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## **CHAPTER - V**

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### SOCIO-ECONOMIC DEVELOPMENT

#### Introduction

The livelihood in Sikkim is at subsistence level and there are three major options namely, traditional farming, pastoralism and tourism. The major livelihood of the Sikkimese people is farming (Jana 1994). The pastoralism is mainly concentrated in the high altitude pasturelands, which is primarily used for Yak/Dzo grazing. Yak/Dzo reared for various purposes such as wool, meat, milk and milk derived items like churpi and also as pack animals. Tourism has been one of the major economic activities in the Sikkim for the past one decade (Sharma 1997). The local communities involved in tourism related activities as lodge operators, porters, pack animal porters and teashops. The major economic changes that took place after 1990, and have altered not only the economics of the area but also many aspects of their social life. The changes, which took place in food consumption due to economic change, have also received some notice. Diet has also changed over time with economic growth. Therefore, this chapter discusses the socio-economic characteristics, indicators on economic development, inventory of physical assets and quality of life etc.

## 5.1 Methods

Socio-economic baseline information collected employ qualitative and quantitative procedures and sampling techniques that are widely accepted and scientifically sound. Including group and individual questionnaire interviews, focused topic interviews and meetings, as well as semi-structured and open-ended interviews on various aspects of the household economy as the demographic features, occupational structure, literacy, cropping pattern, consumption pattern, and so on. While analyzing the livelihood options, the socioeconomic aspects of the different stakeholders were used as important factors, along with the physical and institutional infrastructure that shape the nature of livelihood options being practiced by the stakeholders. Thereafter, the effect of livelihood options was analyzed in terms of their impacts on the quality of life and equity.

The data used for consumption pattern are from National Food Balance Sheets based on agricultural production. For over one hundred different foods, the total weight of domestic production in a year is added to imports and any amounts withdrawn from stock. From this total are deducted exports, the amount used for seed and for feed, and those crops destined for other use. An arbitrary 10 % is subtracted for wastage between the farm gate and the real outlet. This final figure is then converted into calories per capita per day, grams of protein per capita per

day and grams of fat per capita per day (FAO 1991 & 1994). The food balance sheet has drawbacks, it is not a measure of consumption but an estimate of the amount of food available at the retail level. Consumption at the household level is lower than those in the food balance sheets that constitute national average (Dowler & Seo 1985 and Smil 1987). The accuracy of the final estimates of food availability is dependent on the reliability of the production. The utilization of crops for seed and feed is not exactly known even in the developed countries (Grigg 1996). Further, a substantial proportion of food is consumed on the farm and not recorded in survey statistics. However, there are only comprehensive international statistics on food availability and they accurately represent major differences in consumption.

## **5.2 Socio-economic Characteristics**

Total population of the Yuksam and Khecheopalri village was 988 and 463 in 1971, which rose to 1930 and 797 in 1991. At the time of survey (1997) population reached 2622 and 958 respectively. The growth rate was thus estimated as 45% and 27% within one decade (1981-91).

The working population in the age group of 20 to 60 years is significantly higher at both the sites (Table 5.1). The percentage of school going children is higher in sacred Khecheopalri lake site than in the Yuksam-Dzongri-Geochha, La corridor. The sex ratio in the state still remains much lower than the national average of 927 and also much

lower than those of the other Himalayan states, apart from Arunachal Pradesh (Sharma & Sharma 1997). In contrary to this, the number of females per thousand males is higher (972) in Yuksam-Dzongri-Geochha La corridor than the Sikkim and national average.

The density of population has increased significantly during the last two decades from 30 km<sup>-2</sup> in 1971 to 57 km<sup>-2</sup> in 1991 in the state. However, taking into account the fact that nearly 25% of the total geographical area of the state is uninhabited. The density of population in the Yuksam-Dzongri-Geochha La corridor and sacred Khecheopalri Lake are slightly higher than the state average. Yet another way of gauging the population pressure on land is the density of population km<sup>-2</sup> of arable land. The density of population km<sup>-2</sup> of arable land comes to as high as 595 and 260 persons indicating a high pressure on arable land.

About 69% of the total households are involved in tourism related activities in Yuksam area. Out of that 5% were engaged in hotel/lodges, 14% pack-animal operator, 66% porters, 9% fair price shop and 6% tea stall. In Khecheopalri area, only 3% of the total population involved in tourism related activities and the rest belongs to non-tourism sector.

### **5.2.1 Level of education**

The extent of human resource development in terms of literacy is significantly higher in Yuksam-Dzongri-Geochha La corridor than in the Sacred Khecheopalri lake (Table 5.2). The female literacy rate (43% &

47%) is lower than the male (53% & 57%) at both the sites. Stakeholder wise, the highest literacy rate was recorded in tourism involved households and lowest in non-tourism involved households (Table 5.2). These differences could be attributed first to the involvement of Bhutias in tourism sector that remained the privileged ruling community and enjoyed state patronage until the state's merger with India in 1975. Secondly, the tourism involved families earn more cash income, enabled them to afford higher and better education outside the area and state. Between tourism and non-tourism involved families, the percentage of illiterate population is higher in non-tourism involved families at both the sites.

### **5.2.2 Land utilization and agricultural production**

The survey revealed the following land-use categories in Yuksam and Khecheopalri villages. The total area of Yuksam and Khecheopalri villages are 1244 ha and 987 ha, respectively. Out of that 35% and 37 % were under net sown area, 28% and 12% under fallow, 8% and 5% under other cultivable land excluding fallow and 3% and 6 % under area not available for cultivation respectively (Fig. 5.1). The per capita land is 0.28 and 0.32 ha in Yuksam and Khecheopalri villages respectively which is quite low as compared to other Himalayan region. Nearly 35% and 50% of the total operational landholdings were small size (1-2 ha) respectively in Yuksam and Khecheopalri villages.

Table 5.3, shows the cropping pattern of both the villages. Large cardamom (*Amomum subulatum*) based agroforestry system accounted for about 47% and 53 % in Yuksam and Khecheopalri villages respectively. Other important crops are maize (*Zea mays*) and potatoes (*Solanum tuberosum*) that accounted for more than 27% and 37%, respectively, in Yuksam and Khecheopalri villages. For the last 10 to 15 years, large cardamom farming has increased rapidly in both the villages. Farmers of Yuksam village converted their paddy field to large cardamom field to get more revenue. Among different categories of farmers, small holding (1-2 ha) farmers devoted more land to maize and potatoes than the large holding (above 10 ha) farmers, who devoted more land to large cardamom cultivation.

