

Chapter - V

Human Settlement Pattern

The human settlement and housing pattern largely depend on four factors the physical features, climate, seasonal variation and economic pursuits. The vast majority of the people rely mainly on local building materials for house construction. The climate has influenced both design and material used in human settlements.

Human settlements :

In Sikkim, villages to be neat and clean, as they are sparsely populated and are situated on the slope of the hills. Most of the houses are scattered homesteads except in the market places where the traders live in their own shops. But there is some exception in Lachen and Lachung valley of North Sikkim, where the houses are clustered but not adjoining. Dirt debris that remain in the villages situated on hill slopes are washed out by rains water. The roaming domestics pigs and dogs often act as scavengers eating away the food debris and human exereta. There is no provision of proper drainage system in most of the villages. Many houses do not have separate kitchen, bathroom, latrine and cattleshed.

Housing :

In Sikkim the houses have hardly any arrangements for light and air, although both are available in abundance. Poor lighting during night, absence of suitable exists for smoke and ill ventilated houses may be the cause of prevailing eye

troubles. Lack of fresh air during night, due to the absence of proper ventilation system, causes respiratory troubles. The traditional way of life, ignorance, poverty and the cold climate are responsible for such settlements. Most of houses in the rural Sikkim are made of mud, a combination of wood and bamboo with thatched roofs. They are either single or double storeyed having wooden floors. Each house has a courtyard of its own. The Bhutias generally live in double storeyed houses, the upper floor proving the kitchen, the bed room and a combined prayer and guest room. All except the economically backward Bhutias live upstairs. Cattle, pigs, poultry and agricultural products are kept down stairs.

The settlement pattern in North Sikkim is largely influenced by seasonal factors. Generally we find three types of settlement among the Bhutias of Lachen and Lachung. In Lachen, the houses are three to six metres high and twelve to twenty four metres long. These are built of upright strong pine-planks, the gaps are filled with yak-dung. There is only one window which is closed by a shutter. The roofs are made of wood or bark, held down by large stones, but now people have started using corrugated sheets. A typical Lepcha house consists of at least two moderately sized rooms, one of which is used as kitchen and living room and the second as ceremonial room where worships are performed. The whole structure is built on a raised platform about two metres high. It is entered by means of a ladder which usually takes the form of a roughly notched bamboo. The space beneath the house serves as a cattleshed.

In Dzongu, as the climate is extremely wet, there is a wide overhanging roof, which often projects as much as four and a half metres beyond the wall. It keeps the walls dry throughout the rainy season. The walls are made of bamboo lath plastered with mud and cowdung. The roofs are generally thatched. Recently the bamboo and mud-plastered walls and floors have been replaced by corrugated sheets. The new houses are pucca wooden structures. Toilet and Bathroom are kept outside the house. Each household owns some poultry which finds place in the house or near the cattleshed in a bamboo basket. The cattleshed lies beneath the living room in a unhygienic condition with cow-dung piling high.

The Nepalese on the other hand prefer to live downstairs with animals around and store their agricultural products upstairs. Most of the houses of busties are only huts with thatched and tinned or tiled roofs with not much of either light or ventilation. The courtyard and the ground floor in some houses remain dirty and unclean due to keeping of pigs, cattles, poultry and goats. Such conditions in the lower altitudes facilitate breedings of sand-flies, harbour mosquitoes and other insects which not only cause annoyance but also propogate diseases like malaris, kalazar etc.

Residential facilities available:

Environmental sanitation and housing are good indicators of health of the people. It directly affects the quality of life. Proper environmental sanitation and houseing are the requisite condition to facilitate the human development process. It incorporates the types of housing and availability of the facilities like drinking water, exereta, electricity, cattleshed, and sanitation etc. the following table depicts the surveyed results; regarding housing in four districts.

