-1.5	28-120

Estimated Total Porters Employed in Tourism, 1990: 1,847-2,840

Notes/Sources:

(1) Ministry of Tourism

(2) *ibid*

(3) Recorded 372 total trekkers minus estimated 50-100 individuals

(4) Estimated by lodge-keepers in the area

(5) Based on 50-50 individual/group trekkers in other areas, with 100 group trekkers to Milke Danda-Jaljala (see Table 6)

(6) *ibid*

Lowland porters earn between NRs 60-80/day in this area, food may or may not be provided. Highland porters earn from NRs 80-150/day (with or without food, depending upon the terms) and sometimes are given climbing gear (clothes, boots, sunglasses, blankets) for going very high. Porters in this area are generally employed between 100 and 150 days per year; porters working for mountaineering teams have longer employment period due to a stretched season.

The majority of staff employed by group trekkers and mountaineers however, are not residents of the trekking area. Most of the high altitude porters (above Tashigaon) are local Sherpas, Rais and Limbus, some of whom also take jobs as lowland porters. In addition, there are reportedly 10-15 local residents who work as *sirdars* (head guide), cooks and kitchen boys. Previous studies report that the male:female ratio of porters is 4:1 (Banskota and Upadhyay, 1990). Contrary to the seemingly significant employment benefit of tourism to the Area, however, much of the money earned by porters working for tourists goes outside the area.

4.3.2.2 Firewood and food/drink sales

Firewood provides the greatest source of commodity sale revenue to locals. With an estimated tourist demand of 246,108 kg dry wood for the entire Project Area, 1990, sold at NRs 20-40 a *bhari* (30 kg), firewood sales might have generated approximately NRs 7,383,240 in one year, increasing each year.. Sales are presently limited to along the Makalu BC trail, particularly near Tashigaon whose fuelwood resources supply lengthy stays at base camp.

An average local food supplier in Tumlingtar or Khandbari sells NRs 1,000-1,500 worth of food (mostly bottled or packaged items) to trekking groups a month; higher up, sales are much less. Most group treks spend NRs 800-1500 on chickens during an average two to three week trek. *Suntala* (mandarin oranges) are in abundance and sold regularly to tourists; *saag* (spinach), potatoes, tomatoes, beans and cauliflower are common vegetables but are not grown in adequate supplies to provide a reliable source to trekking groups.

The entire region is food deficient: 70% of households polled in the Makalu-Barun area reported not having sufficient food to feed their families from their production (Banskota and Upadhyay, 1990). In villages along the main Makalu BC trail -- Tumlingtar, from Manebhanjyang to Num -- a shortage of water limits cultivation. Food deficits are mostly met by borrowing from other areas or migrating south during deficit months.

An increase in tourist numbers is likely to push food prices higher, encouraging locals to sell food stocks even if it means depriving their families of nutritional needs. Opportunities for increased food production are limited at the current state of technology used. Provision of water and training in management skills to set up a cooperative vegetable and food sales outlet to supply group trekkers on a pre-order basis is needed (see 5.5.a).

4.3.2.3 Lodge/tea stall revenues

The average individual trekkers spends NRs 150 per day for food and lodging, and usually spends one maximum night in each settlement. Lodge-keepers' gross earnings in one season range from NRs 4,570 (Num) to NRs 20-25,000 (Tashigaon) and NRs 10-20,000 in Gupha Pokhari. A woman in Chainpur put four children through school on money earned from tourists lodgers over 20 years.

Construction of trekker lodges of the most basic design, with dirt floors and wooden cots and straw mats, cost from NRs 90-150,000. Tea stalls require much less investment. Villagers in Manebhanjyang, Num, Tashigaon are constructing new lodges in anticipation of a growth in tourism. Most lodges employ family members (unpaid labor) or a young girl or boy who may not get much more than meals for their work. The cost of operation is basically re-supplying food and cooking fuel as improvements or maintenance appear to be minimal.

Lodges and tea stalls sell snacks and beverages to trekkers and their staffs, as well as to Nepalese travelers. In the lower regions (Tumlingtar and Khandbari, where electricity keeps drinks cold), beer and soft drinks are popular and affordable; at Tashigaon a bottle of beer costs NRs 60-70 compared to NRs 40 at the roadhead. Tourists coming out of Base Camp after a week or longer without beer are willing to pay the extra portage cost.

Portering of food and bottled drinks to sell to tourists in lodges and tea stalls employs local trade porters, another employment spin-off of tourism. A prosperous hotel operator in Khandbari, who has a large local clientele in addition to serving trekkers (primarily drinks) orders 40 porter trips of food and drink (NRs 15,000 worth) per month.

4.3.2.4 Souvenirs and miscellaneous sales/rentals

At present, there is not enough of a tourist market to set up production or import/sales units specifically for tourists. Brass-making shops in Chainpur encourage tourist shopping but are more reliant on export of metalware. A few shops in Tumlingtar and Khandbari sell *khukuris* (knives), *topis* (hats), colorful woven bags and *dhaka* cloth, primarily for local consumption rather than tourists'. With some training in design for tourist taste, and production and sales management, handicraft sales could provide a small but worthwhile source of income and would instill interest in preserving traditional items.

One lodge-keeper at Tashigaon reportedly provides some mountaineering equipment on rent, items he has purchased or been given by mountaineering teams returning home from base camp.

Table 16-A: Estimated Tourist Generated Income in Project Area by Locality -- Makalu-Barun NPCA (Seduwa-Tashigaon-MBC and return)

	<u>1990</u>	<u>1995</u>	<u>1999</u>
A. GROUP TREKKERS			
<u>Daily Expenditure/Person</u>			
Firewood (1)	NRs 20	NRs 61	NRs 147
Porters(2)	160	257	376
Campsites	25	50	100
Daily Expenditure	NRs 205	NRs 368	NRs 623
Average # days	x 14	x 14	x 14
# Group Trekkers	x 279	x 507	x 741
Subtotal	NRs 800,730	NRs 2,612,064	NRs 6,463,002
Drinks/snacks	NRs 45	NRs 113	NRs 235
Supplementary Food(3)	90	224	466
Campsites	25	50	100
Daily Expenditure	160	387	801
# days (below Tashigaon)	x 3	x 3	x 3
# Group Trekkers	x 279	x 507	x 741
Subtotal	NRs 133,920	NRs 588,627	NRs 1,780,623

Table 16-A (cont)

	<u>1990</u>	<u>1995</u>	<u>1999</u>
Handicraft(4)			
\$ per person	NRs 300	NRs 531	NRs 777
# Group Trekkers	x 84	x 304	x 445
Subtotal	NRs 25,200	NRs 161,424	NRs 345,765
Estimated Group Annual Local Expenditure	NRs 959,850	NRs 3,362,115	NRs 8,589,390
B. INDIVIDUALS			
<u>Daily Expenditure/Person</u>			
Firewood (5)	NRs 5.5	NRs 16.8	NRs 41
Porters(6)	35	64	94
Food and Lodging(7)	150	242	354
Daily Expenditure	NRs 190.5	NRs 322.8	NRs 489
Average # days	x 4	x 4	x 8
Individuals	93	217	494
Subtotal	NRs 70,866	NRs 280,190	NRs 1,932,528
Handicraft			
\$ per person	NRs 300	NRs 531	NRs 777
# Individuals(30/60%)	x 28	x 130	x 296
Subtotal	NRs 8400	NRs 69,030	NRs 229,992
Estimated Individual Annual Local Expenditure	NRs 79,266	NRs 349,220	NRs 2,162,520
C. MOUNTAINEERS			
<u>Daily Expenditure/Person</u>			
Firewood (8)	NRs 20	NRs 61	NRs 147
Porters(9)	1700	2738	4008
Campsites	25	50	100
Daily Expenditure	NRs 1745	NRs 2849	NRs 4255
Average # days	x 63	x 63	x 63
# Mountaineers	x 86	x 130	x 180
Subtotal	NRs 9,454,410	NRs 23,333,310	NRs 48,251,700
Drinks/snacks	NRs 45	NRs 113	NRs 235
Supplementary Food(3)	90	224	466
Campsites	25	50	100
Daily Expenditure	NRs 160	NRs 387	NRs 801
# days (below Tashigaon)	x 3	x 3	x 3
# Mountaineers	x 86	x 130	x 180
Subtotal	NRs 41,280	NRs 150,930	NRs 432,540
Handicraft(4)			
\$ per person	NRs 300	NRs 531	NRs 777
# Mountaineers(30/60%)	x 26	x 78	x 108
Subtotal	NRs 7800	NRs 41,418	NRs 83,916
Estimated Mtnrs. Annual Local Expenditure	NRs 9,503,490	NRs 23,525,658	NRs 48,768,156
TOTAL EXPENDITURE	NRs 19,182,566	NRs 27,236,993	NRs 59,520,066

Table 16-B: Estimated Tourist Generated Income in Project Area by Locality -- Approach to MBC Area via Tumlingtar-Khandbari-Num

	<u>1990</u>	<u>1995</u>	<u>1999</u>
A. GROUP TREKKERS			
<u>Daily Expenditure/Person</u>			
Firewood (1)	NRs 20	NRs 61	NRs 147
Porters(2)	160	257	376
Drinks/snacks	45	113	235
Supplementary Food(3)	90	224	466
Campsites	25	50	100
Daily Expenditure	NRs 340	NRs 705	NRs 1344
Average # days	x 8	x 1.5(10)	x 1.5
# Group Trekkers(11)	x 223	x 507	x 741
Subtotal	NRs 606,560	NRs 536,152	NRs 1,493,856
Handicraft(12)			
\$ per person	NRs 500	NRs 1000	NRs 1500
Group Trekkers(60%)	x 134	x 304	x 445
Subtotal	NRs 67,000	NRs 304,000	NRs 667,500
Estimated Group Annual Local Expenditure	NRs 673,560	NRs 840,152	NRs 2,161,356
B. INDIVIDUALS			
<u>Daily Expenditure/Person</u>			
Firewood (5)	NRs 5.5	NRs 16.8	NRs 41
Porters(6)	35	64	94
Food and Lodging(7)	150	242	354
Daily Expenditure	NRs 190.5	NRs 322.8	NRs 489
Average # days	x 8	x 1.5	x 1.5
Individuals	x 93	x 217	x 494
Subtotal	NRs 141,732	NRs 105,071	NRs 362,349
Handicraft(12)			
\$ per person	NRs 500	NRs 1000	NRs 1500
Individuals(60%)	x 56	x 130	x 296
Subtotal	NRs 28,000	NRs 130,000	NRs 444,000
Estimated Individual Annual Local Expenditure	NRs 169,732	NRs 235,071	NRs 806,349
C. MOUNTAINEERS			
<u>Daily Expenditure/Person</u>			
Firewood (8)	NRs 20	NRs 61	NRs 147
Porters(9)	1700	2738	4008
Drinks/snacks	45	113	235
Supplementary Food(3)	90	224	466
Campsites	25	50	100
Daily Expenditure	NRs 1880	NRs 3186	NRs 4956
Average # days	x 8	x 1.5(10)	x 1.5
Mountaineers	x 86	x 130	x 180
Subtotal	NRs 1,293,440	NRs 621,270	NRs 1,311,120
Handicraft(12)			
\$ per person	NRs 500	NRs 1000	NRs 1500
Mountaineers (60%)	x 52	x 78	x 108
Subtotal	NRs 26,000	NRs 78,000	NRs 162,000

Table 16-B (cont)			
	<u>1990</u>	<u>1995</u>	<u>1999</u>
Estimated Mtnrs. Annual Local Expenditure	NRs 1,319,440	NRs 699,270	NRs 1,473,120
D. NON-TREKKING TOURISTS (fisher persons, mountain bikers, gliders, etc.)			
<u>Daily Expenditure/Person</u>			
Firewood (13)	----	NRs 33	NRs 80
Food and Lodging	----	2000	4716
Daily Expenditure	----	NRs 2033	NRs 4796
Average # days	----	x 5	x 6
Non-trekkers	----	x 150	x 282
Subtotal	----	NRs 1,524,750	NRs 8,114,832
Handicraft			
\$ per person	----	NRs 1500	NRs 3000
Non-trekkers(60%)	----	x 90	x 170
Subtotal	----	NRs 135,000	NRs 510,000
Equipment Rentals(14)			
(average daily expense)	----	NRs 400	NRs 800
# days	----	x 3	x 3
# persons (30/50% of visitors)	----	x 45	x 85
Subtotal	----	NRs 54,000	NRs 204,000
Estimated Non-Trekking Annual Local Expenditure	----	NRs 1,713,750	NRs 8,828,832
TOTAL EXPENDITURE	NRs 489,172	NRs 3,488,063	NRs 13,269,657

Table 16-C: Estimated Tourist Generated Income in Project Area by Locality -- Seduwa-Bumlingtar-Chirkuwa-Tumlingtar			
	<u>1990</u>	<u>1995</u>	<u>1999</u>
A. GROUP TREKKERS			
<u>Daily Expenditure/Person</u>			
Firewood (1)	NRs 20	NRs 61	NRs 147
Porters(2)	160	257	376
Drinks/snacks	45	113	235
Supplementary Food(3)	90	224	466
Campsites	25	50	100
Daily Expenditure	NRs 340	NRs 705	NRs 1344
Average # days	x 4	x 4	x 4
Group Trekkers	x 56	x 203	x 296
Subtotal	NRs 76,160	NRs 572,460	NRs 1,591,296
Handicraft(4)			
\$ per person	NRs 300	NRs 531	NRs 777
Group Trekkers(30/60%)	x 17	x 121	x 178
Subtotal	NRs 5100	NRs 64,251	NRs 138,306
Estimated Group Annual Local Expenditure	NRs 81,260	NRs 636,711	NRs 1,729,602