The major source of employment and income was overwhelmingly agriculture upto 1996 with 80% of total population engaged in subsistence farming. There has been some minor change in this situation in recent years. Despite this activity, subsistence level nutritional requirements are met by local production or not are doubtful. World Bank (1976) estimates that nutritional needs for normal subsistence should provide an average of 11.3 MJ adult<sup>-1</sup> day<sup>-1</sup> (9.2 MJ for minimum subsistence). Estimates showed that average nutrient intake actually available to the Yuksam and Khecheopalri area people is 2 MJ person<sup>-1</sup> day<sup>-1</sup>, which indeed appear to be far below the World Bank estimates

(Table 5.3). These low values are calculated based on only local production system and these clearly indicate that at both the sites people are more dependent on outside supplies to meet their daily nutritional requirements. If compared to other similar studies in Nepal Himalayan region, the nutrient intake was 5 MJ person<sup>-1</sup> day<sup>-1</sup> (Mahat *et al.* 1987), which is quite high to the present study. However, this proves that the mountain region is one of the food deficit areas and the figures are not much different.

### **5.2.3 Livestock holding**

The livestock numbers of both the sites are presented in Table 6.6. It shows that cattle, goats, pigs and sheep and poultry birds are important animals. A total of 1557 livestock was recorded at Yuksam while only 304 at Khecheopalri. The animals include cattle (26%), goat (18%), sheep (27%), dzo (7%), yak (5%), horse (2%) and pigs (15%) in Yuksam area and cattle (36%), goat (35%), sheep (7%) and pig (22%) in Khecheopalri lake area. All most all households keep poultry birds, which besides enriching their diet also enable them to meet emergency cash requirements. The cattle reared are mostly local breeds, which yield less milk. There is a significant difference in the number of animals owned by different stakeholders in both the sites (Table 5.4). A highly significant difference was observed in the case of pack animal operators who reared large number of Yak/Dzo for tourism purposes. Non-tourism involved

families also have large numbers of livestock because their economy is based on animal population.

### **5.3 Indicators on Economic Development**

The role of tourism in local, state and national economic restructuring has been widely stressed (HMSO 1985 and Grolleau 1988). Local communities of both the sites have reoriented their local economy and lifestyles around tourism recently. Until 1996, more than 50% of all community households had income from agriculture sector only. Since then involvement in tourism has risen in most villages, and it has become increasingly common for several members of a household to have tourism-based incomes. For most families tourism earnings come from employment in trekking as guides, pack animal operator and cooks. Some men work exclusively for mountaineering as pack animal operator. Employment in both trekking and mountaineering is seasonal. Hotel/lodges have become an increasingly important part of the local as well as state economy. Most lodges are operated by women of the households, who typically employ one or two non-family persons to help in cooking, water heating and cleaning.

#### **5.3.1 Income**

The people of Yuksam and Khecheopalri area have reoriented their local economy around tourism. In 1997, about 46% and 7% of the total household income came from this source in Yuksam and Khecheopalri

area respectively. Since then, involvement in tourism related activities have risen to 69% and 22% in 1998 in these sites and it has become increasingly common for local communities to involve in tourism-related activities. The household earnings yielded through different livelihood options are important indicators of their quality. In this context, Table 5.5 & 5.7, reveal that the average annual income of tourism involved and non-tourism involved families registering an increase of 9% and 4% in Yuksam area and 39% and 2% in Khecheopalri over a period of just one year (1997 to 1998). A sizable amount of the revenue (55%) in Yuksam area came from employment in trekking and mountaineering as portorage (Rs 2755856 equivalent US\$67216); followed by grocery shop (Rs 663749 equivalent US\$16189), hotel/lodge/tea stall (Rs 1574933 equivalent US\$38413), and very minimum to local guides (Rs 24887 equivalent US\$607) in 1998. Tourism sector is the most important source of revenue generation followed by service sector and agriculture (Table 5.5 & 5.7). The pattern was similar for both the sites. In agriculture sector, about 50% of the total household income came from large cardamom alone. However, it may be argued that the household income alone, without taking cognizance of the number of employment days, fails to truly reflect the quality of different livelihood options. Thus, the foregoing discussions revealed that an all round socio-economic

development has taken place in both the sites leading from one sector to another and so on.

The average annual income of all the stakeholders in Yuksam-Dzongri-Goechha La corridor and Khecheopalri lake was Rs 25994 (US\$634) and Rs 14924 (US\$ 364) (average of one year worked out on the basis of constant prices prevalent in the year). The tourism sector in Yuksam area contributed maximum with its share of 70%, whereas the service sector accounted only 18% and rest was the contribution from farm activities. Although the income of pack animal operator and teashop owners decreased due to low domestic visitation number in 1998, but it continued to dominate the hotel/lodge and porters whose income increased by 52% and 6% respectively. Whereas Khecheopalri lake area is concerned the maximum revenue (54%) was generated through farm activities and only 30% come from tourism sector and rest from other sources. It is often said that the economic gains from trekking tourism are more evenly and quickly distributed throughout a regional economy than other type of tourism. This is proved by the fact that much of the gains derived from accommodation and portorage stay within the local community.

### **5.3.2 Quality of life**

It is clearly shown that the quality of life enjoyed by households in the hotel/lodges is far superior to that enjoyed by their counterparts. For

example, per capita expenditure on superior grains, fruits and vegetables, clothing and so on are much better in hotel/lodge owning families (Table 5.5 & 5.8). Per capita expenditure on education is also high in hotel/lodge owners than other stakeholders. Increase in the level of education over a period of time is also an important and qualitative indicator of the economic development. Most of the families who owned hotel/lodges have sent their children to Gangtok, Darjeeling, and other cities of India for better education. Despite the fact that people in tourism involved are economically much better off, their traditions and culture, such as dress, marriage, food habits, and so on, are still intact. This is in contrast to other transformed areas, e.g., Himachal Pradesh, where economic prosperity has dealt a severe blow to these values (Sharma 1996).

The food habits of the people at both the sites have showed some changes during 1997 and 1998. Though the farming system continues to be dominated by maize and potatoes, maize is no longer the staple diet of the people. Practically all households have switched over to rice, though the rice eaten by them is of poor quality. The factors which led to this change are due to an increase in both off-farm and on-farm employment opportunities. While more off-farm job became available in tourism sector, the on-farm employment opportunities received a boost with the spread of the cultivation of large cardamom and vegetable cultivation,

this has led to an increase in the incomes and changes the expenditure patterns.