Table: 1¹

	<i>East</i>	<i>West</i>	<i>South</i>	<i>North</i>	<i>Sikkim</i>
Kutchha	128	88	83	24	323 (50.07)
Mixed	75	50	57	16	198 (30.7)
Pucca	52	30	22	20	124 (19.2)
Total	253	168	162	60	645 (100.00)

Source : Personal Survey

The survey results show that out of 645 households, 50.07 per cent household resides in kutchra houses made of local materials. 30.7 per cent resides in mixed houses which are built of local materials alongwith brick and tin and the last 19.2 per cent houses are pucca. The reasons behind such type of housing can be explained in the following manner, firstly the local materials like wood, bamboo etc. are found free of cost. This could be collected from the nearby forest; secondly the steep terrain and inaccessibility and lack of proper transportation facilities restricts the transformation of housing pattern; thirdly the traditional, monotonous and religious life-style of the people is a block towards transition fourthly the materials of the pucca houses are not only costly but also unaffordable among the most of the villagers due to their economic inelasticity.

Kitchen : In sikkim 92.0 per cent of houses in west district have separate kitchen, followed by houses in the East district with 70 per cent. In the North district the number of houses with separate kitchen is only 37.0 per cent, while in the South district the houses with separate kitchen amounted to 65 per cent². It is obvious that the West district is in a better condition in terms of separate kitchen. The nosy smoke and ill-ventilated kitchen causes a bad impact on the health of the women .

Bathroom and latrines : The health status of people largely depends on the proper bathroom and latrine facilities. In Sikkim, the condition is not upto the mark. The percentage of houses with separate bathroom and latrine are 23.3 per cent and 38.5 per cent respectively. The West district with 39.5 per cent of houses with separate bathroom and 51.0 per cent with separate latrines tops the list, followed by South and East district with 29.0 per cent with separate bathrooms, 45.0 per cent separate latrines. 26.2 per cent with separate bathroom and 45.2 per cent with separate latrines respectively. North district 89.1 per cent houses have no separate bathrooms and 81.4 per cent with no separate latrines³.

Cattle shed and Drainage system : In Sikkim 43.2 per cent of the houses in the study area responded with separate cattle-sheds. In regard to separate cattle shed it is the North district which has the highest percentage (65.2) and the South district has only 29.5 per cent of houses.

People are not aware of the fact that certain diseases may be caused by or carried to man through animals inside the house. These animals play a role in perpetuating an insanitary environment and certain infectious diseases are transmitted by animal sources of infection such as urine, faeces, wool, hair, saliva etc. Certain intestinal parasites like tapeworms and *Ascaris* complete their life-cycle in two stages.

Absence of efficient drainage system helps in proliferating bacterial diseases e.g. diarrhoea, dysentery etc. Flies breed in the dirty water which helps in spreading diseases. The people are not able to correlate the transmission of diseases with flies and insects.

Drinking water :

There is no scarcity of water in Sikkim. The source of water in the state is either surface water from rivers or ground water from springs. The water for drinking is not treated or filtered in anyway. It is directly led from its source either in galvanised or bamboo pipes to the reservoirs or taps. The problem of providing safe drinking water to receiving government attention. There is enough natural water in the form of springs and streams, but all the springs and streams are not in the vicinity of habitation and the supply from the springs and streams are seasonal. The availability of drinking water is much better in summer than in other seasons. The scattering nature of the household settlement and the steep terrain causes a great problem. While distance is one of the factors contributing to the difficulties of water supply for drinking purposes, even the quality of the available water is questionable. Laboratory tests revealed that the water, though generally free from bacterial infestation, has a high quantity of mica and certain types of impurities which have adverse effects on general health. As a matter of fact, the contamination of surface water with impurities like mica, iron, fluoride and iodine is the major contributory factor for diseases like dysentery, diarrhoeas and cholera, which are quite common.