Table 16-C (cont)

	<u>1990</u>	<u>1995</u>	<u>1999</u>
B. INDIVIDUALS			
<u>Daily Expenditure/Person</u>			
Firewood (5)	NRs 5.5	NRs 16.8	NRs 41
Porters(6)	35	64	94
Food and Lodging(7)	150	242	354
Daily Expenditure	NRs 190.5	NRs 322.8	NRs 489
Average # days	x 8	x 1.5	x 1.5
Individuals	x 93	x 217	x 494
Subtotal	NRs 141,732	NRs 105,071	NRs 362,349
Handicraft(12)			
\$ per person	NRs 500	NRs 1000	NRs 1500
Individuals(60%)	x 56	x 130	x 296
Subtotal	NRs 28,000	NRs 130,000	NRs 444,000
Estimated Individual Annual Local Expenditure	NRs 169,732	NRs 235,071	NRs 806,349
C. MOUNTAINEERS			
<u>Daily Expenditure/Person</u>			
Firewood (8)	NRs 20	NRs 61	NRs 147
Porters(9)	1700	2738	4008
Drinks/snacks	45	113	235
Supplementary Food(3)	90	224	466
Campsites	25	50	100
Daily Expenditure	NRs 1880	NRs 3186	NRs 4956
Average # days	x 8	x 1.5(10)	x 1.5
Mountaineers	x 86	x 130	x 180
Subtotal	NRs 1,293,440	NRs 621,270	NRs 1,311,120
Handicraft(12)			
\$ per person	NRs 500	NRs 1000	NRs 1500
Mountaineers (60%)	x 52	x 78	x 108
Subtotal	NRs 26,000	NRs 78,000	NRs 162,000
Estimated Mtnrs. Annual Local Expenditure	NRs 1,319,440	NRs 699,270	NRs 1,473,120
TOTAL EXPENDITURE	NRs 1,570,432	NRs 1,571,052	NRs 4,009,071

Table 16-D: Estimated Tourist Generated Income in Project Area by Locality -- Chainpur ((Chainpur, Pokhari, Nundhaki, also Lingling)

	<u>1990</u>	<u>1995</u>	<u>1999</u>
A. GROUP TREKKERS			
<u>Daily Expenditure/Person</u>			
Firewood (1)	NRs 20	NRs 61	NRs 147
Porters (2)	160	257	376
Drinks/snacks	100	200	300
Supplementary Food(3)	90	224	466
Campsites	25	50	100
Daily Expenditure	NRs 395	NRs 792	NRs 1389
Average # days	x 4	x 4	x 4
Group Trekkers	x 42	x 66	x 83
Subtotal	NRs 66,360	NRs 209,088	NRs 461,148

Table 16-D (cont)

	<u>1990</u>	<u>1995</u>	<u>1999</u>
Handicraft			
\$ per person	NRs 1500	NRs 3000	NRs 6000
Group Trekkers(80%)	x 34	x 53	x 66
Subtotal	NRs 51,000	NRs 159,000	NRs 396,000
Estimated Group Annual Local Expenditure	NRs 117,360	NRs 368,088	NRs 857,148
B. INDIVIDUALS			
<u>Daily Expenditure/Person</u>			
Firewood (5)	NRs 5.5	NRs 16.8	NRs 41
Porters(6)	35	64	94
Food and Lodging(7)	150	373	775
Daily Expenditure	NRs 190.5	NRs 453.8	NRs 910
Average # days	x 4	x 5	x 6
Individuals	x 28	x 65	x 121
Subtotal	NRs 21,336	NRs 147,485	NRs 660,660
Handicraft(12)			
\$ per person	NRs 1500	NRs 3000	NRs 6000
Individuals(60%)	x 17	x 39	x 73
Subtotal	NRs 25,500	NRs 117,000	NRs 438,000
Estimated Individual Annual Local Expenditure	NRs 46,836	NRs 311,321	NRs 1,098,660
C. NON-TREKKING TOURISTS			
<u>Daily Expenditure/Person</u>			
Firewood (13)	----	NRs 33	NRs 80
Food and Lodging	----	3000	6000
Daily Expenditure	----	NRs 3033	NRs 6080
Average # days	----	x 4	x 5
Non-trekkers	----	x 150	x 311
Subtotal	----	NRs 1,819,800	NRs 9,454,400
Handicraft			
\$ per person	----	NRs 3500	NRs 7000
Non-trekkers(80%)	----	x 120	x 170
Subtotal	----	NRs 420,000	NRs 1,190,000
Estimated Non-Trekking Annual Local Expenditure:	----	NRs 2,239,800	NRs 9,644,400
TOTAL EXPENDITURE	NRs 164,196	NRs 2,919,209	NRs 11,600,208

Table 16-E: Estimated Tourist Generated Income in Project Area by Locality -- Milke Danda-Jaljale Himal

	<u>1990</u>	<u>1995</u>	<u>1999</u>
A. GROUP TREKKERS			
<u>Daily Expenditure/Person</u>			
Firewood (1)	NRs 20	NRs 61	NRs 147
Porters(2)	160	257	376
Drinks/snacks	45	113	235
Supplementary Food(3)	90	224	466
Campsites	25	50	100
Local Guide	200	322	471
Daily Expenditure	NRs 540	NRs 1027	NRs 1815
Average # days	x 6	x 8	x 8
Group Trekkers	x 60	x 99	x 163
Subtotal	NRs 194,400	NRs 813,384	NRs 2,366,760
Handicraft(4)			
\$ per person	NRs 300	NRs 531	NRs 777
Group Trekkers(30/60%)	x 18	x 60	x 98
Subtotal	NRs 5400	NRs 31,860	NRs 76,146
Estimated Group Annual Local Expenditure	NRs 199,800	NRs 845,244	NRs 2,442,906
B. INDIVIDUALS			
C. MOUNTAINEERS			
<u>Daily Expenditure/Person</u>			
Firewood (8)	NRs 20	NRs 61	NRs 147
Porters(9)	1700	2738	4008
Drinks/snacks	45	113	235
Supplementary Food(3)	90	224	466
Campsites	25	50	100
Local Guide	200	322	471
Daily Expenditure	NRs 2080	NRs 3508	NRs 5427
Average # days	----	x 8	x 8
Mountaineers	----	x 13	x 15
Subtotal	----	NRs 364,832	NRs 651,240
<u>Table 16-E (cont)</u>			
	<u>1990</u>	<u>1995</u>	<u>1999</u>
Handicraft			
\$ per person	NRs 300	NRs 531	NRs 777
Mountaineers (60%)	----	x 8	x 9
Subtotal	----	NRs 4248	NRs 6993
Estimated Mtnrs. Annual Local Expenditure	----	NRs 369,080	NRs 658,233
Conservation Fee	----	NRs 350	NRs 500
# All Tourists	60	x 102	x 178
Subtotal	----	NRs 53,700	NRs 89,000
TOTAL EXPENDITURE	NRs 199,800	NRs 1,268,024	NRs 3,190,139

Table 16-F: Estimated Tourist Generated Income in Project Area by Locality -- Salpa Pass

	<u>1990</u>	<u>1995</u>	<u>1999</u>
A. GROUP TREKKERS			
<u>Daily Expenditure/Person</u>			
Firewood (1)	NRs 20	NRs 61	NRs 147
Porters(2)	160	257	376
Drinks/snacks	45	113	235
Supplementary Food(3)	90	224	466
Campsites	25	50	100
Daily Expenditure	NRs 340	NRs 705	NRs 1324
Average # days	x 6	x 8	x 8
Group Trekkers	x 69	x 128	x 211
Subtotal	NRs 140,760	NRs 721,920	NRs 1,292,224
Handicraft(4)			
\$ per person	NRs 300	NRs 531	NRs 777
Group Trekkers(30/60%)	x 21	x 77	x 127
Subtotal	NRs 6300	NRs 40,887	NRs 98,679
Estimated Group Annual Local Expenditure	NRs 147,060	NRs 762,807	NRs 1,390,903
B. INDIVIDUALS			
<u>Daily Expenditure/Person</u>			
Firewood (5)	NRs 5.5	NRs 16.8	NRs 41
Porters(6)	35	64	94
Food and Lodging(7)	150	242	354
Daily Expenditure	NRs 190.5	NRs 322.8	NRs 489
Average # days	3	3	3
# individuals	46	86	142
Subtotal	NRs 26,289	NRs 83,282	NRs 208,314
Handicraft(12)			
\$ per person	NRs 300	NRs 531	NRs 777
Individuals(30/60%)	x 14	x 52	x 85
Subtotal	NRs 4200	NRs 27,612	NRs 66,045
Estimated Individual Annual Local Expenditure	NRs 30,489	NRs 110,894	NRs 274,359

Table 16-F (cont)

	<u>1990</u>	<u>1995</u>	<u>1999</u>
C. MOUNTAINEERS			
<u>Daily Expenditure/Person</u>			
Firewood (8)	NRs 20	NRs 61	NRs 147
Porters(9)	1700	2738	4008
Drinks/snacks	45	113	235
Supplementary Food(3)	90	224	466
Campsites	25	50	100
Daily Expenditure	NRs 1880	NRs 3186	NRs 4956
Average # days	x 3	x 3	x 3
Mountaineers	x 20	x 37	x 61
Subtotal	NRs 112,800	NRs 353,646	NRs 906,948
Handicraft			
\$ per person	NRs 300	NRs 531	NRs 777
Mountaineers(30/60%)	x 6	x 22	x 37
Subtotal	NRs 1800	NRs 11,682	NRs 28,749
Estimated Mtnrs. Annual			
Local Expenditure	NRs 114,600	NRs 365,328	NRs 935,697
TOTAL			
EXPENDITURE	NRs 292,149	NRs 1,239,029	NRs 2,600,959

Table 16-G: Estimated Tourist Generated Income in Project Area by Locality -- Bhojpur

	<u>1990</u>	<u>1995</u>	<u>1999</u>
A. GROUP TREKKERS			
<u>Daily Expenditure/Person</u>			
Firewood (1)	NRs 20	NRs 61	NRs 147
Porters(2)	160	257	376
Drinks/snacks	45	113	235
Supplementary Food(3)	90	224	466
Campsites	25	50	100
Daily Expenditure	NRs 340	NRs 705	NRs 1324
Average # days	x 4	x 4	x 4
Group Trekkers	x 10	x 18	x 29
Subtotal	NRs 13,600	NRs 50,760	NRs 153,584
Handicraft(4)			
\$ per person	NRs 300	NRs 531	NRs 777
Group Trekkers(30/60%)	x 3	x 11	x 17
Subtotal	NRs 900	NRs 5841	NRs 13,209
Estimated Group Annual			
Local Expenditure	NRs 14,500	NRs 56,601	NRs 166,793
B. INDIVIDUALS			
<u>Daily Expenditure/Person</u>			
Firewood (5)	NRs 5.5	NRs 16.8	NRs 41
Porters(6)	35	64	94
Food and Lodging(7)	150	242	354
Daily Expenditure	NRs 190.5	NRs 322.8	NRs 489
Average # days	4	4	4
# Individuals	5	10	16
Subtotal	NRs 3810	NRs 12,912	NRs 31,296

Table 16-G (cont)	1990	1995	1999
Handicraft(12)			
\$ per person	NRs 500	NRs 1000	NRs 2000
Individuals(60%)	x 3	x 6	x 10
Subtotal	NRs 1500	NRs 6000	NRs 20,000
Estimated Individual Annual Local Expenditure	NRs 5310	NRs 18,912	NRs 51,296
TOTAL EXPENDITURE	NRs 19,810	NRs 75,513	NRs 218,089

Explanatory Notes for Tables 16-A to 16-G

- (1) Average group trekker uses 18.6 kg firewood/person/day. Average cost of one *bhari* (30 kg) in 1990 is NRs 30; or NRs 1/kg; or NRs 18.6/person/day (NRs 20 for ease). Price will assume an annual price increase of 25% taking into account inflation and the increased demand of employees of Arun III.
- (2) See Table 15: average 2.25 porter/group trekker, average daily payment NRs 70 = NRs 157.5/day rounded to NRs 160. Many porters are not from the area. Annual wage increase: 10%
- (3) See Table 10: of trekking operators' average per person cost, 8-10% is spent on local food purchases: \$2.50/day or approximately NRs 90 in 1990. Annual increase of 10% accounts for inflation, and another annual 10% for additional sales generated by farmer organized food sales centers (see Policies).
- (4) Handicraft/souvenirs are available only in certain areas; purchases are a one time expense, not averaged over the entire number of days. Assumes that 30% of trekkers buy a souvenir in 1990, and 60% later when handicraft centers open up. Annual increase plus greater availability and marketing training: 10%
- (5) Individuals use an average of 5.5kg/day, at NRs 1/kg. Assume annual 25% price increase.
- (6) Individuals hire an average of 0.5porter/day at NRs 70/day. Assume annual 10% wage increase.
- (7) According to lodge-owners in the area, in 1990 individuals spend an average of NRs 150/day on food and lodging. Assume an annual 10% price increase, except in Chainpur where demand may shove prices up at 20% annual.
- (8) Mountaineers an average of use 18.5kg/person/day (Table 12), at NRs 1/kg, round to NRs 20/day.
- (9) According to Table 15, mountaineers employ an average of 14.8 porters per person, at high altitude wages of NRs 80-150, or average daily wage: NRs 115 for NRs 1700/person/day.
- (10) In 1990, trekkers walk both ways to Num; after completion of the road, they will only spend overnights in Tumlingtar and Num.
- (11) Estimates that 80% of trekkers exit via Num-Tumlingtar; others go the through Walung-Bumlingtar.
- (12) There are more handicraft/souvenir shopping opportunities in this area (Tumlingtar, Khandbari, Num) and thus each person is more like to spend more and more people will shop; in the future, opportunities will increase even more.
- (13) Non-trekkers are expected to require more firewood per day, assuming more luxurious meals
- (14) Equipment rentals might include fishing equipment (NRs 200/day), boats (NRs 150/day), glider (NRs 1000/day), etc. at 1990 prices, with inflation and greater availability of goods by 1999.
- (15) Rafterers will camp, using equivalent firewood amounts as group trekkers; fisher-persons will stay in lodges, as non-trekkers.