### **5.3.3 Consumption pattern**

The change in economic structure that took place due to tourism profoundly altered the consumption patterns of all the stakeholders at both the sites. The changes, which took place in food consumption, are another indicator of economic development in the area. The dietary changes in Yuksam-Dzongri-Goechha La and Khecheopalri lake area during 1997 to 1998 have received some notice. It is very difficult to measure the changes in consumption of diet over time or over space and relate it to economic development. Human beings eat an astonishing variety of foods. One way of making this complexity more easily understood is to group foods into classes, such as cereals or dairy products, and measure their relative importance by their caloric content. Even so, classifying the stakeholder wise diets of over more than 200 households caused difficulties. There would thus seem to be an obvious relationship between diet and economic development. The dietary pattern of a mountain people is different from that of the general population, as consumption of a variety of roots and tubers, green leafy vegetables and livestock products are higher in their diet. Fruits and vegetables have a very low caloric and protein content per unit weight, and could not play the role of a staple food. Pulses provide a good source of protein and have

a high caloric content. They are found in nearly all traditional diets as a complement.

A change in consumption pattern and its relationship to change in income structure is not properly analyzed earlier. However, evidence suggests that the consumption pattern increase in the early stages of economic growth (FAO 1958). An increase in incomes leads to different patterns of consumption at different stages of economic growth. In the study area before 1990, majority of the population was very poor, and most of the limited incomes had to be spent upon rice and potatoes, the cheapest sources of calories. Hence any increase in incomes led not only to the purchase of more expensive foods to add diversity to a monotonous diet but also to an increase in the consumption of the meat. The total food caloric supply in study sites increased from 1878 kcal to 1881 kcal in tourism involved and 1764 to 1827 kcal in non-tourism involved families in Yuksam area and 1822 to 1987 kcal in tourism involved and 1593 to 1787 kcal in non-tourism involved families in Khecheopalri lake area during 1997 to 1998. This showed 0.16 % increase in tourism involved and 3.51% in non-tourism involved families in Yuksam area, and 9.05% in tourism involved and 12.18% non-tourism involved families in Khecheopalri lake area. Variation in caloric intake by different stakeholders is presented in Fig. 5.2. A minor decrease in caloric intake was recorded in pack animal operator and faire price shop stakeholders

due to decrease in domestic visitors and HMI trainees number in the Yuksam-Dzongri-Goechha La corridor. According to estimates, meat contributed 127 kcal and 87 kcal (6.76% to 4.93%) to the average daily per capita calories supply in 1997 in tourism and non-tourism based households at Yukasam. Cereals such as rice or wheat, on the other hand, contributed 1112 kcal and 1123 kcal (59% and 64%). Milk and milk products provided 163 kcal and 128 kcal per person per day (Table 5.9). All this has changed in tourism and non-tourism involved families at both the sites. The per capita consumption of meat has increased from 6.76% to 7.28% in tourism involved families during 1997-98. The per capita supply of pulses has decreased in tourism involved families in Yuksam site, while milk and milk product has increased. Vegetables and fruits, for instance, now contributed 4% to the average calorie supply. Tourism-based affluence has brought with it increased economic differentiation in wealth at both the sites and the household levels. For one decade villages have differed sharply not only in the percentage of households with earnings from trekking and mountaineering but also in the proportion of households with income from the services and business. With increased affluence the area's average diet will change further, becoming similar to that of other developed Asian countries in future. Food preference at both the sites are changing rapidly. Today, people not only eat much more meat than earlier, but there is also a trend towards a more diverse diet.

To examine the trends in different stakeholders, calories derived from different sources are plotted against income per capita per month (Fig. 5.3). It is clear from the Fig. 5.3 that the economic growth has led to increased consumption pattern. Increases in income promoted consumers to purchase more of the expensive foods such as sugar, alcoholic beverages, oils, fruit and vegetables, meats, fish and dairy products.

Regressing the calorie intake against income yields a positive correlation with as much as 84% to 92% being influenced by income ( $r^2 = 0.837$  and  $r^2 = 0.919$ ) (Fig. 5.4), suggesting a moderately close relationship between the calories and income per capita. Results showed that economic development leads to changes in food consumption as income grows. With an increase in income, total caloric intake and the consumption of other foods have increased.

#### **5.3.4 Household assets**

The asset's inventory of sample households of different stakeholders in terms of residential building, cattlesheds, electronic goods and utensils are another indicator of economic development. The amount of assets per stakeholder was more in Yuksam area than in the Khecheoplari area because visitors stay in Yuksam area is longer and they spent more money. In the composition and relative importance of different assets at both the areas, residential building accounted more. The most important difference is, however, in the percentage of non-farm

assets such as television, vehicles and other durable household goods. Stakeholder wise major changes was observed in porters and hotel/lodge owner families due to increase in wage rate and more days and times in trekking.

#### **5.4 Conclusion**

Growth of visitors has been responsible for significant changes in employment and income generation, which lead to improve socio-economic condition of the local people and overall national and state GNP. In economically depressed area, the employment and income provided by tourism may help to check out-migration.

Agriculture is still the main occupation of the villagers at both the sites. Crop yield is very low and people purchased food from market to meet out the daily demand. Now the people of Yuksam and Khecheopalri have reoriented their local economy around tourism. In 1997, about 46% and 7% of the households had income from this source. Since then, involvement in tourism related activities have risen to 69% and 22% in 1998 at both the sites.

Economic development leads to change in food consumption pattern as income grows. With an increase in income, total caloric intake, and the consumption of other food increase. When a threshold income growth per capita is reached, further increases in income are devoted to other foods such as animal foods, fruits and vegetable, and sugar.

Table 5.1. Age-sex composition (%) at the study sites in 1998

Age-Group	Yuksam-Dzongri-Goecha La trekking corridor			Khecheopalri Lake		
	Male	Female	Total	Male	Female	Total
0 – 9	9.60	9.47	19.08	13.12	11.32	24.43
10 – 19	9.10	8.78	17.87	10.18	8.82	19.03
20 – 29	8.84	8.10	16.92	8.82	7.01	15.83
30 – 39	8.39	8.14	16.53	8.83	6.33	15.15
40 – 49	6.74	6.80	13.54	7.01	5.88	12.89
50 – 59	4.89	4.53	9.44	3.62	4.53	8.14
Above 60	3.12	3.50	6.62	1.81	2.72	4.53
Total	50.68	49.32	100	53.39	46.61	100