Table - 2⁴

Districtwise Drinking water

<i>Source</i>	<i>District</i>			
	<i>East</i>	<i>West</i>	<i>South</i>	<i>North</i>
Tap	88.2	87.62	75.89	86.7
Stream	5.6	5.21	9.42	8.5
Springs/Pond	4.1	3.43	10.95	3.12
Others/Rivers	2.1	3.74	3.72	1.68
Sample (n)	225	168	162	60

Source : Personal survey

In most of the villages, the source of drinking water is common; it is fed by the nearby pool or stream through pipes. This saves the people the need to walk long distances to fetch water.

Sanitation : The physical environment of a population affects the population as a whole. Sanitation is one of the basic component of hygiene which has a strong cultural determination and key influence on people's health. In Sikkim the houses are generally extremely insanitary, people and animals living in the same house or compound. Except the large income group, there is no proper bathroom or latrine facility. Water is mainly drawn from springs and occasionally from rivers and not subjected to any purification before drinking. The most of the houses are dark and ill-ventilated and infested with cockroaches, leeches, mice and other rodents and insects like mosquitoes and houseflies. Only 9.82 per cent households in Sikkim responded with good sanitary condition, 42.3 per cent with medium sanitary condition and 48 per cent with poor sanitary conditions.

There is no provision of sewerage in most of the villages and refuse is thrown into lanes and backyards, which is washed into water sources by rains

exposing people to many types of diseases. The great problem is the disposal of the human waste, the people go about in the fields for defecation, thus polluting the soil indiscriminately which results in heavy infestation with helminthic parasites. In the absence of proper facilities, animal dung and urine further aggravated the insanitary conditions of the villages. Fly breeding is enormous and flies like *Musca*, Blue bottle, *sarcophaga* were seen almost everywhere. Improper disposal of night soil and human excreta are responsible for - (a) the contamination of soil or of ground or surface water, (b) the possibility of disease transmittance to man through the agency of insects or animals. In the absence of latrines, Sikkimese go to nearby fields to answer the call of nature. The habit of going outdoors for defecation is responsible i.e. for hookworm infestation

Table - 3⁵

Districtwise percentage of Families according to method used for Exereta Disposal

Method used	Districts			
	<i>East</i> (n=255)	<i>West</i> (n=168)	<i>South</i> (n=162)	<i>North</i> (n=60)
Open field	66.8	69.4	61.5	63.4
Latrine Borehole	25.3	23.56	27.5	29.92
Service Latrine	1.82	2.89	2.4	3.4
Flush latrine	1.7	0.9	5.8	1.72
Septic tank	4.38	3.25	2.8	4.56
Total	100.00	100.00	100.00	100.00

Source : Personal Survey

A large population in rural areas is still using open fields for defecation like anywhere else in rural India. Although there is a decline in number of people

using open fields from 81.6 per cent in 1979 to 66.8 per cent in the present survey. The number of people using borehole latrines has gone up from 11 per cent to 25.3 per cent. In districtwise comparison we observe that West district reveals the worst condition whereas the south district is in a better of condition. In case of borehole latrine the South district is ahead of all but the West district occupies the leading position in terms of service latrine; the North and East districts are in a better condition in terms of septic tank.

Shelter is regarded as the one of the vital basic need of human life. The quality of life largely is induced by the housing pattern and its material composition. Undoubtedly, the availability of the local materials play a significant role in the direction. The housing of a region depends on so many factors e.g. economic status of and economic potentiality of the area, Agro-climatic condition, socio-cultural practices, and the spread of modernisation. The national housing policy was declared on 1992 to provide a basic guideline to formulate a national housing policy to promote the living condition of the people. The policy is based on some principles. It directs that the state would provide facility to the people to secure affordable shelter. It would not work as a constructor of houses. It would assist people to provide adequate shelter and facilitate the flow of finance in housing appropriate raw materials and housing technique.