Table 17-A: Summary of Tourist Generated Income in Project Area by Type of Tourist -- Makalu-Barun

	<u>1990</u>	<u>1995</u>	<u>1999</u>
A. GROUP TREKKERS			
Ave. Daily Expenditure/Person	NRs 182	NRs 377	NRs 712
Estimated Group Annual Local Expenditure	NRs 959,850	NRs 3,362,115	NRs 8,589,390
B. INDIVIDUALS			
Ave. Daily Expenditure/Person	NRs 190.5	NRs 322.8	NRs 489
Estimated Individual Annual Local Expenditure	NRs 79,266	NRs 349,220	NRs 2,162,520
C. MOUNTAINEERS			
Ave. Daily Expenditure/Person at High Altitude	NRs 1745	NRs 2849	NRs 4255
Plus Daily Expenditure Below Tashigaon	NRs 160	NRs 387	NRs 801
Estimated Mtnrs. Annual Local Expenditure:	NRs 9,503,490	NRs 23,525,658	NRs 48,768,156

Table 17-B: Summary of Tourist Generated Income in Project Area by Type of Tourist -- Tumlingtar-Khandbari-Num

	<u>1990</u>	<u>1995</u>	<u>1999</u>
A. GROUP TREKKERS			
Ave. Daily Expenditure/Person	NRs 340	NRs 705	NRs 1344
Estimated Group Annual Local Expenditure	NRs 673,560	NRs 840,152	NRs 2,161,356
B. INDIVIDUALS			
Ave. Daily Expenditure/Person	NRs 190.5	NRs 322.8	NRs 489
Estimated Individual Annual Local Expenditure	NRs 169,732	NRs 235,071	NRs 806,349
C. MOUNTAINEERS			
Ave. Daily Expenditure/Person	NRs 1880	NRs 3186	NRs 4956
Estimated Mtnrs. Annual Local Expenditure	NRs 1,319,440	NRs 699,270	NRs 1,473,120
D. NON-TREKKING TOURISTS			
Ave. Daily Expenditure/Person (not including equipment rental)	-----	NRs 2033	NRs 4796
Estimated Non-Trekking Annual Local Expenditure	-----	NRs 1,713,750	NRs 8,828,832

Table 17-C: Summary of Tourist Generated Income in Project Area by Type of Tourist -- Seduwa-Tumlingtar

	<u>1990</u>	<u>1995</u>	<u>1999</u>
A. GROUP TREKKERS			
Ave. Daily Expenditure/Person	NRs 340	NRs 705	NRs 1344
Estimated Group Annual Local Expenditure	NRs 81,260	NRs 636,711	NRs 1,729,602
B. INDIVIDUALS			
Ave. Daily Expenditure/Person	NRs 190.5	NRs 322.8	NRs 489
Estimated Individual Annual Local Expenditure	NRs 169,732	NRs 235,071	NRs 806,349
C. MOUNTAINEERS			
Ave. Daily Expenditure/Person	NRs 1880	NRs 3186	NRs 4956
Estimated Mtnrs. Annual Local Expenditure	NRs 1,319,440	NRs 699,270	NRs 1,473,120

Table 17-D: Summary of Tourist Generated Income in Project Area by Type of Tourist -- Chainpur Area

	<u>1990</u>	<u>1995</u>	<u>1999</u>
A. GROUP TREKKERS			
Ave. Daily Expenditure/Person	NRs 395	NRs 792	NRs 1389
Estimated Group Annual Local Expenditure	NRs 117,360	NRs 368,088	NRs 857,148
B. INDIVIDUALS			
Ave. Daily Expenditure/Person	NRs 190.5	NRs 453.8	NRs 910
Estimated Individual Annual Local Expenditure	NRs 46,836	NRs 311,321	NRs 1,098,660
C. NON-TREKKING TOURISTS			
Ave. Daily Expenditure/Person	-----	NRs 3033	NRs 6080
Estimated Non-Trekking Annual Local Expenditure	-----	NRs 2,239,800	NRs 9,644,400

Table 17-E: Summary of Tourist Generated Income in Project Area by Type of Tourist -- Milke Danda-Jaljala Himal

	<u>1990</u>	<u>1995</u>	<u>1999</u>
A. GROUP TREKKERS			
Ave. Daily Expenditure/Person	NRS 540	NRs 1027	NRs 1815
Estimated Group Annual Local Expenditure	NRs 199,800	NRs 845,244	NRs 2,442,906
B. INDIVIDUALS	-----	-----	-----
C. MOUNTAINEERS			
Ave. Daily Expenditure/Person	NRs 2080	NRs 3508	NRs 5427
Estimated Mtnrs. Annual Local Expenditure	-----	NRs 369,080	NRs 658,233

Table 17-F: Summary of Tourist Generated Income in Project Area by Type of Tourist -- Salpa Pass

	<u>1990</u>	<u>1995</u>	<u>1999</u>
A. GROUP TREKKERS			
Ave. Daily Expenditure/Person	NRs 340	NRs 705	NRs 1324
Estimated Group Annual Local Expenditure	NRs 147,060	NRs 762,807	NRs 1,390,903
B. INDIVIDUALS			
Ave. Daily Expenditure/Person	NRs 190.5	NRs 453.8	NRs 910
Estimated Individual Annual Local Expenditure	NRs 30,489	NRs 144,692	NRs 453,705
C. MOUNTAINEERS			
Ave. Daily Expenditure/Person	NRs 1880	NRs 3186	NRs 4956
Estimated Mtnrs. Annual Local Expenditure	NRs 114,600	NRs 365,328	NRs 935,697

Table 17-G: Summary of Tourist Generated Income in Project Area by Type of Tourist -- Bhojpur

	<u>1990</u>	<u>1995</u>	<u>1999</u>
A. GROUP TREKKERS			
Ave. Daily Expenditure/Person	NRs 365	NRs 755	NRs 1424
Estimated Group Annual Local Expenditure	NRs 14,500	NRs 56,601	NRs 166,793
B. INDIVIDUALS			
Ave. Daily Expenditure/Person	NRs 190.5	NRs 453.8	NRs 910
Estimated Individual Annual Local Expenditure	NRs 5310	NRs 24,152	NRs 78,240

Table 17-H: Summary of Tourist Generated Income in Project Area by Type of Tourist -- Conclusions

	<u>1990</u>	<u>1995</u>	<u>1999</u>
A. GROUPS			
Average Daily Expenditure			
Group Trekkers in Project Area	NRs 380	NRs 770	NRs 1423
Total Group Income Generated			
in Project Area	NRs 2,193,390	NRs 6,871,718	NRs 17,338,098
B. INDIVIDUALS			
Average Daily Expenditure			
for Individuals in Project Area	NRs 190	NRs 345	NRs 560
Total Individual Income Generated			
in Project Area	NRs 501,365	NRs 1,260,489	NRs 5,199,533
C. MOUNTAINEERS			
Average Daily Expenditure			
for Mountaineers in Project Area	NRs 1893	NRs 3183	NRs 4910
Total Mountaineer Income Generated			
in Project Area	NRs 12,246,970	NRs 25,658,606	NRs 53,308,326
D. NON-TREKKING TOURISTS			
Average Daily Expenditure			
for Non-Trekking Tourists	-----	NRs 2533	NRs 5438
Total Non-Trekking Tourist Income			
Generated in Project Area	-----	NRs 3,953,550	NRs 18,473,232
GRAND TOTAL TOURIST GENERATED INCOME PER YEAR			
	NRs 14,941,725	NRs 37,744,363	NRs 94,319,189

Note: The above average daily expenditure figures do not include expenditures on handicrafts or equipment rentals, however the Total Income Generated per Tourist Type does include all expenditures.

Table 17-H shows that mountaineers generate the greatest income per person per day and contribute most on an annual basis to the local economies. Mountaineers contribute the largest share by the fact that 1) they stay longer in the area than any other type of tourist, albeit usually at base camp, and 2) they hire large numbers of porters, although many are not actually from the local area. Therefore, many of the apparent mountaineers' economic benefits only reach a limited area -- 78% of expenditures are made in or while getting to the Makalu Barun area -- and much of it goes to outside porters. In order to spread the benefits of mountaineering to other parts of the Project Area and to assure that more income stays within the local communities, a number of policies are recommended (see Chapter 5): 1) new mountaineering areas should be opened up which use alternative access routes and base camp sites, 2) a porter registration center should be set up at trekking trailheads to facilitate hiring of local residents, 3) opening of kerosene depots along the trekking routes and mandating alternative energy use at expedition base camps, and 4) food supply centers should be set up to sell fresh and preserved foods to expeditions staying for long periods.

Non-Trekking Tourists spend the second highest amount per day, but again only in limited areas: where there are facilities to support and entertain them. These benefits are contingent upon the construction of well managed tourist standard hotels at Chainpur and Num/Hedangna with shopping, cultural tours, fishing, and other activities as recommended in Chapter 5. Interest in non-trekking tourism will take longer to cultivate because of the distance from Kathmandu and will depend upon strong marketing and publicity.

Group Trekkers generate the third greatest daily and total income, again concentrated along the main Makalu-Barun trekking access corridor, but spread to other areas as well. Group trekkers will continue

to generate significantly more income than individuals into the future by the fact that they will continue to number in the majority because Makalu Base Camp and Milke Danda-Jaljale Himal will attract the greatest numbers of trekkers to places where individuals cannot go. Therefore, economic benefits shown here -- supplemental food purchases, handicraft sales, campsite fees, hiring of local guides, etc. -- can only be anticipated if such programs are facilitated with training, loan assistance, publicity and local supervision, as outlined in the recommended policies of this report (see Chapter 5).

Likewise, the future income figures shown here for individual trekkers are dependent upon the availability of tourist standard lodging and food, opportunities to purchase handicrafts, to hire local guides and porters and to contribute in other ways to local economies (tourism tax to support regional tourism centers, etc) as recommended herein.

4.3.2.5 Impacts on specific socioeconomic classes

Traditionally, service type work such as lodge-keeping, grain, oil, cloth, tool, etc. sales, craftwork, and labor/portering work are divided according to caste and the economic status, factors which are often interrelated. This socio-economic hierarchy is evident among people in the Project Area involved in different aspects of tourism trade.

In most communities, lodges are owned and operated primarily by Newars and Brahmin-Chhetri, secondly by Gurung and lastly by Sherpas, Rais or Limbus. Food sales in shops follows similar caste lines, and everybody is a farmer.

Craftwork such as pottery production and leather work is even more stringently aligned: the Kumhals of Tumlingtar provide pottery for much of the lower Arun and beyond, Sarki make leather sheaths for the *khukuri*, drums (*madals*) or stools (*moorah*). Newari metalworkers of Chainpur follow generations of family tradition among the Tamrakar and other lineages. Kamis hand-forged the famous *khukuri* knives. Gurungs and Tibetans traditionally tend the herds which produce wool for clothing or blankets. And Sherpa, Tibetan, Rai and Newari women weave cloth, bags and *dhaka* cloth.

Among the labor ranks, Sherpas are often chosen for high altitude portering and climbing work, although many of those employed by mountaineering teams in the Makalu area come from the Khumbu region, not here. Lowland porters employed in trekking in this region are primarily Brahmin-Chhetri and others of the eastern Terai, and the sturdy Rai and Limbu.

With new chances for economic gain from the development of tourism, it is likely that benefits will be realized along similar lines. Those with the money and skills to invest in lodge construction or other infrastructure and production components, or if not the money the status to borrow or raise it, will benefit the most, reinforcing age-old priorities among castes and sexes. Women will likely follow tradition and not take on entrepreneurial tasks. Porter/laborers will continue to suffer the whim of market forces except for those with skills such as high altitude tolerance, who also suffer under harsh, life-threatening conditions. Programs and policies for village entrepreneurship and local management should attempt to help those of lower economic status -- those in greatest need -- with training and loan assistance to help equalize development opportunities.

4.3.2.6 Village character/lifestyle

Trekkers who have returned to the Annapurna region after ten years inevitably comment on how every village now looks the same, plastered with glaring signs offering a Nirvana experience to the prospective lodger.

"Ticky-tacky" tea stalls line the trails and signs for Pepsi and Coke mask traditional building lines. Thus far, only a few lodges in the area have resorted to brash signs and most maintain a native look. In order to encourage the villages of the Project Area to protect the character of particularly heritage sites such as Chainpur, a community education forum teaching the value of architectural preservation is needed.

4.3.2.7 Cultural impacts

With increased access afforded by the service roads, tourists will enter areas where local inhabitants have had little or no exposure to foreigners and there are likely to be some cultural conflicts, as seen in other trekking areas of Nepal.

The trail along the west bank of the Arun River is likely to become a main access trail to Makalu BC, the area's primary tourist destination. Some of the peoples living here are surprisingly primitive and poor, employing only native materials in houses and household items. They haven't any experience in dealing with tourists; during our field work, some didn't want to accept money for food. Some people's lifestyle may improve if they partake in tourism and are able to purchase a few modern goods with earned income. But the sudden arrival of tourists, with their material wealth, and seemingly free expression in clothes and sexual behavior, can also be disruptive to cultural values and expectations, undermining age-old customs especially among young people who are drawn to an assumed "better" life.