Table 5.2. Per cent literacy rate of stakeholders at the study sites, 1998

Stakeholders	Sites			
	Yuksam-Dzongri-Goechha La trekking corridor		Khecheopalri Lake	
	Male	Female	Male	Female
<b>Tourism involved</b>				
Hotel/Lodges	61.29	38.71	75.00	25.00
Pack-animal operator	57.41	42.59	-	-
Poterage	57.15	42.85	-	-
Fair-price Shop	62.50	37.50	66.66	33.34
Tea Stall	66.66	33.34	45.45	54.55
<b>Non-Tourism</b>	56.00	44.00	56.70	43.30
<b>Total</b>	53.41	46.59	56.75	43.25

Table 5.3. Daily average per capita food intake at the study sites, 1998

Sites	Paddy	Maize	Wheat	Millet	Barley	Potato/other vegetables	Total	Other foods	Grand Total
<b>Yuksam-Dzongri-Goechha La trekking corridor</b>									
Cropped Area (ha) <sup>1</sup>	15.75	98.135	64.38	28.37	7.25	21.44	235.325	-	-
Average Yield (tonne/ha)	0.50	0.98	0.86	0.37	0.198	0.74	-	-	-
Gross Production (tonne)	7.875	96.172	55.366	10.49	1.43	15.86	187.193	-	-
Less (Crop residuals/other) <sup>2</sup>	0.787	9.617	5.536	1.04	0.143	1.586	18.709	-	-
Net Balance (tonne)	7.088	86.555	49.830	9.450	1.287	14.274	168.484	-	-
Consumable Proportion (%) <sup>3</sup>	85	80	75	90	90	95	-	-	-
Consumable proportion (tonne)	5.902	67.3	35.984	8.320	1.14	13.48	132.136	-	-
Energy Supplied (kJ/g)	14.6	14.4	13.7	13.7	14.0	3.38	-	-	-
Total Energy (J)	86.1692	969.26	492.98	113.98	15.96	45.56	1723.90	-	-
Energy/person/day (MJ) <sup>4</sup>	-	-	-	-	-	-	1.09	0.66	1.75
<b>Khecheopalri Lake</b>									
Cropped Area (ha) <sup>1</sup>	-	47.36	10.85	3.04	1.25	5.51	68.010	-	-
Average Yield (tonne/ha)	-	0.98	0.86	0.37	0.198	0.74	-	-	-
Gross Production (tonne)	-	46.4128	9.331	1.1248	0.2475	4.0774	61.1935	-	-
Less (Crop residuals/other) <sup>2</sup>	-	4.6412	0.9331	0.1124	0.0247	0.4077	6.1191	-	-
Net Balance (tonne)	-	41.4716	8.3979	1.0112	0.228	3.6697	54.7784	-	-
Consumable Proportion (%) <sup>3</sup>	-	95	85	90	85	95	-	-	-
Consumable proportion (tonne)	-	39.450	6.9982	0.8992	0.1852	3.4654	50.998	-	-
Energy Supplied (kJ/g)	-	14.4	13.7	13.7	14	3.38	-	-	-
Total Energy (J)	-	568.08	95.875	12.3190	2.5928	11.7130	690.5798	-	-
Energy/person/day (MJ) <sup>4</sup>	-	-	-	-	-	-	1.56	0.66	2.22

<sup>1</sup>= Primary Survey, <sup>2</sup> = Rents, Storage and residual losses together calculated at 10 %, <sup>3</sup>= Consumable proportion is calculated by asking the local community the amount of consumption from the total production, <sup>4</sup>= Other foods include mainly sugar, meat, fruit, vegetable oil, milk and milk products etc., and are calculated at c. 15 (%) (Mahat, *et al.* 1987)

Table 5.4. Stakeholder wise ownership of livestock, 1998

Stakeholder	Yuksam-Dzongri-Goechha La trekking corridor		Khecheopalri Lake	
	Number	(%)	Number	(%)
<b>Tourism involved</b>				
Poterage	289	18.56	2	0.79
Pack-animal operator	302	19.40	-	-
Hotel/Lodge	38	2.44	-	-
Fair-price Shop	55	3.53	8	3.16
Tea Stall	7	0.45	-	-
<b>Non-tourism</b>	866	55.62	243	96.05
<b>Total</b>	1557	100	253	100

Table 5.5. Income (Rs) from various sources and percent variation during 1997 and 1998 among stakeholders in the Yuksam-Dzongri-Goechha La trekking corridor

Parameters	Stakeholders											
	S1		S2		S3		S4		S5		NS	
	1997	1998	1997	1998	1997	1998	1997	1998	1997	1998	1997	1998
<b>Tourism</b>												
Mean	57375	87350	30555	27264	7035	7487	8281	7503	5717	5472	-	-
Median	30500	29750	29000	2667	6995	8097	7250	5833	4500	4500	-	-
Std.Dev.	83922	174518	8504	7148	2448	2502	3702	4703	4559	4436	-	-
Sum	459000	698800	825000	736120	773825	823626	132500	120050	62890	60195	-	-
% of Variation	52.24		-10.77		6.43		-9.39		-4.28		-	
<b>Agriculture</b>												
Mean	8400	9626	7850	8729	5777	5974	7937	8206	-	-	9544	9950
Median	8000	9980	8500	8571	5800	6457	7000	6925	-	-	7500	8754
Std.Dev.	8253	8478	5299	4144	3006	1993	4161	4478	-	-	5667	5666
Sum	58800	67380	211950	235678	618140	657189	63500	65650	-	-	906690	945295
% of Variation	14.59		11.19		6.31		3.38		-		4.25	
<b>Service</b>												
Mean	109000	115750	7000	8783	-	-	30000	21253	-	-	24665	25196
Median	67500	77250	9000	10500	-	-	39000	21854	-	-	24000	24000
Std.Dev.	113140	113077	6245	8063	-	-	20199	8661	-	-	14260	14499
Sum	436000	463000	21000	26350	-	-	120000	138000	-	-	641300	655100
% of Variation	6.19		25.47		-		15.00		-		2.15	
<b>Others</b>												
Mean	22187	25044	4644	4111	1799	1760	19512	21253	7483	7745	7018	7595
Median	17500	17500	3700	3600	1670	1905	19750	21854	6400	6500	4800	4902
Std.Dev.	20329	111240	4779	2463	955	605	8298	8661	3038	3407	9223	11706
Sum	177500	200350	116100	110990	165500	193650	312200	340043	82310	85197	501770	564986
% of Variation	12.87		-4.40		17		8.91		3.50		1259	
<b>Total</b>												
Mean	141412	178691	41056	41086	14164	14969	39387	41484	13200	13217	20498	21296
Median	104250	112240	42000	40360	15575	16193	32500	32775	10000	10392	14825	15650
Std.Dev.	124779	190438	12158	10920	4886	4998	23943	27370	7196	7422	15991	17694
Sum	1131300	1429530	1108514	1109328	1558009	1646553	630200	663743	145200	145392	2049760	2129600
% of Variation	26.36		0.07		5.68		-4.19		0.13		3.89	