The material composition combination and number of rooms provide good information relating to the living status of the people. The main material composition are of local in nature. Woods are cost free and locally available in most parts of Sikkim. Not only wood but also stone is very common as a material of housing in Sikkim. Soil is another natural component of housing here. Except these bricks, iron-rod, tin and cement are used in housing too. The poor families construct their houses with the help of wood, soil, stone

Table - 4⁶

Major material composition for housing in Sikkim

<i>Wall</i>	<i>Roof</i>
(a) Wood, stones, soil and cowdung	Straw
(b) Wood, cement, rod (iron) stones and sand	Tin sheet
(c) Wood, soil and stone	Tin sheet
(d) Wood, stone and clay	Tin sheet
(e) Wood, stone and soil	Straw
(f) Wood, soil, stone and straw	Straw
(g) Stone, bricks, sand and cements, iron	Same material

Source : Personal Investigation

and straw mainly. In few cases the roofs are made of tin sheet. This tin sheet is given as the government aid to the rural poor. Most of the houses are made of mixed type materials.

Regional variation of climate and weather is very frequent in Sikkim. Due to this factor, the housing pattern also varies from lower to upper area. The people inhabiting the higher altitude usually lead a nomadic life, while those in the lower altitudes enjoy a more settled life. There are some variation in house types amongst the Nepalese, Lepchas and Bhutias, but the material used is the same e.g. stones, mud, bamboo, wood and straw. Normally straw is used as roofing. A typical Lepcha house or li is usually about 2 metres above the ground. These rectangular in shape with one or two rooms. Whereas a Bhutia house is called khim, is also rectangular and build on the stones. Most of houses are made of bamboo. Beside straw, bamboo is also used for constructing roof. Although modernisation has brought in changes in the design of houses ad its material composition. The introduction of bricks,

cement, iron rod, glass and galvanized iron sheets is a new phenomena in housing pattern is Sikkim. These materials are costly and rare.

Table - 5⁷

Percentage distribution of households living in different houses

	1981	1991	1981	1991	1981	1991 °
	<i>Pucca</i>		<i>Semi-pucca</i>		<i>Kutchha</i>	
Total	18.16	26.95	35.51	39.11	77.0	33.94
Rural	11.2	22.13	35.31	40.43	53.48	37.43
Urban	51.7	70.09	36.45	27.3	11.86	2.6

Source : Centre for Monitoring Indian Economy, Sept. 1992

The house listing operations of the 1991 census were conducted during April to September 1990. It classifies that there are three categories of houses namely pucca, semi-pucca and kutchha houses. It reveals that there is a great improvement in housing pattern from 1981 to 1991. The proportion of pucca houses increased from 18.16 per cent to 26.95 and the percentage of semi-pucca houses increased from 35.5 to 39.11. These achievements are significant in Sikkim and the process of transformation is satisfactory. It also depicts that the percentage of kutchha houses sharply declines from 77.0 to 33.94, indicates the upliftment process is very rapid and worthy to human development in Sikkim.

Rural-Urban variation is very prominents. Although the percentage of urban population is very low i.e. seven per cent. Yet the rate of transformation is nearly doubled in rural area in case of pucca houses but the process is slower in cases of semi-pucca and kutchha houses. In urban area, the percentage of kutchha houses decline to only 2.6 per cent and the pucca houses increase from 51.7 to 70.09 per cent. In case of semi-pucca, the proportion has increased significantly. It shows that there is a havoc change in this housing proportion in Sikkim during the last decade, implies a better quality and hygenic living condition of the people.

Electricity, safe water and toilet are the three basic amenities. The percentage distribution pattern of these three are shown in the Table - 6.