CHAPTER 5: OPPORTUNITIES AND CONSTRAINTS FOR EXPANSION OF TOURISM AND MITIGATION OF NEGATIVE IMPACTS

The construction of the dam service road will improve tourist access to the area. But the road alone will not bring in the numbers and types of visitors that are necessary to generate significant economic benefits to local residents as outlined above.

Table 18: Comparison of Estimated Future Tourist Generated Income with Major Prescribed Expenses for Tourism Development in the Project Area

	<u>1990</u>	<u>1995</u>	<u>1999</u>
Estimated Total Tourist Generated Income for Project Area (1) NRs 14,941,725		NRs 37,744,363	NRs 94,319,189
Estimated Expenses for Tourism Development in the Project Area, Phase I, II & III (2)	< -----NRs 8,590,000 to NRs 10,000,000----- >		

(1) See Table 17-H

(2) See Chapter 6 recommendations

Along with economic opportunities come demands for food, fuel, shelter and the by-products of tourist inhabitation, from environmental pollution to strains on cultural and socio-economic mores.

Nepal has seen what unmanaged and unmitigated tourism has done elsewhere in the country. It is vital that every attempt be made to avoid the ill-effects of tourism in the Project Area. This will take careful planning, education of both local residents and visitors, and in some cases regulation in order to sustain the long term well being of the people, trees, water and overall environment of the Area.

The following section discusses on an area-wide basis policies, programs and infrastructure improvements to minimize tourism's negative impacts on the Project Area and to facilitate the economic benefits necessary to reduce harmful demands on natural resources, to improve the local standards of living, and to sustain farming and tourism economies. Constraints to development area also identified. In Chapter 6, recommendation will be made in a site-specific Plan of Action including suggested management and implementation techniques and estimates of funding costs.

5.1 TREKKING AND MOUNTAINEERING OPPORTUNITIES

5.1.1 Campsites

Proper development and management of campsites will largely preclude problems of litter, human waste disposal, marring and burning of landscape, etc. as identified above. And secondly, it will provide a means of local income generation without significant investment requirements.

The designation of fixed campsites at every established night stop along trekking routes will concentrate traces of camper use and will facilitate proper management by local residents, providing a means of income generation through private entrepreneurship. A clean camping environment will not only draw more tourists to the area and help sustain the cost of campsite maintenance, but will serve as an demonstration site for local villages on how to manage their own environments.

Not every campsite can provide a water tap for trekker use. Where streams are used, tourists should be advised through information hand-outs against polluting the water with bacteria and toxic substances.

Campsites are most critically needed along the route to Makalu Base Camp and at trailheads where trekkers accumulate spend more than one night -- at Tumlingtar, Pikhwa, Num, Tashigaon, Chainpur, Gupha Pokhari and Basantpur. (See Makalu- Barun NPCA Tourism Development Plan, Banskota and Upadhyay, July 1990 for discussion of campsites above Tashigaon).

Designated and improved campsites area also needed along lesser used trekking trails: alternate routes to Makalu BC, ie. on the west side of the Arun River and via Barabise from Khandbari; over Salpa Pass;

at Nundhaki; along Milke Danda-Jaljala Himal; and on high trails connecting Khumbu to the Arun-Makalu area (see Tourism Development Plan, *ibid*). Where the service road impinges upon camping solitude (the west side of the Arun, Kharang-Chainpur, Basantpur, Tumlingtar), new campsites will be needed.

Besides trekker users, fishermen and rafters staying at Hedangna, Pikhuwa, Bumlingtar and along the lower Arun between Tumlingtar and Mongmaya Khola would also benefit from developed campsites.

POLICIES

1. Campsites should be designated for each overnight stop along Main Trekking Routes (see 6.1.1.1), using presently used sites where appropriate. Camping in other areas should be discouraged. As Alternate Routes become more well used, campsites should be designated and improved.
2. Each designated campsite should be signed and outfitted with a latrine, refuse disposal pit, a marked (and covered if possible) cooking site, and where appropriate landscaping separating different user groups and trekkers from villagers.
3. The campsite owners or local residents should be encouraged to manage and maintain the sites and facilities, and authority to collect a reasonable camping fee.
4. Training in sanitation, design and construction of inexpensive and simple methods of litter and waste disposal are needed; loan assistance for facility construction may be necessary.

5.1.2 Trails and Bridges: Designated Trekking Routes

Properly maintained trails and bridges not only increase visitors' enjoyment and safety, in the long run bringing more trekkers to the area, but are appreciated by local residents as well, reducing injury, easing emergency evacuation and reducing loss of goods carried in.

Below are listed trails to be designated as trekking routes in the Project Area. Trail descriptions presume completion of the road to trailheads at Num, Hedangna, Pikhuwa, and Chainpur. For trails which fall within the Makalu-Barun NPCA, activities will be coordinated with policies and programs of the Makalu-Barun Conservation Project.

5.1.2.1 Makalu Base Camp

Main Trekking Routes

Num (by vehicle) - Seduwa - Tashigaon - Khongma - Mubuk - Nahve Kharka - Ramara - Makalu Base Camp (alternative from Hedangna to Seduwa/Tashigaon to MBC) - return same way

Tumlingtar - Chirkhuwa - Bumlingtar - Mangtewa Phedi - Walung Phedi - Seduwa - Tashigaon - MBC - and return same way or via Num-Tumlingtar by vehicle

Pikhuwa (by vehicle) - Ala Uling - Garhi - Navagaon - Utise - Khongma - Makalu BC - return same way or via Num-Tumlingtar

Alternate Routes

Tumlingtar or Khandbari - Barabise - Devitar - Matsya Pokhari - Num - Makalu BC - return same way or by one of above

Milke Danda-Jaljala Himal - Panch Pokhari - Pawa Khola (restricted) - Arun River - Tashigaon - Makalu BC - return by one of above

5.1.2.2 Khembalung

Tumlingtar - Chirkhuwa - Bumlingtar - Tamku - Nagitar - Chitre - Deorali - Gontala - Khembalung - Arun River - Seduwa - Tashigaon - Makalu BC; or Arun River - Num - Tumlingtar

5.1.2.3 Bhojpur-Dingla/Salpa Pass area

Main Trekking Routes

Tumlingtar OR Bumlingtar on return from Makalu BC - Chirkhuwa - Salpa Pass - Chheskam - Bung - Lukla

Tumlingtar - Chirkhuwa - Salpa Pass - Panch Pokhari - Naulek Kharkha - Dig Kharkha - Mera Peak - Lukla

Alternate Routes

Tumlingtar - Bhojpur - Dingla - Khandbari; OR Dingla - Chirkhuwa - Salpa Pass - Lukla

5.1.2.4 Upper Khumbu-Makalu trail

Lukla - Namache Bazaar - Chhukung - Sherpani Col - Makalu BC - return by one of above

Chhukung - Hongu Panch Pokhari - Hongu Khola - Bakam Kharka - Bala Panchayat (?) - Bumlingtar - Tumlingtar

5.1.2.5 Chainpur-Gupha Pokhari

Main Trekking Routes

(Tumlingtar) - Chainpur - Nundhaki - Gupha Pokhari - Chauki - Basantpur

5.1.2.6 Milke Danda-Jaljale Himal

Main Trekking Routes

(Tumlingtar) - Chainpur - Pokhari or Nundhaki - Milke Danda - Goru Jure - Milke Danda - Gupha Pokhari - Chauki - Basantpur

(Tumlingtar) - Chainpur/Gupha Pokhari - Milke Danda - Goru Jure - Jaljale Himal - Topke Gola - Mewa Khola - Dobhan - Taplejung

Alternate Routes

Chainpur - Lumling - Goru Jure - Phakumba - Gupha Pokhari - Chauki - Basantpur

5.1.2.7 Trail conditions

Most of the middle elevation main trekking trails are in good condition and do not presently need upgrading. However, trail conditions at higher elevations and along less used routes require improvement in places: clearing vegetation, fixing fallen sections, repairing dangerous stretches, etc. Trails along the road and construction sites will be graded over or rendered unusable because of noise, dust and construction activities.

5.1.2.8 Improvements

Trail sections identified in the Makalu-Barun NPCA Tourism Development Plan for improvement are:

- Mubuk to Ramara section above Khongma en route to Makalu Base Camp
- Khembalung to Khongma (most parts) and between Chitre and Deorali on the Bumlingtar-Tamku-Khembalung trail

Outside of the MBNPACA, trails in need of improvement are:

- Along the Arun River west side between Issuwa Khola and Yaphu Phedi
- Along the top of Milke Danda-Jaljale Himal
- Milke Danda-Jaljale Himal-Panch Pokhari-Pawa Khola to Makalu BC (if Panch Pokhari becomes de-restricted to tourists)

- Upgrading of Khandbari-Barabise-Matsya Pokhari-Num trail as needed after reconnaissance
- **Bridges:** The existing bridges along main trekking routes are mostly adequate, with some upkeep of old and weak ones. On the high trail along the west side of the Arun River, the Makalu-Barun NPCA Tourism Development Plan identifies the need for bridge construction on the Barun, Apsuwa and Issuwa Kholas (see Chapter 6). In addition, two or three permanent bridges are needed to replace seasonal log crossings near Mangtewa Phedi, along the lower west side of Arun. On the Khandbari to Chainpur trail, bridge crossings on the Sabha and Hinwan Kholas need some improvement (replacement of wooden slats on walkway).

A new bridge is needed outside of Tumlingtar en route to Chainpur where there is no bridge across the Hinwan and Sabha Kholas. This may be remedied with the construction of bridges to serve the road: pedestrian access also should be provided.

Other bridges are satisfactory. Bridges en route to Bhojpur were not surveyed but are reportedly in satisfactory condition.

5.1.2.9 Maintenance

An on-going maintenance program is needed to assure that trails and bridges do not deteriorate to unsafe conditions. At present, communities throughout Nepal take responsibility for maintaining trails, however the standard acceptable to local travelers is not always the same as for tourists, especially for bridges. Unlike collecting fees from tourists for campsite upkeep, it would be difficult to collect fees from trekker trail users. A Tourism Committee can be set up to address such needs on a regional basis.

Trail maintenance should also address clean-up of litter, as proper refuse clean-up will not only teach good practices among locals but encourage more tourism with a clean environment. The Tourism Committee's responsibilities should stretch to overseeing trail clean-up with placement of litter containers and periodical disposal (see below, 5.4.a. Refuse Disposal).

POLICIES

1. The above listed Main Trekking Routes and Alternate Routes should be designated on Tourist Information maps and literature for posting in the area. Main trails should be signed, especially at trail junctions (see below, 5.1.c Signs)

2. Hazardous trails should be improved as identified in 6.1.2.1.

3. Trails which are displaced or rendered unusable to trekkers because of road construction should be replaced with alternative trails.

4. Bridges identified in 6.1.2.1 should be improved to safe standards, and new bridges constructed where identified.

5. A monitoring and maintenance program for trails and bridges should be set up through local communities and the Tourism Committee.

5.1.3 Signs, Tourist Information Centers and Safety

Many of the identified adverse impacts of tourism, such as littering, pollution, insensitivity to cultural mores, and safety concerns can be alleviated through education of tourists. Group trekkers are briefed by their guides, but individuals often go uninformed and sometimes get lost for lack of directions. Posted information at trail junctions and information handouts and educational displays at a few tourist centers will be useful for visitors.

An interpretive natural and cultural history museum is planned by the Makalu-Barun NPCA, possible site: Khandbari. Rather than Khandbari, where visitors may not stop, an alternate site might be Num, Pikhwa, or Tashigaon, within the protected area where trekkers spend some time getting ready or spend a night.

In the other locales, Tumlingtar, Num or Pikhwa, Bumlingtar, Chainpur and Basantpur (trailheads).

Tourist Information Centers could be set up. If a public (government) or community site is not available, a private lodge could be designated. The centers should contain information on trails, availability of facilities, cultural tips, hazards, emergency contacts, etc. Handout maps with such information printed on the back (such as the ACAP map) would be most useful as visitors could take it along for reference.

A Transport Service Information Center would facilitate travel for individual trekkers arriving in Basantpur and Num in need of transport to Biratnagar or Kathmandu. Bus schedules could be posted and a car hire sign-up office could match returnee trekkers with cars that have dropped off others and are returning empty.

Safety in trekking and mountaineering is an issue of paramount concern but is often overlooked, particularly when it comes to Nepalese staffs' well being. There is little hope of trekkers or staff receiving high standard health care while in remote trekking areas (outside of Solukhumbu), so that smoothing emergency rescue operations and precluding accidents with safety information are the answers.

At present, radio contact with Kathmandu is available at the Tumlingtar airport and at Khandbari Police post, with anticipated contact at Tashigaon as part of the German-HMG weather project. A reliable radio contact is much needed at Tashigaon being the gateway to most hazardous and well used tourist destination in the Project Area. Eventually, if the number of trekkers and mountaineers warrants it, an HRA (Himalayan Rescue Association) post could be established in or above Tashigaon to treat high altitude or other illness among tourists, and sick locals. Other existing health posts could be brought to higher standards for treatment of visitors: at Khandbari (British-Nepal Medical Trust Hospital), and the basic units at Seduwa and Chainpur.

Another aspect of health and safety is activating preventative measures: maintaining trails and bridges with safety in mind, preventing pollution of drinking water sources, training lodge-owners in sanitation, reminding visitors of the hazards in the Makalu BC area when weather turns bad, and educating trekkers and mountaineers of their responsibilities for properly outfitting high altitude porters and climbers with clothes, sun glasses, shoes, sleeping cover and providing medical treatment/accident insurance when needed.