S1=Hotel/Lodges; S2=Pack-animal Operator; S3=Porters; S4=Fair Price Shop; S5=Tea Stall; NS=Non-tourism

Table 5.6. Expenditure (Rs) in various items and percent variation during 1997 and 1998 among stakeholders in Yuksam-Dzongri-Goecha La Trekking Corridor

Parameters	Stakeholders											
	S1		S2		S3		S4		S5		NS	
	1997	1998	1997	1998	1997	1998	1997	1998	1997	1998	1997	1998
<b>Tourism related</b>												
Mean	15354	15606	7250	6995	405	428	12559	14012	5700	5836	-	-
Median	10000	8925	7809	7000	445	463	12500	13575	4000	4000	-	-
Std.Dev.	19225	22107	2332	1981	140	143	5693	6795	3635	3925	-	-
Sum	122833	124850	210855	187509	44514	47044	200950	224191	62700	64200	-	-
% of Variation	1.64		-11.07		5.68		11.56		2.39		-	
<b>Farming</b>												
Mean	2800	3208	2053	2281	683	1025	2712	3040	-	-	3795	4252
Median	2667	3327	1889	2131	660	1029	3100	3500	-	-	2945	3130
Std.Dev.	2751	2826	1458	1157	237	204	1130	1246	-	-	2559	3515
Sum	19600	22460	55418	57432	56730	85092	21700	24320	-	-	379512	425160
% of Variation	14.59		3.63		49.99		12.07		-		12.02	
<b>Food</b>												
Mean	18850	19322	14747	13765	6641	6804	10299	10807	4004	3658	9715	10629
Median	15000	15925	14567	13402	7102	7360	10758	11452	3000	3000	7412	7825
Std.Dev.	7549	7695	3748	3392	2114	2272	3535	3526	1691	1943	6451	8789
Sum	150800	154580	398183	361859	730531	748433	164783	172915	44050	40240	971530	1062900
% of Variation	2.50		-9.12		2.45		4.93		-8.64		9.40	
<b>Non-food</b>												
Mean	3900	4384	4740	4419	1894	1871	3595	3906	832	862	2960	3189
Median	3750	4440	4330	4500	2000	2024	3711	4097	550	535	2224	2347
Std.Dev.	1442	1702	1127	1118	736	625	1256	1330	514	560	2034	2637
Sum	31200	35070	127986	119329	208322	205819	57521	62495	9150	9483	296009	318870
% of Variation	12.40		-6.76		-1.20		8.64		3.63		7.72	
<b>Mislenneous</b>												
Mean	3625	4235	2149	2034	567	599	1947	2146	591	591	1742	638
Median	3500	3550	2150	2065	623	648	1975	2125	600	600	1186	470
Std.Dev.	2048	2637	539	525	195	200	606	629	102	102	1634	527
Sum	29000	33880	58019	54928	62370	65862	31150	34332	6500	6500	174205	63774
% of Variation	16.82		-5.32		5.59		10.21		-		-63.39	
<b>Total</b>												
Mean	44179	46355	31498	29896	10022	10475	29756	32391	11127	10947	18212	18707
Median	41750	44353	31567	28931	10688	11467	30519	33246	8100	8135	13787	13772
Std.Dev.	25164	28700	8050	7429	3449	3680	10472	11555	5516	5979	12235	15469
Sum	353433	370840	850461	781151	1102468	1152251	476105	518253	122400	120423	1821256	1870704
% of Variation	4.92		-8.14		4.51		8.85		-1.61		2.71	

S1=Hotel/Lodges; S2=Pack-animal Operator; S3=Porters; S4=Fair Price Shop; S5=Tea Stall; NS=Non-tourism

Table 5.7. Income (Rs) from various sources and percent variation during 1997 and 1998 among stakeholders in the Khecheopalri Lake

Parameters	Stakeholders											
	S1		S2		S3		S4		S5		NS	
	1997	1998	1997	1998	1997	1998	1997	1998	1997	1998	1997	1998
<b>Tourism</b>												
Mean	-	-	-	-	-	-	17000	20325	7496	10080	-	-
Median	-	-	-	-	-	-	17000	20325	5000	5550	-	-
Std.Dev.	-	-	-	-	-	-	2121	6116	6218	10046	-	-
Sum	55000	86650	-	-	-	-	34000	40650	37480	50400	-	-
% of Variation	57.54		-		-		19.55		34.47		-	
<b>Agriculture</b>												
Mean	-	-	-	-	-	-	9775	10150	3050	3050	9205	9319
Median	-	-	-	-	-	-	9775	10150	3050	3050	8800	8850
Std.Dev.	-	-	-	-	-	-	2510	2121	71	71	4340	4083
Sum	6500	7650	-	-	-	-	19550	20300	6100	6100	543085	549825
% of Variation	17.69		-		-		3.83		-		1.24	
<b>Service</b>												
Mean	-	-	-	-	-	-	-	-	-	-	9183	11000
Median	-	-	-	-	-	-	-	-	-	-	12000	15000
Std.Dev.	-	-	-	-	-	-	-	-	-	-	8149	9644
Sum	36000	50400	-	-	-	-	36000	42000	-	-	27500	33000
% of Variation	40		-		-		16.66		-		20	
<b>Others</b>												
Mean	-	-	-	-	-	-	925	2705	1925	2190	4864	4816
Median	-	-	-	-	-	-	925	2705	1750	2105	3725	4150
Std.Dev.	-	-	-	-	-	-	813	3330	789	606	3487	2934
Sum	1500	4300	-	-	-	-	1850	5410	7700	8760	163885	166185
% of Variation	138.88		-		-		192.43		13.76		1.40	
<b>Total</b>												
Mean	-	-	-	-	-	-	47300	55930	10256	13052	11477	11703
Median	-	-	-	-	-	-	47300	55930	7500	10926	10500	10750
Std.Dev.	-	-	-	-	-	-	23617	29599	7084	8550	5587	5011
Sum	89400	149000	-	-	-	-	94600	111860	51280	65260	734520	749010
% of Variation	50.50		-		-		18.24		27.26		1.97	

S1=Hotel/Lodges; S2=Pack-animal Operator; S3=Porters; S4=Fair Price Shop; S5=Tea Stall; NS=Non-tourism