Table - 6⁸

Electricity, Safe Water & Toilet (Per Cent of Households)

	<i>Electr city</i>	<i>Safe Water</i>	<i>Toilet</i>	<i>Electri city & Safe</i>	<i>Toilet & Safe Water</i>	<i>Electr city & Toilet</i>	<i>All Three</i>	<i>None</i>
Total	60.66	73.05	34.97	49.71	30.75	32.41	28.84	15.35
Rural	57.12	70.84	30.20	45.57	25.9	27.41	23.82	16.9
Urban	92.37	92.85	77.69	86.78	74.15	77.14	73.72	1.4

Source : Centre for monitoring Indian Economy

It reveals that 60-66 per cent of houses have electricity, although there is a great variation in between rural and urban area. In urban area more than 90 per cent houses have electricity whereas in rural area 67 per cent houses have electricity during 1991. In Sikkim all the village are electrified i.e. 100 per cent electrification is possible but their spread among the rural households is more than 55 per cent. It implies that there is a gap between household connection and village connection of electricity. This disparity is due to poor housing condition of the households, low economic status and high cost of electricity installation.

In case of safe water, it covered 73.05 per cent people. Water-borne diseases are very frequent in Sikkim. So safe water is a prime condition for good health and the better quality of life. 70.84 per cent of the rural household have the access to safe water. This is possible due to integrated Rural Development Programme to alleviate the poor people from poverty. Urban area is in a better condition and it almost attend 92.85 per cent access to the safe water. Another component is toilet which serves as the sanitary status of the people. The sanitary condition is very poor in Sikkim. Only 34.97 per cent households have the access to toilet facilities.

This is due to high cost of latrine installation and the sparse and scattered settlement of the human beings in the villages. In rural area the access to toilet is only 30 per cent where as in urban area, it is far better than rural, it is 77.69 per cent. In rural area, instead of toilet, open land and terrain is used frequently and even also the river catchments are used for this purpose. This leads to pollution of overall water flow of Sikkim and the intensity of water borne diseases also increases. Consequently, a proper measure is to be taken to uplift the poor sanitary condition of the state. A large amount of fund is needed to change the present state. Social consciousness should be increased through mass mobilisation and spread of education. Electricity and drinking water is available at less than 50 per cent of the total households. It is 86.78 per cent in urban area and 45.57 per cent in rural area. Toilet and drinking which may be regarded as the sanitary napkin to the people of Sikkim is very poor. It is only 30.75 per cent i.e. 70 per cent of the total household remains out of the purview of sanitary safety. This reflects a poor hygienic condition of Sikkim. On the other hand 32.41 per cent households have th access to both electricity and toilet. It also depicts that only 28.84 per cent of the households have the access to all the three basic amenities at a time.

References

1. Personal survey
2. Personal investigation
3. Ibid
4. Ibid
5. Personal Survey
6. Personal Survey
7. Centre for Monitoring Indian Economy : Economic Intelligence service Basic statistics relating to Indian Economy vol-2, Sept. 1992 P. 276.
8. Centre for monitoring Indian Economy : Economic Intelligence Service, Basic statistics relating to Indian Economy. Vol.2. Sept-1992 P. 279

Food Habits and Consumption Pattern

Population growth and the quality of life are closely related with food supply, health, mortality and nutrition. There is a circular relationship among them. Population growth increases demand for basic needs of food and shelter. If the demand is met there may not be any effect on people's health and nutrition; otherwise it will affect health, nutrition and the mortality level of the community that the quality of life as a whole. Food supply depends on domestic production of food grains and import capacity. If there is no natural calamity, food production depends on land available for cultivation and facilities available to farmers. Rapid increase in population, thereby decreasing total size of arable land and the cumulative effect of the deterioration of economic conditions of farmers, poses a serious threat.

In Sikkim, the most important crop is maize. It is regarded as the major staple food for the majority of the people. Although rice is grown extensively in the valleys in terraced fields. The state is not self-sufficient in rice production; rice has to be imported from outside. Other important cereals are millet (kodo) and buckwheat (phapar). These are extensively used for the preparation of a fermented liquor called Rakshi. In isolated places, a little wheat and barley are grown. Black grams (kalodal), Moongdal and potatoes are also cultivated. In the valleys, oranges are grown in plenty. Besides, oranges, apples are grown in Lachen and Lachung. Bananas are produced abundantly in the lower valleys where tropical fruits like papayas, guavas, mangoes, jackfruit, pine apples also grow.