POLICIES

1. Signs should be posted at major trail intersections on all designated trekking routes, indicating destinations and walking times, locations and approximate walking times to campsites, food and lodging, points of tourist interest, and detours or dangerous trail sections. Trailside signs should also announce campsites, latrines and disposal sites.

2. Signs should be of a low-maintenance, aesthetic design and should be the responsibility of a regional Tourism Committee.

3. Tourist Information Centers should be set up at a few key places giving educational and safety information to visitors.

4. The Center should include posted maps showing trekking routes in the area, walking times, update on trail conditions, availability of campsites/lodges on routes, location of hospital and emergency radio contact, warnings about high altitude sickness, tips on conservation and cultural sensitivity, information about the natural environment, opportunities for tourists such as swimming, fishing, cultural tours, points of interest (weekly *haat* bazaars, etc) and opportunities to purchase locally produced food or handicraft items.

5. At Basantpur, a Transport Service Information office could post bus schedules for tourists and serve as a registration center for tourists seeking to hire a car to return to Kathmandu or Biratnagar.

6. Through community development work, basic emergency treatment facilities should be established at existing health posts in the Area. Trekkers and mountaineers should expect to pay higher fees for treatment than locals.

7. Tourist Information handouts and postings should inform all visitors of existing radio contacts posts and the procedure for calling for rescue. All radios, whether police or park service, should be made available for emergency use by tourists.

8. Through a trekking staff employment center (see below, 5.1.d), trekking and mountaineering outfitters should be required to provide high altitude staff with adequate warm clothing and safety equipment. The employment center should encourage revision of regulations on insurance coverage to bring accidental or death coverage up to current economic standards.

5.1.4 Trekking Staff Employment Generation

A minimal number of locals are employed as trekking staffs, even porters. With an increase in individual trekkers, more locals have opportunities to be employed as guides, but they lack proper training. A trekking employment center would enable trekking groups to hire local registered porters and individuals to employ guides. Other benefits such as overnight food and shelter between jobs, medical care, pensions, etc. could be set up with membership and dues.

The Milke Danda-Jaljala Himal range is difficult to follow without prior knowledge of the route and availability of water. Herders from the area can be employed as local guides, with references kept at an office in Gupha Pokhari. Schoolmasters, elders or students can also lead cultural or historical tours. Both would benefit locals with job opportunities, and require training in dealing with tourists and managing their responsibilities.

POLICIES

1. At trekking staff hiring locales -- Tumlingtar, Basantpur, Chainpur, Num or Pikhawa -- a porter and staff registration center should be established to facilitate hiring of registered local residents and offering group benefits (health care, pensions, etc.) to long-term participants.

2. Certified trekking guide and cook training (through KMTNC) should be offered at a central location and a register created of qualified *sirdars*, kitchen staff and guides.

5.1.5 New Areas to Open

Some restricted zones are impediments to encouraging more tourism. If Hedangna is to develop as a fishing and water-related recreational center, it must be de-restricted and access provided to the lake. The old access trail from Hedangna to Makalu BC may be restorable and would provide an alternative route for safety and to reduce congestion and overuse along the primary corridor. The Makalu-Barun NPCA Management Plan recommends opening a ridge trail above the Barun Valley through Pathibhara Panchayat.

The Milke Danda-Jaljala Himal-Panch Pokhari trail is also restricted; its opening would allow trekkers to approach the popular Makalu BC upper trail without facing the disturbance of road construction or operation. Likewise, the Jaljala Himal exit route via Topke Gola and east passes through restricted zone, although trekkers presently find no checkpoint there. Opening this route would encourage more trekkers on Milke Danda-Jaljala by opening a loop trail rather than one way in and out.

The opening of new Trekking Peaks to climbing would attract more mountaineering tourism in the area, relieving overuse of some of the easily accessible and well known peaks in Khumbu and Annapurna areas. Mountaineers also benefit local economies with purchases of food, souvenirs and hiring of high altitude staff.

POLICIES

1. Hedangna area should be de-restricted, opened to tourists in order to encourage fishing and water related recreation on the impoundment lake.

2. The old trail from Hedangna to Makalu BC should be looked at from a safety standpoint as an alternative access.

3. The upper Jaljala Himal route through Panch Pokhari and Topke Gola should be opened to tourists.

4. As a facilitator to attract more mountaineering interests to the Project Area, the government and NMA should look into opening up new Trekking Peaks in the area.

5.2 LODGE AND HOTEL DEVELOPMENT

5.2.1 Lodges and Tea Stalls

At present, most of the money spent by trekkers and their support staffs is concentrated along one trekking corridor: the Makalu Base Camp trail. One way to attract trekkers to other trails is to provide decent lodging and food at nightly stops. As seen in the Everest and Annapurna regions, individual trekkers are attracted to places where there is a homey environment and good food. Local ownership and management of trekker lodges or opening up rooms in homes for tourists will provide much needed income and jobs in undeveloped communities.

Unregulated lodge and tea stall construction leads to over competition, minimal charges and minimal profits which brings on a deterioration of standards, as can be seen along heavily trekked routes in the Annapurnas. Rather than face government regulation imposed from the outside, self-regulation of lodge construction and management from within has been shown to be more effective. ACAP has been successful in stemming the decline in lodge standards by introducing local committees to oversee lodge and tea stall development and operational standards. Lodge-owner committees would likewise be useful in the Project Area to guide lodge development and set minimum prices to protect investor interests.

Existing lodges will benefit from improvements. The lodge at Tashigaon can cater to mountaineers and trekkers returning from base camp with a warm, congenial atmosphere and good food. Lodges in Chainpur, Nundhaki or Gupha Pokhari might appeal to longer stays with attractive features and development of cultural interests (see below, 5.5.c Cultural Tours). At Basantpur and Tumlingtar, exiting trekkers would appreciate shower facilities.

Trekker lodges may not be appropriate everywhere. In some areas, food, water and fuel supplies are inadequate, vegetation is especially fragile such as at high elevations, and trails are not safe for unaccompanied trekkers. Such sensitive or wilderness areas should remain as camping only areas. Milke Danda-Jaljala Himal presently has no settlements, is short on water, and supports a fragile high altitude ecosystem; camping-only trekking should be regulated in order to preserve its resources and wilderness qualities. Another area which is ill-prepared for lodge operation because of inadequate food and a lack of tourism experience is the lower trail along the west side of the Arun River. Lodge construction here should be phased and controlled by lodge committee guidelines, with emphasis on hosting self-sufficient camping trekkers until the food supply can be enhanced and lodge-owner training can be provided.

Where lodge development is appropriate, loan assistance to lower income, lower caste people and women should be made available to help equalize the opportunities for lodge development.

Rental of private rooms in homes for tourists provides a more affordable means of income generation for villagers and gives the tourist an opportunity to experience Nepalese home life. It reduces the investment costs of providing tourist accommodations. Interested house-owners could be taught to provide amenities such as bed, small table, clean bed sheets, towel, curtains, lighting and privacy. Hygienic, tasty cooking and a clean toilet are other requirements.

Follow-up training in lodge management, sanitation in cooking, hygienic waste disposal, menu planning to avoid waste and lessen fuel use, simple design improvements, true cost accounting, and standardized pricing to avoid over-competition with other lodges should also be carried out. Some innovative income generating projects such as hot showers which require no extra fuel burning (water heated in the back-boiler stoves) should also be encouraged. Lodge operators could be encouraged to join together and offer a package plan to individual trekkers: a pre-paid all-inclusive tour with local guide, as Sherpa Guide Lodges offers in Solukhumbu. This would give greater competition to other lodge operators to meet the higher standards.

POLICIES

1. Lodge-owners and operators along the trekking routes should be encouraged to organize committees to regulate the number of lodges, to set facility standards and minimum prices for lodging and food.
2. Initiate lodge-keeper training on construction, operation and management of trekker lodges. Training should include food preparation and cooking, kitchen hygiene, sanitation, proper refuse disposal (recycling, burning and packing and carrying out), housekeeping, fuel conservation (use of low wood

burning stoves, insulation, menu planning), service etiquette, cultural differences, pricing/accounting, etc.

3. Advise lodge-owners on how to obtain loans for construction and to improve standards and services. Loan assistance to lower income, lower caste people and women should be made available to help equalize the opportunities for lodge development.

4. The Tourism Committee or another appropriate management authority should permit lodge development only in designated areas, where food, water and fuel supplies are adequate to support both local populations and tourists, where unaccompanied trekkers are free from trail safety concerns.

5. Sites suitable for development or improvement of a limited number of trekker lodges (as listed in Chapter 6) are: Tumlingtar, Seduwa, Tashigaon, along the Salpa Pass route, Chainpur, Nundhaki, Gupha Pokhari, Chauki, and Basantpur.

6. Areas where lodges should not be allowed are the Milke Danda-Jaljala Himal. Lodge construction along the lower west side of the Arun River should not be permitted until the food supply can be enhanced and lodge-owner training can be provided.

7. Conversion of private rooms for tourist use should be encouraged, with proper sanitation facilities and privacy requirements, in order to reduce infrastructure investment requirements.

8. Lodge operators can be encouraged to organize individual trekking packages to market tea house trekking of higher standards.

5.2.2 Tourist Standard Hotel

Road access will open up new opportunities for drive-in, leisure tourists. As shown in Table 17-H, non-trekking tourists will contribute significantly to local economies if the facilities are there. They will easily pay \$50-70 a night for lodging and food in an attractive clean setting; but they will not stay longer than one or two nights unless there are activities available such as fishing, shopping, cultural experiences, etc.

Chainpur is a prime site for the construction of low impact, tourist standard hotel. An appropriate design and scale for Chainpur would be 8-10 double rooms with attached baths, optional dormitory facilities, of medium price range, clean with pleasant gardens, a hygienic kitchen and built in the style of a traditional Nepalese/Newari house. One possible site is Lamichaur, on a large flat hilltop 1/2 hr. walk north of town on the main trail. This spot was once considered for a community supported hotel project, and has stunning views of the Makalu massif and Chamlang. Construction is dependent upon availability of water. Unless the road were extended to this (or another) site, access would be by foot.

As part of the Chainpur tourist hotel or within walking distance in Chainpur main bazaar, an attractive restaurant serving Nepali/Newari food tailored for tourists could be developed. Taking advantage of the pleasant weather and charming surrounding, the restaurant could be built in an old restored home with courtyard garden seating. Local products such as fresh milk and yogurt, farm fresh vegetables, homemade fruit jams, brandies, etc. would add to the appeal.

Num or Hedangna could support a somewhat smaller tourist hotel aimed at visitors who drive up for a few days of day hikes and perhaps fishing, rafting or ballooning. The site should be located away from road and construction camp site, above Num or Hedangna for better views. A Nepali motif is an asset attracting tourists to the unique culture of the area. Fishermen cabins or a small lodge near the dam impoundment would be appropriate as long as agricultural disturbance is minimized.

POLICIES

1. Encourage construction of a quality tourist standard hotel for leisure tourists at Chainpur. The hotel should be of moderate scale and incorporate architectural and design motifs of Chainpur. One possible site is the Lamichaur site, outside of town. Provision of an adequate water supply is required.

2. As companion to the hotel, a tourist restaurant serving Nepalese food would be appropriate in Chainpur, with attractive garden outside seating, serving fresh local products such as yogurt, vegetables, fruit jams, brandies, etc.

3. Encourage construction of a modest tourist standard hotel or lodge for drive-in tourists and non-trekking recreationists in Num or Hedangna. Locate it away from road, maximizing mountain views. Development is contingent on an adequate water supply to serve locals and visitors.

4. To facilitate fishing and water related recreation, encourage development of cottages at Hedangna for fishermen. Construction site could be on the terraces below Hedangna (west side of Arun) with trail access to the impoundment lake. Efforts should be made to minimize disturbance of agricultural land.

5.3 OTHER TOURIST ACTIVITIES

Commercial rafting has already proven to be a viable sport on the Arun River, and is expected to expand in volume and diversify into more kayaking with greater road upstream access (to Pikhwa). Rafting tourism should be encouraged for the possible revenue-generating benefits it could bring, and support facilities such as campsites, latrines, refuse pits, cooking sites provided. Rafting equipment storage space might prove valuable to companies who schedule several trips a season. Local purchases of food staples can be coordinated (see below 5.5.a Food Sales), and information of handicraft sales and cultural tours made available through Tourist Information Centers.

Sportfishing from the banks of the lower Arun River, the Hinwan and Sabha Kholas can be done informally and with minimal investment, but would be facilitated with some basic guide and equipment rental services. Fishing from boats in the project dam impoundment lake is a potential attraction which will require fish-stocking to get fish beyond the dam impediment.

Some of the other tourist activities worth exploring in the area include hot air ballooning, para-gliding, pony treks, and mountain biking. Only pony treks require infrastructure investment in terms of ponies (horses) and their maintenance. The other sports depend upon private operators, someone with previous tourism experience, attracting participants through marketing. Therefore, whereas such endeavors may be beyond the means of local residents, any increase in tourist visitation will benefit locals through employment and product sales. Safety should remain a high priority in setting up such activities to minimize demands on local emergency evacuation services.

A rather unique opportunity for visitors to the Num-Hedangna and Phaksinda areas is a visit to the dam and observation of its operations. A small interpretive center with charts and diagrams would help explain the process and some of the problems to overcome when building a dam in the Himalaya.

Mountain or landscape view points could also be developed in conjunction with tea stalls at roadside stops, at Chichila, for example, as a way to enable small scale operators along the road alignment to benefit from tourism. Residents of Gupha Pokhari should be encouraged to sign and improve the trail to the lookout point (Mencham Danda) and cave, and install a sign identifying mountains and places visible from there.