Table 5.8. Expenditure (Rs) in various items and percent variation during 1997 and 1998 among stakeholders in Khecheopalri Lake

Parameters	Stakeholders											
	S1		S2		S3		S4		S5		NS	
	1997	1998	1997	1998	1997	1998	1997	1998	1997	1998	1997	1998
<b>Tourism related</b>												
Mean	-	-	-	-	-	-	9175	11000	2630	4156	-	-
Median	-	-	-	-	-	-	9175	11000	1500	2650	-	-
Std.Dev.	-	-	-	-	-	-	3783	5657	2741	4859	-	-
Sum	25000	38580	-	-	-	-	18350	22000	13150	20780	-	-
% of Variation	54.32		-	-	-	-	19.89		58.02		-	-
<b>Farming</b>												
Mean	-	-	-	-	-	-	4325	5000	825	875	2850	2904
Median	-	-	-	-	-	-	4325	5000	825	875	2625	2687
Std.Dev.	-	-	-	-	-	-	1662	2121	35	106	1287	1196
Sum	2000	2250	-	-	-	-	8650	10000	1650	1750	182380	185891
% of Variation	12.50		-	-	-	-	1560		6.66		1.92	
<b>Food</b>												
Mean	-	-	-	-	-	-	15775	17030	4830	5140	5643	5757
Median	-	-	-	-	-	-	15775	17030	3750	4500	5250	5375
Std.Dev.	-	-	-	-	-	-	7036	6321	2885	3089	2299	2275
Sum	22000	25650	-	-	-	-	31550	34060	24150	25700	361160	368441
% of Variation	16.59		-	-	-	-	7.95		6.41		2.01	
<b>Non-food</b>												
Mean	-	-	-	-	-	-	5720	6250	1027	1255	1710	1743
Median	-	-	-	-	-	-	5720	6250	1050	1215	1575	1612
Std.Dev.	-	-	-	-	-	-	5487	5303	352	473	772	717
Sum	7500	8750	-	-	-	-	11440	12500	5135	6274	109428	111535
% of Variation	16.66		-	-	-	-	9.26		22.18		1.92	
<b>Mislenneous</b>												
Mean	-	-	-	-	-	-	3311	3375	718	730	798	813
Median	-	-	-	-	-	-	3311	3375	525	567	735	752
Std.Dev.	-	-	-	-	-	-	1653	1590	496	439	360	335
Sum	6500	6500	-	-	-	-	6622	6750	3590	3651	51066	52050
% of Variation	-		-	-	-	-	1.93		1.69		1.92	
<b>Total</b>												
Mean	-	-	-	-	-	-	38306	42655	9535	11411	11000	11217
Median	-	-	-	-	-	-	38306	42655	6700	7400	10185	10427
Std.Dev.	-	-	-	-	-	-	16297	16751	6620	8835	4707	4515
Sum	63000	81730	-	-	-	-	76612	85310	47674	57055	704034	717916
% of Variation	29.73		-	-	-	-	11.35		19.67		1.97	

S1=Hotel/Lodges; S2=Pack-animal Operator; S3=Porters; S4=Fair Price Shop; S5=Tea Stall; NS=Non-tourism

Table 5.9. Average daily food calorie supply at the study sites during 1997 and 1998

Food-items	Yuksam-Dzongri-Goechha La Corridor				Khecheopalri Lake			
	Kcal per person per day							
	Tourism		Non-Tourism		Tourism		Non-Tourism	
	1997	1998	1997	1998	1997	1998	1997	1998
Cereals	1112.16	1126.00	1123.20	1153.20	1108.20	1128.00	1118.40	1140.00
Pulses	64.28	57.72	63.32	65.60	63.41	78.72	32.80	32.80
Leafy Vegetables	41.40	43.40	47.00	50.00	40.00	46.66	42.00	48.00
Other Vegetables	34.20	33.80	28.00	25.00	29.66	34.33	15.00	20.00
Root and Tubers	26.22	33.06	28.50	33.25	32.61	41.48	98.40	158.76
Milk Products	162.73	158.47	127.80	127.80	224.83	253.23	71.00	92.30
Fat & Oils	210.60	210.90	180.00	198.00	147.00	195.00	90.00	135.00
Sugar & Jaggery	85.42	80.13	79.38	86.94	74.34	83.16	37.80	49.14
Meat	126.96	137.44	87.30	87.30	101.95	126.23	87.39	110.69
Grand Total	1877.97	1880.92	1764.50	1827.09	1822.00	1986.81	1592.79	1786.69