Cattle, pigs, goats and poultry are reared by almost all families. In the Lachen area cattle are reared but yaks are common. These animals supply not only milk and butter but also form the main source of proteins in the diet of the people. The yield of milk per cattle is very low.

Maize and rice are the chief cereals. The poorer classes take millets and buckwheats. Kalo-dal and Murwa ka Bhat also form important items of diet. All except the Brahmans take meat, but Nepali Hindus avoid pork. In fact, Pork is a more favourite dish with them than beef or mutton. A pig is the universal item of present in all ceremonies.

In Dzongu, part of North Sikkim, the subsistence of the Lepchas are supplemented by gathering, hunting and fishing from the nature. The people believe that as long as the forest is there, there can never be shortage of food. There is no quantitative or qualitative analysis of nature. The nutritive value of these plants and animals is not known. The major portion of their nutritional needs like protein are met by domesticated plants and animals.

The bamboo is one of the most important plants of the area. The tender shoots are eaten. Its seed is collected and eaten as grain. Besides bamboo shoots, a number of other forest products are used as used as food substitutes such as mushrooms, tubers, wild fruits. Wild honey is collected. Various edible plants are collected and steamed. There are different species of mushroom which grow at different times. All these are fried in mustard oil and eaten.

There are edible tubers also. The Kashing is a seasonal tuber. It is found between Nov., Dec. and January. It is bitter in taste and is used as medicinal plants. There are also some *Dioseorea* spp. Which are also used as emergency food. In higher altitudes corms are collected for preparing delicious food. A large mushroom, a favourite food of the Lachenpas, grows in the Lachen Valley.

The consumption pattern of Sikkim is highly influenced by its natural set up. There is a wide variation in consumption of cereals. The following table depicts the picture.

Table - 1 : Cereal Consumption Pattern (kilogram/day)¹

<i>Community</i>	<i>Rice</i>	<i>Maize</i>	<i>Millet</i>	<i>Wheat/Atta</i>	<i>Total</i>
Nepali	0.244	0.218	0.03	0.0135	0.5055
Bhutia	0.38	0.068	0.041	0.012	0.501
Lepcha	0.353	0.143	0.023	0.001	0.52
Total	0.323	0.132	0.05	0.0119	0.5169

n=645

Source : Personal Survey (Calculated from observed data)

A total sample of 645 was surveyed on the basis of household schedule. It is evident that the per capita consumption of foodgrains among the people of Sikkim is 0.5169 kg per day as against Indian average 0.50 kg. The consumption pattern and metabolic rate depends on so many factors. Anand and Sen proposed, "People's rates vary, as do their activity levels and the climatic condition in which they live. People in a mountainous areas need more energy from food and fuel because they lose more energy in the colder ambient temperature".² The climatic and geographical set up of Sikkim largely influences its consumption pattern. It depicts from the above table that rice occupies the major role in cereal consumption and maize is the second important food item and other cereals have a negligible role to play.

Consumption also varies on the basis of composition. It reveals that per capita rice consumption is highest among the Bhutia and lowest among the Nepalis, these are 0.38 kg/day and 0.274kg/day. But in case of maize Nepalis consume 0.218 kg/day, as highest and 0.68 kg/day among the Bhutias and these two cereals comprises nearly 90 to 95% of the total food consumption.³ Millet is also used as food as an inferior commodity by the poorer section of society and it is largely used to prepare local liquor. Wheat and Atta are rarely used by them.