POLICIES

1. Commercial rafting should be encouraged on the Arun River by allowing vehicles to carry rafts and rafters to Pikhwa. Campsites for rafting groups should be designated along the river at appropriate overnight stops, and latrines, refuse pits, cooking sites provided and managed by local entrepreneurs.

2. Sportfishing activities should be regulated to be consistent with Conservation Designation of Makalu/Barun NP. Fishing activities should be low intensity, with no motor boats in lake. Periodically fish levels should be monitored and new fish introduced (stocked) when necessary to maintain a healthy population.

3. Fishing support facilities such as a boat launch, boat and equipment rentals, guide services and a campsite should be allowed at Hedangna but facilities should abide by local scale and material and avoid displacement of agricultural land.

4. Other recreational sports such as para-gliding or hot air ballooning, pony treks and mountain biking should be encouraged in the Num-Hedangna area by facilitating construction of support facilities where they do not infringe upon local agricultural production or are harmful to the natural environment. Safety should remain a critical concern, and precautions taken to avoid accident and smooth emergency rescue.

5. A Dam Information Center should be set up to educate visitors about the nature and uniqueness of the project.

6. Mountain view spots should be marked on the road (at Chichila, for one) with a turn out to encourage stopping. A sign could identify visible peaks, with their heights. Another view point could be developed above Gupha Pokhari on Mencham Danda, with similar signs.

5.4 CONSERVATION AND RESOURCE MANAGEMENT

The benefits of conservation of natural resources may be less tangible to local minds concerned about feeding and clothing their families; however, they bring long-term and indirect rewards of indisputable importance. Properly disposing of waste reduces illness by preventing water pollution and dispersal of airborne bacteria; maintaining a clean, healthy environment not only bolsters communities' self image, but encourages a prosperous growth in tourism and its benefits. Preservation of forests and its products by using alternative energy sources helps assure an adequate water supply and temperate weather conditions, both necessary for a farm-subsistence existence. Management of special biological zones such as Milke Danda-Jaljala Himal ridge provides for the long-term protection of grazing resources which support an important milk production income, and is necessary for the preservation of plant and animal wildlife species of unquantifiable but significant value.

5.4.1 Refuse Disposal

Provision of rubbish pits at campsites, lodges and trailside litter containers will contain the problem of scattered litter, but long-term disposal of refuse is the ultimate solution.

Even with provision of refuse cans and dumps, clean-up required cooperation of all users; education of tourists, villagers and trekking staffs is the key. All must be taught how to separate and treat different kinds of refuse: placement in separate containers, burning burnables, re-cycling biodegradables and packing out the others. Trekking agents must take responsibility for group trekkers' garbage, but campsite managers must provide the pits and insist on proper clean-up. Lodge operators must also provide separate rubbish pits and deal with long term build-up. Mountaineering teams must be made responsible for bringing out their refuse. And someone must oversee trail clean-up when so many users are involved.

Packing out non-biodegradables is the biggest hurdle, requiring coordination of efforts and incentives to collectors and carriers. Local committees can work to set up refuse collection along the trails and transfer points along the road (at Num, Tumlingtar, Basantpur) and facilitate transfer to recyclers in Kathmandu and India. Money received from recyclers can help give motivation to private entrepreneurs to operate a regional refuse disposal system.

A system of mandating clean-up by mountaineering expeditions is put forward in the Makalu-Barun NPCA, requiring payment of a refundable deposit once the park authority verifies the campsite's cleanliness. Deposits withheld will go into the annual maintenance fund. Policies in the Project Area should support such a system, and enforce it for all climbing expeditions in the area, should new peaks open up.

In order to dispose of burnables and biodegradables carried out from high elevations such as Makalu BC and the Milke Danda-Jaljala Himal areas, disposal sites should be set up at Tashigaon and Gupha Pokhari with incinerators and community composts. Others waste should be carried to Kathmandu or the refuse transfer sites at the roadheads.

POLICIES

1. Encourage the Tourism Committee to set up a transfer system for non-biodegradable and non-burnable refuse. Deposit sites should be designated at campsites or along the trails and pick-up points established along the road to transfer all such refuse to Basantpur or Dhankuta and on to Kathmandu or India for disposal or re-cycling.

2. Teach villagers, lodge operators, trekking guides and tourists to through training sessions and information handouts to separate garbage and dispose of each properly, through composting of biodegradables, burning burnables and placement of other refuse in designated dumps for carry-out.

3. Working through the Makalu-Barun NPCA and the mountaineering permit procedures, support a policy of mandating clean-up of expedition base camps by requiring a refundable deposit, as described in the MBNPCA Management Plan.

4. To treat biodegradables and burnables being brought out from Makalu BC, set up a compost and incinerator near Tashigaon in cooperation with Makalu-Barun park authorities.

5.4.2 Alternative Fuel Sources

In order to reduce tourists' dependency on fuelwood, alternative sources of energy must be provided. The establishment of kerosene depots at trek staging and re-supply centers will facilitate trekking groups' and mountaineers use of kerosene by reducing transport costs from Kathmandu. But the government must help maintain adequate kerosene supplies during national shortages.

Realizing that kerosene is costly, involves dependency on foreign suppliers and is non-renewable, development of other alternative fuel sources is preferable. The Arun Basin has abundant streams and waterfalls which may be harnessed to generate electricity for local and tourist consumption. Another possible local energy source is wind; a German organization has already experimented with wind energy above Khongma. However, local peoples have not the resources nor know-how to utilize such potential energy resources.

Conservation of energy increases efficiency and reduces costs, enabling a savings in serving tourists that can go toward profit. Conservation built into the design of new lodges and hotels (wall insulation, low fuel-burning stoves, back-boiler water heater, etc.) should be encouraged and introduced through training sessions. As well, through education of trekkers and trekking agencies, conservation in trekking can be accomplished by foregoing a few unnecessary luxuries such as cooking an overabundant variety of menu items or heating bathing water twice a day.

Where forest preservation is a high priority -- at high altitudes and in designated important bio-diversity zones, such as above Tashigaon and on Milke Danda-Jaljale Himal -- regulations should be put in force to minimize fuelwood dependency; and at the same time alternative sources should be made feasible, economically and practically.

POLICIES

1. Establish kerosene depots at trek staging and re-supply sites (Basantpur, Tumlingtar, Num/Pikhuwa, Seduwa/Tashigaon and Chainpur). Depots should be operated privately. Loan assistance may be provided to help with set-up costs.

2. During times of national kerosene shortage, the Tourism Ministry should be requested to reserve adequate supplies for mountain tourists and disperse it to areas according to historic need.

3. Where feasible, financial and technical assistance should be provided for development of alternative energy sources such as hydro-electricity, wind and solar energy to help meet tourists' and communities' cooking energy needs.

4. In lodge design and operation, conservation techniques should be taught and facilitated with loan assistance (see above 5.2.a). Income generation through conservation should also be encouraged, such as utilizing water heated by the back-boiler stove to sell tourists for showers. Lodges and trekking agents should be encouraged to market conservation in their promotional material.

5. Consistent with the Makalu-Barun NPCA Management Plan, firewood use should be controlled through the park authority.

6. Tree cutting for firewood use should be prohibited on the Milke Danda-Jaljale Himal route by requiring all trekkers to take sufficient supplies of kerosene (see below 5.4.c).

5.4.3 Conservation Area Designation on Milke Danda

Because of its high biological, wilderness and recreational value, the Milke Danda-Jaljale Himal is worthy of protection; not as a strict nature reserve but for the long term sustainability of a shared use resource zone, in line Conservation Area status given elsewhere in Nepal (ACAP). This contained uninhabited

ridge should be recognized for its summer livestock grazing value, its tourist appeal and for its rich biodiversity. Besides establishing tourist use standards regarding fuel use, protection of flora and fauna and wilderness quality, a management scheme must also address seasonal herders and their subsistence needs for fuel, fodder and living sites as well as wildlife habitat requirements. As there is no management not in effect, an overseeing body with planning and enforcement authority is needed, led primarily by local efforts with outside skill and technological assistance where necessary, and vested responsibility given by the Nepalese government.

Recommended restrictions on land uses would preclude construction of trekker lodges or other permanent structures in the area; herders' temporary quarters (*goths*) could continue but with some limitation on numbers and locations. Only trekking or mountaineering groups, accompanied by a guide (preferably local), which can demonstrate self-sufficiency in food and fuel (kerosene or gas for all participants' cooking needs, *including fuel for staffs' cooking*), would be allowed to enter the area. Trekkers must camp only in designated campsites improved with unobtrusive toilets, cooking and refuse sites, and all non-biodegradable refuse must be carried out. Cutting or collecting of wood would not be allowed by tourists; locals would only be allowed to cut in designated areas, with a permit for specific trees/vegetation and amounts. Hunting would be prohibited, and some accommodation for protection of livestock would be needed.

Another side of resource management is education of users. Tourist Information Centers would distribute information for trekkers on trail conditions, availability of water, hazards, conservation education and the reasons for restrictions. Local participation in restoration of damaged forests and tree planting and protection programs should be encouraged. At the same time as local users are educated against tree cutting, overgrazing, litter and pollution, practical alternatives must be introduced.

POLICIES

1. Establish Milke Danda-Jaljale Himal as a Conservation Area with authority under His Majesty's Government. Establish local and tourist user regulations, and give enforcement responsibility to local officers.
2. Trekker lodge construction and other permanent structures for tourists (except for latrines and campsite support facilities, see #7) should not be allowed on in the Conservation Area.
3. Only guided group trekkers self-sufficient in food and fuel (kerosene or gas) for all members including staff and porters, should be allowed in this area.
4. No cutting or collecting of fresh wood for trekker use should be allowed within the Conservation Area.
5. Wood cutting by local residents and herders should be regulated by local officers on a permit basis, designating trees and amounts of wood to be cut.
6. The management authority should work with local livestock herders to establish a rotational grazing system so as to protect the long term sustainability of grasses and vegetation.
7. Trekkers should only camp in designated campsites. Campsites should be developed with latrines, cooking sites and refuse pits in a design that is unobtrusive and does not contradict the wilderness experience.
8. All refuse should be properly disposed of: buried, burned and carried out for disposal at the trailhead disposal sites. During the cold season and above 5,000 meters (?), all refuse must be carried out.
9. The Conservation Area management authority should periodically (at least once a season) clean up campsites and trails.
10. Trails along the Milke Danda-Jaljale Himal ridge and routes down its flanks both east and west should be signed at main trail junctions.
11. A radio contact should be established at Gupha Pokhari for emergency visitor use.

12. Tourist Information Centers, in corroboration with the Conservation Area management authority, should provide information for visitors on trail conditions, availability of water, hazards, and trekker regulations, to be distributed to all who apply for a permit at a checkpoint in the vicinity.

13. A reforestation program should be established to replace the damaged rhododendron and fir forests.

14. Wildlife habitat areas should be protected for the long term sustainability of plant and animal life.

15. Local users including livestock herders, traders and wood collectors should be educated through schools, community forums, information centers and by Conservation Area staff against tree cutting and overgrazing, litter and pollution.

16. Herders' temporary quarters (*goths*) should be allowed but with limitation on numbers and locations.

5.4.4 Community Planning to Accommodate Tourists

Often local peoples do not realize what it is that attracts tourists; for example, they think that tourists want the kinds of lodges or food which they have at home, not something unique to Nepal. They are ignorant of their communities' indigenous charm, via architecture, treatment of holy sites, cropping patterns, etc. Through community planning efforts, members of those settlements with some particular charm or appeal can be educated toward architectural preservation, restoration of old building, cleanliness standards and how to enhance their living area to attract tourists while not losing the traditional authenticity.

Planning for tourism development must also address the availability of water for development, and establish a means to fairly allocate limited water sources among local and visitor users. Through planning, communities can decide where to locate campsites and how their settlement should grow to avoid "leapfrog development" or an inefficient distribution of services (water, electricity, waste disposal). Some places such as Gupha Pokhari and Tumlingtar need a general "facelift"; loan assistance could help restore or paint buildings and clean up the grounds, making the area generally more appealing to tourists.

POLICIES

1. Through the Community Planning element, initiate an educational and public participation forum to discuss concepts of architectural heritage preservation, restoration, sanitation, community and tourist development.

2. Working with local water allocators, establish policies addressing equitable distribution of limited water supplies among competing users (farmers, industry, residential use, tourist lodge operators, etc.

3. Facilitate provision of loan assistance to communities interested in renovation of buildings as part of a concrete tourism development plan.

4. Encourage communities to adopt a community plan on a map showing where tourist facilities such as campsites, lodges, handicraft centers or shops should go and how to regulate land use.

5.5 INCOME GENERATION

5.5.1 Food Sales and Equipment Rentals

Farmers of the Project Area expressed much interest in supplying trekking groups with vegetables, chickens and fresh produce, as well as staples for which the new road will give access. Sales of vegetables, fruits, poultry, staples and locally dried or processed foods in a major opportunity for farmers to earn supplemental income from tourists, and a strong basis for encouraging tourism in the area.

But trekking agents need assurance before departing Kathmandu that adequate and high quality food will be available for their clients. The success of a trekker food supply system depends upon an effective communications network between trekking agents in Kathmandu and local suppliers, upon the

fair pricing of commodities relative to Kathmandu purchase plus transport costs, and ultimately upon the farmers' reliability in filling orders. A similar system was established under ACAP, but has not functioned well due to low orders.