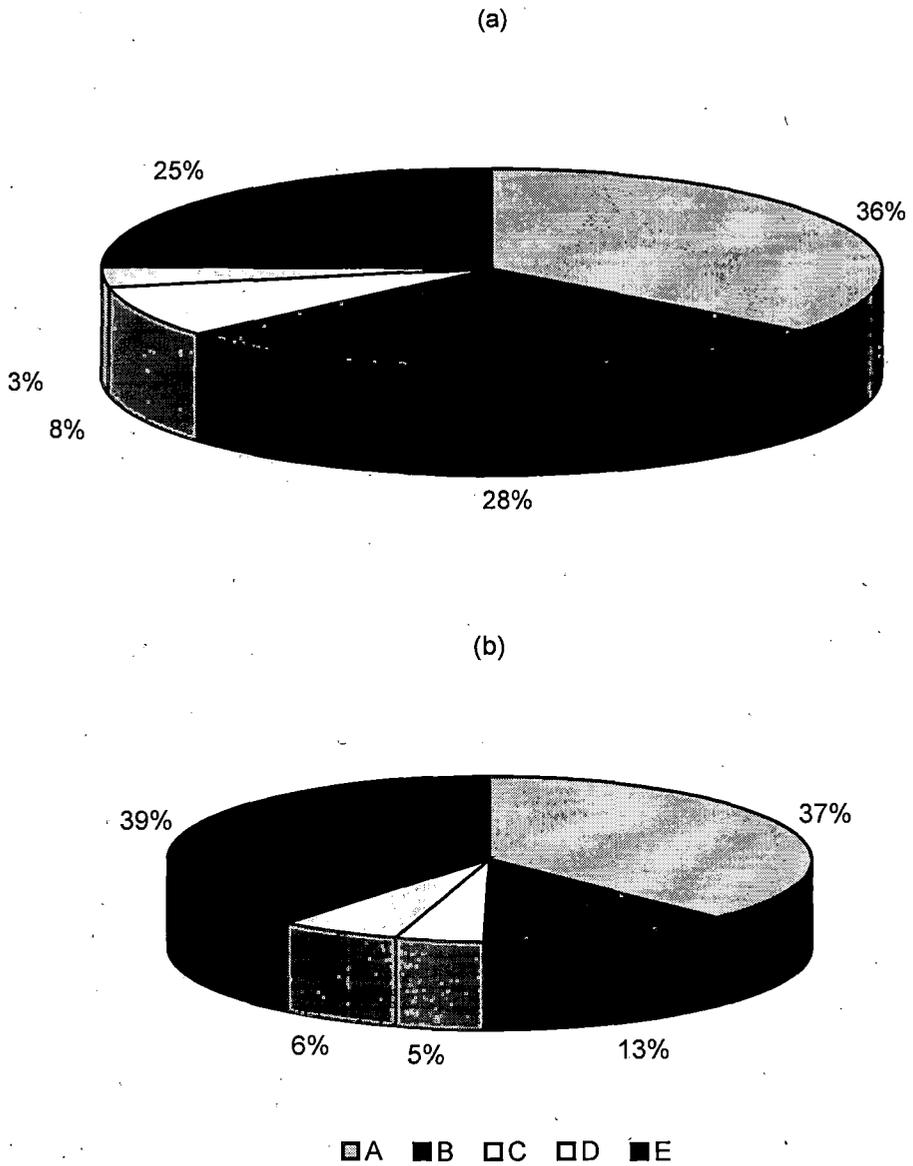


Fig. 5.1 Land utilization pattern of study area (a) Yuksam and (b) Khecheopalri villages, 1997

A-Net area shown; B-Fallow Land; C-Other cultivated land excluding fallow land; D-Area not available for cultivation; E-Forest

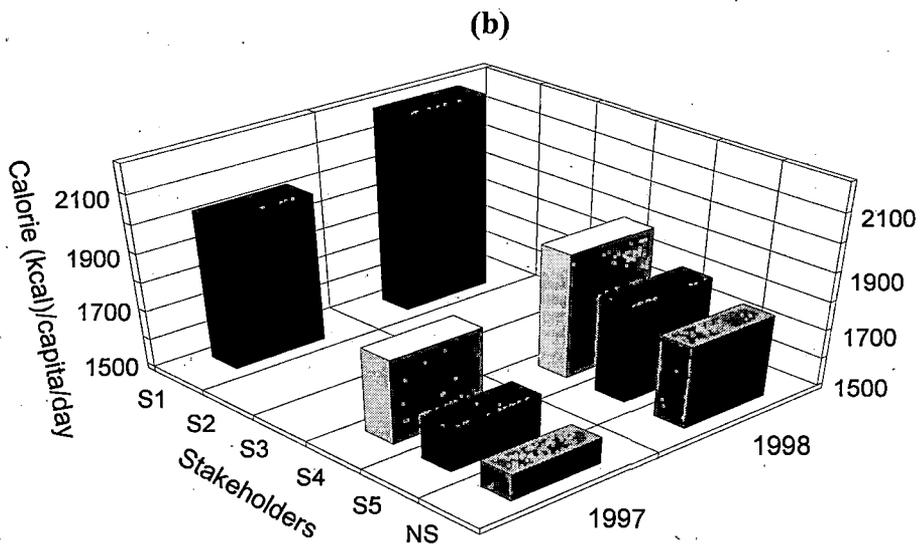
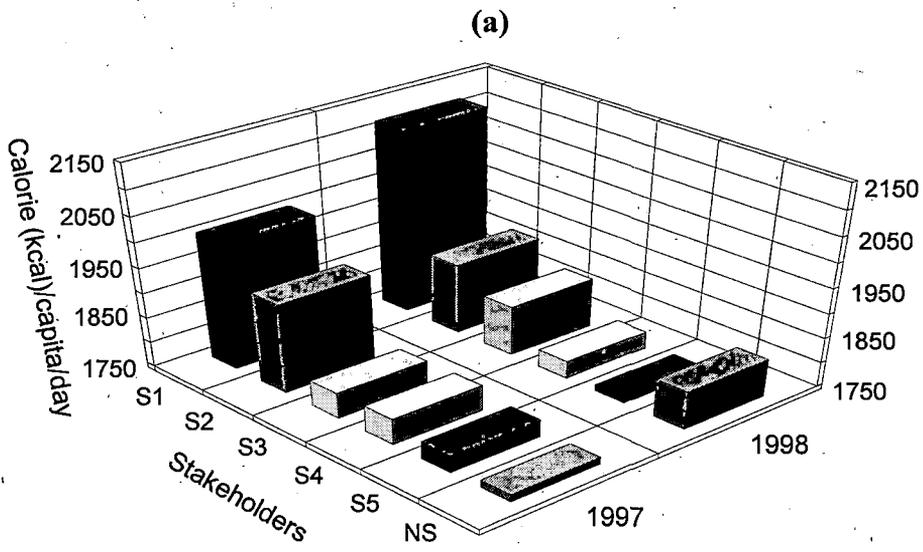


Fig. 5.2. Variation in calorie intake by different stakeholders in (a) Yuksam-Dzongri-Gochha La trekking corridor and (b) Khecheopalri Lake

S1=Hotel/Lodges; S2=Pack-animal Operator; S3=Porter; S4=Fair-price Shop; S5=Tea Stall and NS=Non-tourism families

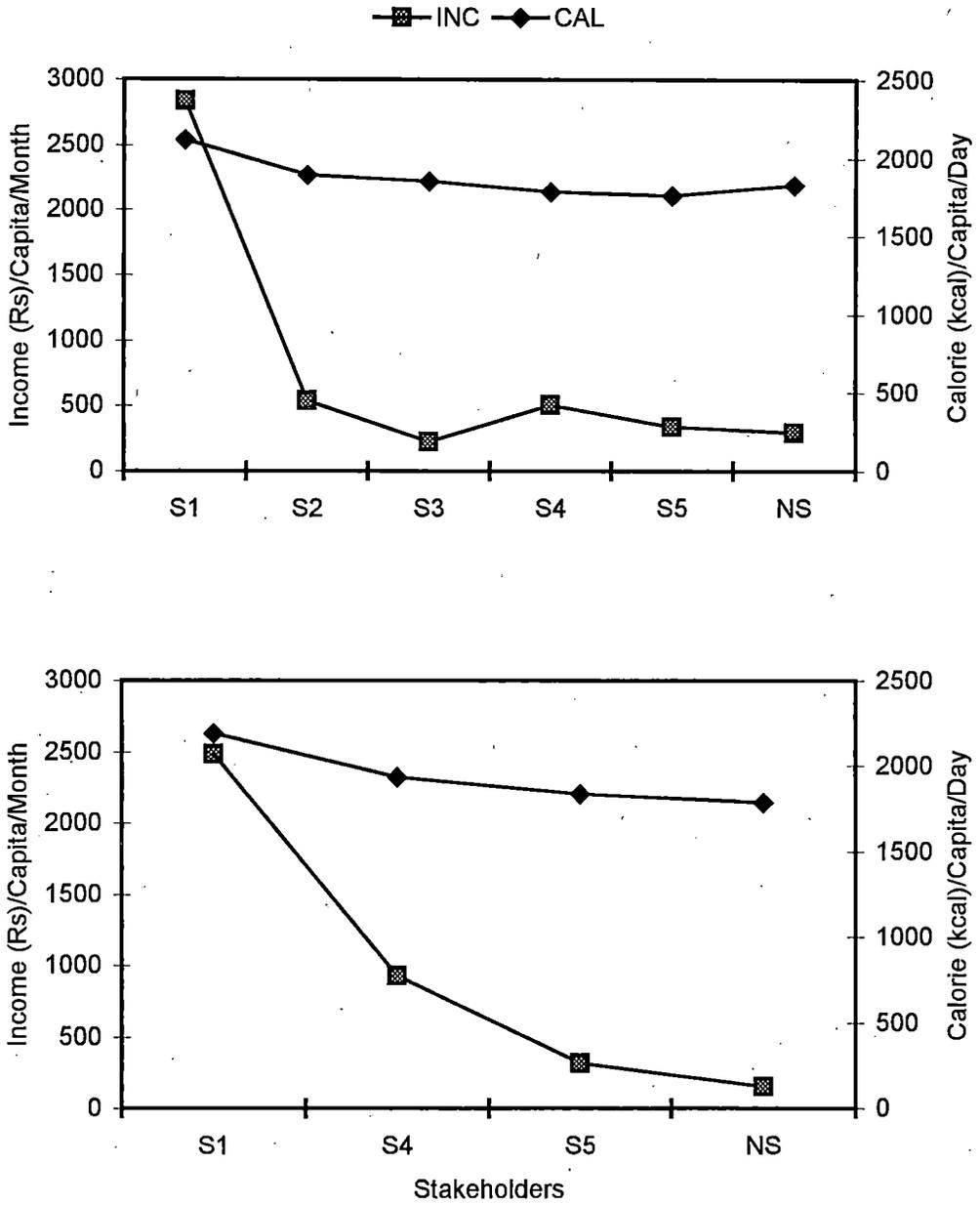


Fig. 5.3. Calories (kcal)/Capita/Day and income (Rs) level per Capita/Month in (a) Yuksam-Dzongri-Gochha La trekking corridor and (b) Khecheopalri Lake by stakeholders

S1=Hotel/Lodges; S2=Pack-animal Operators; S3=Porters; S4=Fair price shop; S5=Tea

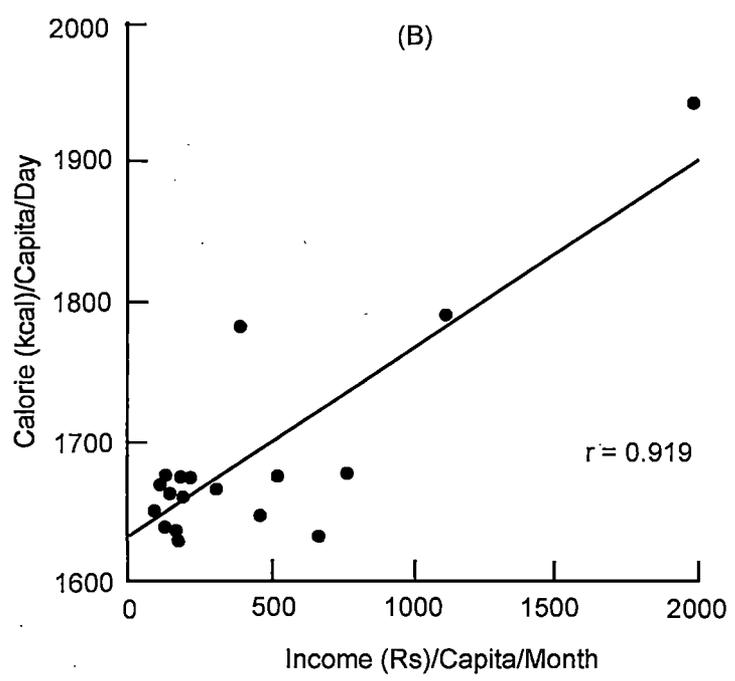
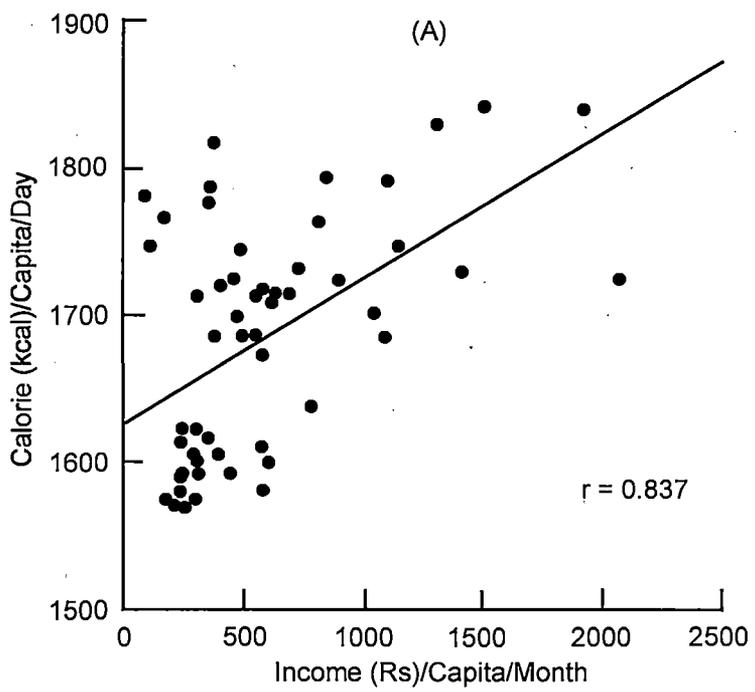


Fig. 5.4. Relationship between income per capita and absolute consumption in (A) Yuksam-Dzongri-Gochha La trekking corridor and (B) Khecheopalri Lake