Main food order supply centers would be appropriate at trailheads at Tumlingtar, Num/Hedangna, Pikhawa, Basantpur and Chainpur. Sales for re-supply on a drop in basis could be set at Tashigaon, Bumlingtar, and Nundhaki. Training in high quality vegetable, fruit, chicken, and egg production and management of the supply centers are needed. A communications systems (radio, telegram, air service and foot carrier) is vital as is active promotion in Kathmandu. In some places, increased agricultural production is also dependent upon a year-round water supply.

In addition to provision of food staples to trekkers, sales of specialized food production such as jams, brandies, pickled *achars*, dried fruit (bananas), fruit juice, fresh fruit such as bananas, pineapple, oranges, fresh milk products such as cheese, butter, yogurt, and fish can be developed for sale to group trekkers, lodges and hotels. With an abundance of milk produced on Milke Danda each summer and elsewhere at lower elevations, the possibility of opening a cheese factory is worth investigating. Cheese production requires large amounts of cooking fuel, however; alternative fuel sources such as solar, hydro or wind should be considered.

see

Trekkers' and mountaineer equipment rentals may be premature at present with low trekker numbers. But depending upon the tourism growth, rentals of tents, ropes, ice axe, stoves, lanterns, sleeping bags, down jackets, and porters' clothes could be made available at Tumlingtar, Num or Tashigaon. Tashigaon could stock up on stove repair parts, batteries, and chocolate as well for high altitude needs. For mountain climbing equipment rental, Tashigaon is probably the best place to offer replacement or forgotten/broken items. Trekking agents who do regular trips into the area could establish a rental relationship with a rental outfitter at Tumlingtar or Num (the trailhead).

POLICIES

1. Help set up a farmers' trekking food supply cooperative to sell local produce such as vegetables, fruit, eggs, poultry, etc. to trekking groups. Offer training in production of high quality merchandise, management, accounting, and responding to orders.

2. Major food supply centers would be appropriate at trek staging sites such as at Tumlingtar, Num/Hedangna, Pikhawa, Basantpur and Chainpur, with re-supply sales on a drop-in basis at Tashigaon, Bumlingtar, and Nundhaki.

3. Help initiate loan assistance to set up an food supply ordering communications system between supply centers and Kathmandu trekking agents.

4. Where water is a constraint to increased food production for sale to tourists, help seek loan assistance for development of an enhanced water supply system.

5. Provide training in methods for development of specialized food cottage industry such as home production of jams, brandies, pickled *achars*, dried fruit (bananas), fruit juice, fresh fruit such as bananas, pineapple, oranges, fresh milk products such as cheese, butter, and yogurt. Help provide loan assistance for purchase of equipment where needed. Offer training in design and sales marketing.

6. As trekking and mountaineering numbers grow, encourage rental of support equipment at trek staging centers and rental replacement of stove parts, etc. at high settlements such as Tashigaon. Facilitate communication between local entrepreneurs and Kathmandu trek operators to identify needs.

5.5.2 Handicrafts Sales

Handicraft sales has great potential for income generation among local residents, particularly among women and lower income peoples. Drawing upon local expertise and tradition, training sessions could be set up to standardize quality and to help develop designs which appeal to tourist buyers. For example, the Tumlingtar Kumhals who traditionally manufacture pottery for local sale could be instructed in production of souvenir items such as candle holders, ashtrays, bowls, etc. Chainpur's brassmaking industry could be greatly expanded both for export to Kathmandu for sales to tourists, and for sales directly to visitors. Women of the Arun Basin area knit, weave bags, and could be trained in

paper production as well. Tibetan peoples of Gupha Pokhari produce yak wool items, while peoples further east have vast bamboo resources to draw upon.

POLICIES

1. Set up training centers in handicraft production throughout the region, particularly in rural areas deprived of alternative income generation means and along trekking corridors: the west side of the Arun River, the upper Arun Basin (beyond Hedangna), Nundhaki-Gupha Pokhari area, and elsewhere off the trekking tracks where supplemental income is needed.

2. Teach participants in the production of traditional handicrafts indigenous to their culture and area, such as weaving fabric, bags, blankets, clothes, etc., pottery, brass and metalwork, wool weaving and knitting, paper products, drums, etc. Offer design workshops in employing designs, colors, sizes appealing to tourists; and in the marketing both locally at the production site and at shops in tourist destinations such as Chainpur.

3. As practical, open demonstration projects and training centers for tourists' visits so that tourists can observe the technique and make purchases.

5.5.3 Cultural Tours and Demonstrations

Organizing cultural tours to homes to observe home life, house-styles and architectural features, and to experience the culture through dance performances, sharing meals, local-guided tours of historic places, etc. is one way encourage cross-cultural understanding and respect. Tourists are less likely to offend the local peoples' social values with dress and behavior once they understand local ways; and the Nepalese come to treasure their own heritage and guard against its deterioration when they see that outsiders value it. Cultural tours of old and picturesque settlements such as Chainpur, Nundhaki, parts of Khandbari, Barabise, and elsewhere are another means of income generation, through direct payment or as a marketing technique which trekking agents can promote. Other ideas are festival promotion, *haat* bazaar treks, historical tours, farming and food preparation demonstrations, cave visits. Village elders can act as guides with translation by local students. Evening cultural dances are popular in other regions and can be encouraged here.

People in the area raised the idea of developing the trail to Sabha Pokhari, a sacred lake high in the Jaljale Himal, as a tourist destination. An annual *mela* attracts thousands of Nepalese pilgrims during August full moon for Janai Purnima. The three to four day journey from Khandbari or Chainpur is reportedly rough and is not the preferred route to Milke Danda-Jaljale. As well, the festival season is during monsoon rains, and few trekkers enjoy the mud and leeches. Some trekking agents may wish to scout the pilgrimage trail to Sabha Pokhari or an alternative from atop Jaljale Himal. However, other sites for development of cultural tourism are more accessible.

POLICIES

1. Encourage communities to offer organized cultural tours of home life, religious or historic sites, festival activities, meal sharing, and to stage cultural demonstrations such as song and dance shows for tourists as a means of revenue generation and cross-cultural exchange.

2. Offer training to interested locals in guiding techniques, and in protocol for interaction with tourists.

3. Encourage communities to promote cultural tourism such as festival or *haat* bazaar treks, historical tours, farming and food preparation demonstrations, cave visits, etc. with printed information at Tourist Information Centers and distribution among trekking agents in Kathmandu.

5.6 CONSTRAINTS TO DEVELOPMENT OF TOURISM SITES AND ACTIVITIES

5.6.1 Physical Constraints, Demands on Natural Resources and Lack of Infrastructure

5.6.1.1 Steep terrain

The steepness of terrain throughout the Project Area puts developable land at a premium. Level sites support agricultural production, forests or towns and settlements. Development of new campsites, trails, lodges and other tourist support facilities would therefore displace productive land uses for

seasonal and uncertain returns on investment. It is preferable to improve existing campsites and trails wherever feasible, and to locate other tourism support facilities within existing settlements. Development of steep lands often requires massive land movement which is not only expensive in labor costs but can cause instability if not properly engineered. Improvement of trails, particularly as alternatives to those displaced by the road, face rough and steep terrain through remote areas.

5.6.1.2 Water supply

Shortage of water is already a problem at some settlements; water is available from the tap only at certain hours, or comes from a fixed source such as a lake or stream which is subject to pollution from multiple users. Water shortages preclude farmers from producing adequate food supplies, much less excess produce to sell to tourists. As tourism grows, conflicts over water use among tourist serving facilities and domestic/agricultural use may arise.

5.6.1.3 Food

Food is in limited supply, and many families in the Area suffer from insufficient nutrition. As tourists increasingly visit the area, there will be greater demands on limited food. Locals may be tempted to earn cash income from food sales to lodges and trekking parties rather than feed their families.

5.6.1.4 Fuel for cooking

Fuel for cooking -- presently in the form of trees -- is another major constraint to tourism growth. There is no ready alternative fuel source available to locals; kerosene is used by some trekking groups but is too costly for the majority of residents. It must be carried several days and is not available on a steady basis. Where electricity is supplied to communities, it is at insufficient levels to cook with. Whereas the hydroelectric potential is great, construction and transmission costs have deterred the development. The potential for wind and solar energy has not been fully researched.

5.6.1.5 Climate and weather

The limited seasonality of trekking in the area will be somewhat broadened with road access to the dam site, eliminating walking at lowlands during the hot season. However, the main constraint -- snowfall on the passes into Makalu BC -- will remain a hazard and deterrent against early spring and late fall season treks.

At high elevations, cold temperature inhibits decomposition of refuse and human wastes, contributing to a build-up of litter and pollution along the Makalu BC trail. High altitudes also slow vegetation growth, and plants cut to provide cooking fuel and warmth for trekking and mountaineering staffs takes a long time to grow back.

5.6.1.6 Lack of refuse disposal infrastructure

Waste disposal infrastructure at all levels, from campsite pits to recycling centers or landfills, lacking. Even if trekking staffs and local porters carried out all trash there is no system for receipt of refuse at roadheads, no transport vehicles and no proper dump at the other end of the road.

5.6.2 Investment Costs, Skills and Technical Know-How

5.6.2.1 Investment and operational costs

Virtually all of the above recommended mitigation measures require capital investment. Local peoples by and large lack the capital to invest in lodges, latrines or kerosene depots, to acquire land for campsites or trails, to set up handicraft and food cottage industry projects, etc.. Nor is there adequate incentive for private investors at current levels of tourism. At present, there is no outside funding source earmarked for implementation of these policies and programs. Loans are difficult to get and at high interest rates.

Investment in infrastructure alone will not bring tourists; a growth in tourism requires promotion both within Nepal among trekking agents as well as abroad among the adventure travel agents. Brochures, maps, guide books, slide shows must complement visitors' own word of mouth marketing.

The cost of operating treks in the area, including transport costs of all food, supplies, staff and clients, has been identified as a major limiting factor in the area's trekking popularity. Much of this will be mitigated with road access.

5.6.2.2 Skills and know-how

Traditional construction and technical skills have sufficed with historic demands on natural resources and basic infrastructure. Introduction of conservation techniques such as low fuel using stoves and development of alternative energy sources will require technical training. Subsistence farmers lack experience in organizing and managing cottage industries such as handicraft and food production and sales. Local designs may need to be modified to stimulate tourist interest. Some production such as paper processing, wool dyeing, pottery baking, etc. requires a fuel source, compiling demands for energy. Training and manufacturing centers will also be needed.

5.6.3 Attitudinal Constraints

Local peoples expressed strong support for tourism growth, but are largely unaware of what tourists like and do not like. For example, residents of Chainpur hear that tourists find the community charming, but they don't know why. A greater ignorance is over sanitation and the importance of personal and environmental hygiene especially when serving tourists. Attitudes toward litter and cleanliness in the kitchen are out of line with tourists' demands.

Deforestation, pollution and other environmental problems are jointly issues of survival and attitude. Out of necessity and ignorance both, locals are abusing the resources upon which their lives depend. Conservation education at a level meaningful to an uneducated farmer must follow introduction of alternatives. Understanding the importance of maintaining a sustainable environment will help take the pressure off enforcement and will transfer responsibility to local levels.

Although people along existing tourist corridors seem supportive of tourism, people living in more remote areas could be leery of importing outsiders for religious or cultural reasons. Tourists' *faux pas*, such as not showing proper respect for sacred sites, scant dress or excessive bargaining are the types of behavior that can offend traditional beliefs. Before opening up places such as Khembalung or encouraging cultural tours to homes or religious festivals, local peoples must be consulted.

CHAPTER 6: PLAN OF ACTION: DEVELOPMENT OF INFRASTRUCTURE AND ACTIVITIES TO IMPLEMENT POLICIES

6.1 SPECIFIC SITES/ACTIVITIES FOR TOURIST USE/DEVELOPMENT

The following table identifies specific projects and investment required for each recommended tourist destination and access trail. Priorities are based upon need (considering present or anticipated tourist demand) and the level of income generation to be expected from the improvement/action. Priority I projects should be carried out within one to two years from commencement of the Project, Priority II projects within three to four years or upon completion the road, and Priority III projects within five to six years (i.e., when tourism demand warrants additional facilities). Projects or actions to be addressed within the Makalu-Barun NPCA Management Plan are listed separately.

6.1.1 Campsite Designation and Development of Facilities

Campsites should be designated at following sites, with latrines, refuse pits, cooking sites (covered if possible) and landscaping, in accordance with Policy 5.1.1.

6.1.1.1 Designated and improved campsites

<u>Place Name</u>	<u>Location</u>	<u>Capacity (no. of tents)</u>	<u>Estd Cost</u>	<u>Priority</u>
<u>Tumlingtar</u>	Open space in airport buffer (existing site)	2 sites 10 tents	NRs 60,000	I/II
	East of town, by Sabha and Hinwan Kholas (new site)	1 site 10 tents	NRs 70,000	III
<u>Num</u>	Large terraces north of school (existing site)	2 sites 10 tents each	NRs 60,000	I/II

Conditions:

- 1) Locate campsites away from road's dust and noise
- 2) Increase water supply for tourist/resident use.
- 3) Build one camp site within year 1-2, other campsite within year 3-4 or as needed.
- 4) Must relocate road alignment at Num to reserve existing campsite. Alternative site at

Hedangna.

<u>Hedangna</u>	Close to dam impoundment, for fishermen use (new site)	1 site max. 5 tents	NRs 70,000	III (on completion of dam reservoir)
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Conditions:

- 1) Avoid displacement of agricultural lands

Other Campsites Recommended, to be addressed in the Makalu-Barun NPCA Management Plan: (not to be included in this budget)

<u>Seduwa</u>	School grounds (existing site)	1 site 10 tents		I
	Above town on shoulder (new site)	1 site 10 tents each		I

<u>Tashigaon</u>	At base of forest, mid-settlement (existing site)	2 sites 10 tents each	I
	At top of settlement, near weather station (existing)	1 site 10 tents	I
<u>Hedangna</u>	Above town, away from traffic or below on abandoned terraces (new site)	1 site 10 tents	II

Note: Please see Makalu-Barun NPCA Management Plan for additional campsites above Tashigaon

<u>West side of Arun River</u>	Walung Phedi avail. farm terrace (new site)	1 site 10 tents	NRs 70,000	II
	Mangtewa Phedi broad terraces (new site)	1 site 10 tents	NRs 70,000	II
	Bumlingtar near Sisuwa K. confluence w/ Arun R. (existing site)	1 site 10 tents	NRs 30,000	II
	Chirkhuwa outside village along river (existing site)	2 sites 10 tents each	NRs 60,000	II/III
<u>Salpa Pass</u>	Campsites for every night's rest (needs reconnaissance)	3 sites 10 tents each	NRs 90,000	I/II/III
<u>Chainpur</u>	Bazaar grounds (existing site)	1 site 15 tents	NRs 30,000	I
	Off the ridge, north or south, on avail. ag. land (new sites)	2 sites 10 tents each	NRs 140,000	II/III

Conditions:

- 1) Locate to minimize disturbance to agricultural land and from road activity, noise, dust but close to town center to encourage shopping
- 2) Increase water supply for tourists/residents.

<u>Pokhari/ Mayam</u>	Bazaar grounds (existing site)	1 site 10 tents	NRs 30,000	I
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	Avail. agri. land near Mayam (new site)	1 site 10 tents	NRs 70,000	III
<u>Nundhaki</u>	Near bridge, Piluwa Khola (existing site)	1 site 10 tents	NRs 30,000	I
	School grounds above town (existing site)	1 site 15 tents	NRs 30,000	I
<u>Milke Danda</u>	Top of ridge, yak pastures (existing site)	1 site 10 tents	NRs 50,000	I
	Goru Jure small grassy knoll on ridgetop (existing site)	1 site 10 tents	NRs 50,000	II
	Jaljale Himal sign campsites for every night & indicate water source; latrines in 2nd phase	1 site 10 tents for each nights' stop (4-5 sites)	NRs 250,000 (primitive facilities)	II/III

Conditions:

1) Water may be too costly to bring to the top of Milke Danda, but directional signs could indicate closest location to campsites.

<u>Gupha Pokhari</u>	In meadows below lake (existing site)	2 sites 10 tents each	NRs 60,000	I/II
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Conditions:

- 1) Site latrines to avoid drainage into lake
- 2) Separate campsites with landscaping
- 3) Develop piped water supply

<u>Chauki</u>	Meadow behind settlement (existing site)	2 sites 10 tents each	NRs 60,000 each	I/II
<u>Basantpur</u>	Outside of town, avoid noise, dust (existing site)	2 sites 10 tents each	NRs 60,000	I/II

Note: As other trekking routes become used, i.e., to Num via Barabise, Bhojpur area, Khandbari to Chainpur, alternate trails to Milke Danda, additional campsites should designated and improved.

6.1.1.2 Total campsite budget

Phase I: NRs 350,000

Phase II: NRs 550,000

Phase III: NRs 390,000

6.1.2 Trails and Bridges

In accordance with Policy 5.1.2 the identified trails and bridges should be designated and improved for the safety of tourists and other users.

6.1.2.1 Trail and bridge improvements and construction

Trail Improvements

	<u>Length</u>	<u>Estd. Cost</u>	<u>Priority</u>
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Trails and Bridges covered under the Makalu-Barun NPCA Management Plan:

Trails:

Mubuk to Ramara	20km		I
Khembalung to Khongma	30km		II
Chitre and Deorali	3km		II

Bridges: Barun, Apsuwa and Issuwa Kholas

Arun River west side, Issuwa Khola-Yaphu Phedi	10km	NRs 300,000	I
Milke Danda-Jaljale Himal- Panch Pokhari-Pawa Khola	40-50km	NRs 1.2-1.5 mil	II
Khandbari-Barabise- Matsya Pokhari-Num: needs reconnaissance	?	?	I

Bridges: New Construction

Replace log crossings on 2-3 streams near Mangtewa Phedi	10 m each		II
Sabha and Hinwan Kholas, on Tumlingtar-Chainpur trail (unless provided with road)	30/20 m		I

Bridges: Improvements

Sabha and Hinwan Kholas, on Khandbari-Chainpur trail	15 m each		III
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6.1.3 Signs, Tourist Information Centers and Safety

In accordance with Policy 5.1.3 construct facilities at the following major places; this list is not inclusive.

6.1.3.1 Signs, tourist information centers and safety/radio contacts

Types of Signs:

A - Directional, time/distance, facilities available; located at trailheads or junctions

B - Special regulations in effect; located at trailhead for area

C - Location/direction of campsites, latrines, litter disposal, emergency contact station, special tourist attractions, hazardous trail or other warning; marking location or where access trail leaves main trail

<u>Trail</u>	<u>Location</u>	<u>Type</u>	<u>Estd. Cost</u>	<u>Priority</u>

Projects covered under Makalu-Barun NPCA Management Plan:				
Khongma-Khembalung	Khongma & Khembalung	A, B, C en route		II
Tashigaon-Navagaon	Tashigaon & Navagaon	A, B, C en route		I
Makalu BC-Chhukung via Sherpani Col	Makalu BC & Chhukung	A, B		III
Seduwa-Walung-Phedi-Bumlingtar	Seduwa & Bumling	A, B C en route		II

Salpa Pass route	Trail junction at Irkhua K.	A, C en route	NRs 200-300 each (tin)	I
Dingla-Bhojpur	Chirkhuwa K., Dingla, Bhojpur, Tumlingtar	A, C en route	" "	III
Barabise-Num via Matsya Pokhari	Khandbari, Tumlingtar, Chainpur, Num	A, C en route	" "	I
Khandbari-Chainpur	Khandbari, Chainpur	A, C en route	" "	III
Pokhari	Pokhari	A, B	" "	I
Nundhaki to Gupha Pokhari/Milke Danda	Nundhaki, GP, MD at Goru Jure	C en route		
Milke Danda-Jaljala Himal	at campsites	B	" "	I

6.1.3.2 Tourist information centers

<u>Type</u>	<u>Location</u>	<u>Estd. Cost</u>	<u>Priority</u>

Projects covered under Makalu-Barun NPCA Management Plan:			
Makalu-Barun Interpretive Center	Num, Pikhawa or Tashigaon	(see MBNPCA Mngt. Plan)	.
General Info. Center and Radio Contact	Tashigaon (if interpretive center is elsewhere)		

General Information	Tumlingtar	NRs 100,000 each	I
	Num/Pikhawa		II

	Chainpur		II
	Basantpur		I
		TOTAL Cost	NRs 400,000
Milke Danda-Jaljale Himal Interpretive Center	Gupha Pokhari	NRs 5-6,000,000	II
Transport Information Center	Basantpur, Num	Rental basis	II
Safety/ Ratio Contact	Gupha Pokhari		III

Dam Visitors Center (see below, 6.3)

6.2 LODGE AND HOTEL DEVELOPMENT

6.2.1 Trekker Lodges

In accordance with Policy 5.2.1, improvement and development of lodges are appropriate at the following locations (list is not inclusive; no lodges should be permitted on Milke Danda-Jaljale Himal). Priority is to improve existing lodges.

6.2.1.1 Trekker lodges

KEY: *Improve Existing Lodges with X number of beds: (I)*
Construct New Lodges with X number of beds: (N)

<u>Location</u>	No. of Beds (present # beds to Improve; <u>proposed New #</u>)	<u>Estd. Cost</u>	<u>Year</u>
Tumlingtar	50(I) 10-15(N)	NRs 150,000 NRs 200,000	I II
Num	20(I) 10 (N)	NRs 100,000 NRs 200,000	I II
Hedangna	6(I) 6(N)	NRs 30,000 Rs 250,000	II II
Chirkhuwa	3(I) 6-10(N)	NRs 30,000 NRs 200,000	II III
Chainpur	30(I) 20(N)	NRs 120,000 NRs 250,000	I/II II/III
Pokhari	6-8(I) 4-6(N)	NRs 30,000 NRs 150,000	I III
Nundhaki	4-6(I) 10(N)	NRs 30,000 NRs 200,000	I II
Gupha Pokhari	8-10(I) 10(N)	NRs 50,000 NRs 200,000	I II
Chauki	10(N)	NRs 100,000	I

Basantpur	12-15(I)	NRs 70,000	I/II
	10(N)	NRs 100,000	III
Bhojpur	3-4(I)	NRs 50,000	II
	10(N)	NRs 100,000	III

Projects covered in Makalu-Barun NPCA Management Plan:

Seduwa	6-10(I)	I
	10(N)	II
Tashigaon	3-4(I)	I
	10-15(N)	II

6.2.1.2 Total trekker lodge cost

Phase I: NRs 560,000

Phase II: NRs 1,150,000

Phase III: NRs 950,000

6.2.2 Tourist Hotels

In accordance with Policy 5.2.2, a tourist standard hotel would be appropriate at the following places:

6.2.2.1 Tourist hotels

<u>Location</u>	<u>No. of Beds</u>	<u>Estd. Cost</u>	<u>Priority</u>
Chainpur	Phase I: 10	NRs 500,000 +	II
	Phase II: 20 +	NRs 1,000,000	III
Num/ Hedangna	Phase I: 10	NRs 500,000	II
	Phase II: 10	NRs 500,000	III

6.2.2.2 Total tourist hotel cost

Phase II: NRs 1,000,000

Phase III: NRs 1,000,000

6.3 INFRASTRUCTURE FOR OTHER TOURIST ACTIVITIES

Consistent with Policy 5.3, the following activities are appropriate:

Rafting/Kayaking

Facilities: Improved campsites and river access

Locations: Pikhwa, Tumlingtar, Lower Arun

Priority: II/III

Fishing

Facilities: Campsites, equipment rental, guide service, water access

Location: Hedangna (Tumlingtar)

Priority: II/III

Ballooning/Gliding

Facilities: Access, trails

Location: Num/Hedangna, Tumlingtar area

Priority: II/III

Pony Treks

Facilities: Ponies and Stables

Location: Tumlingtar

Priority: III

Dam Visitors Center

Facilities: Educational display, walking tour, observation platform

Location: Dam site below Num or at Pikhuwa power house site

Priority: III

Mountain View Points

Facilities: Signs, road turnout/standing platform, identification of mountains visible

Location: Chichila, Gupha Pokhari

Priority: III

6.4 INFRASTRUCTURE FOR CONSERVATION/RESOURCE MANAGEMENT

6.4.1 Refuse/Waste Disposal

Latrines

Locations: Besides at every designated campsite and lodge, at trekking lunch stops and/or elsewhere along main trails where possible

Cost: NRs 2,000 - NRs 10,000 per latrine (with septic tank)

Priority: I/II

Covered Refuse Pits

Location: At every campsite (see location of campsites, 6.1.a above), along trail spaced every 2-3 hours, and at every lodge.

Cost: approximately NRs 2,000/each

Priority: I/II at time of campsite or trail development/improvement (see above)

Main Dumping Pit cum Incinerator and Storage

Location: At Tashigaon, Num, Tumlingtar, Chainpur, Gupha Pokhari, Basantpur.

Cost: approximately NRs 2,500.

Priority: III

6.4.2 Alternative Fuel Sources

Kerosene Depots

Locations: Basantpur, Tumlingtar, Num/Pikhuwa, Seduwa/Tashigaon and Chainpur.

Cost: approximately NRs 5-10,000 each station.

Priority: I/II

6.5 INFRASTRUCTURE TO SUPPORT INCOME GENERATION ACTIVITIES

6.5.1 Food Sales/Equipment Rental

Trekking Group Main Food Supply Centers

Facilities: Storage and sales center; communications network

Locations: Tumlingtar, Num/Hedangna, Pikhuwa, Basantpur and Chainpur.

Trekking Re-supply Centers

Facilities: Storage and sales center

Location: Tashigaon, Bumlingtar, and Nundhaki.

Priority: I/II

Trekking and Mountaineering Equipment Rental

Facilities: Storage and sales/rental and repair center

Location: Tumlingtar, Num or Tashigaon.

Priority: III

Processed Food Production

Facilities: Drying, canning, distilling, pickling, etc. and sales centers

Locations: Wherever local people express interest and there are adequate resources (food stock, fuel, water). Possible sites: banana drying along west side of Arun River, orange juice, marmalade, brandy processing in Chainpur (and elsewhere), cheese production near Milke Danda and Mamling, etc.

Priority: III

6.5.2 Handicraft Sales

is feasible here: trekking in the Project Area, followed by a three day rafting trip on the Arun River (from Phaksinda or Tumlingtar) and overland transfer from Chatara (optional night in Biratnagar) to Koshi Tappu for wildlife viewing. Because of the undeveloped nature of Koshi Tappu Reserve, it is a much different experience than jungle safari in Royal Chitwan National Park where guests of Tiger Tops or other luxury lodges have comfortable accommodations, refrigerated drinks, nice meals and hot showers. Visitors to Koshi Tappu must be willing to sacrifice living comforts; camping is allowed but there are no latrines or water taps. Elephants are available for excursions, but otherwise tourists must walk and be totally self-sufficient. Sports fishing is allowed although reportedly not as good as on the Karnali River of west Nepal. Nearby Tharu villages offer some cultural interest to visitors. Besides the NRs 250 per person entry fee, a camping fee of NRs 100 per person per night is levied.

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