The per capita consumption of food grains is more than Indian average. Because of the terrain and cold climate of the state, the people require a larger amount of calories for sustenance and physical work than in the other parts of India. The population composition is heterogeneous and there is a wide variation if we analyse the data minutely. Hence Sherpas are aggregated with the Nepali community. But there is clear variation between the consumption pattern of Sherpa and Nepalis (excluding Sherpa)

Table - 2 : Pulse Consumption Pers on/day⁴

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	<i>Kalo-dal</i>	<i>Masur dal/day</i>
Nepali	18.13 gm.	10.6 gm.
Bhutia	1.53 gm.	8.18 gm.
Lepcha	0.44 gm	2.2 gm.
Total	11.03 gm.	6.48 gm.

Source : Calculated from Personal Survey data.

Pulse is a good source of protein. It is a very essential component of daily meal. But the result shows that the consumption of pulse is not impressive. The survey people mainly consume the local kalo-dal and a little amount of other pulses from the market. Pulses are rarely used as food. It is not an essential item of their daily meal. The per capita consumption of kalo-dal (Black grams) 11.03 gm. and other pulse are 6.48 gm per day. It is interesting to note that Nepali people consumes 18.13 gm and 10.6 gm of kalo-dal and others respectively and this amount has no parity with other community. The per capita consumption is lowest among Lepchas; it is 0.44 gm and 2.2 gm per respectively. The Bhutias and the Lepchas are economical and socially so backward that they hardly think of pulse consumption. It is a rare occurrence.

Meat is another major source of protein installation. The main source of animal proteins are beef, buffalo, pork, chicken, mutton and fish. To meet the need of animal protein, domestic animals play an important role. Besides this, animals play an crucial role in their social, cultural and religious life also. Nearby all ceremonies are accompanied by animal sacrifice. Goats are raised for their meat and used in sacrifice. Pigs are raised for eating and sacrifice and the only domestic animals which are oftenly killed for food. Poultry birds are kept for meet and eggs.

Alongwith the socio-religious life, animals provide a source of food of nutritious value. The meat of bulls, cows, pigs and goats are taken time to time. The excess meat is preserved by drying in sunlight. There are a large variation in consumption pattern of meat in different community of people.

This difference arises due to religious, social, locational, natural and adoptional factors, Market price and availability are two major factors which influence the consumption pattern of meat. The price of pork is Rs. 34 per kilogram which is more than double the price of beef which is Rs. 14 to 15 per kilogram. Sikkim is a backward state and most of the people are traditional and poor. Consequently they prefer less priced beef than higher priced favoured pork dish.

Table - 3 : Meat and fish consumption pattern amount gm/person/day ⁵

<i>Community</i>	<i>Beef</i>	<i>Buffalo</i>	<i>Pork</i>	<i>Chicken</i>	<i>Mutton</i>	<i>Fish</i>	<i>Total</i>
Nepali exc- luding Limbu & Sherpa	0.00	8.6	5.07	2.20	3.09	2.11	21.07
Limbu	0.53	16.13	8.78	3.30	1.56	0.00	30.3
Sherpa	26.67	0.00	13.55	13.1	0.00	1.34	54.66
Bhutia	51.32	0.00	1.67	0.27	0.109	0.00	53.37
Lepcha	24.12	0.00	6.80	0.00	0.00	0.00	30.92
Total (Sikkimese)	21.35	5.12	6.16	3.62	1.13	0.57	37.95

Source : From Personal Survey data.

The table depicts that the consumption of beef is highest i.e. 21.35 gm/day/person among the Sikkimese, followed by buffalo 5.12 gm/day/person, pork 6.16 gm/day/person occupies the second important item, the 3.62 gm/day/person chicken and 1.13 gm/day/person mutton and very little amount of fish amounted to 0.57 gm/day/person. Being a Hindu and Buddha state, practically there is no religious restriction of taking meat excepting a few. The cold climatic condition of the state requires more calorific than that of the plain people. The meat of the beef is cheaper and available in most of places that is why the consumption is higher than others. On the other hand chicken and mutton are costly and beyond the capacity of the common people. So these are consumed in less amount and lastly land terrain rivers are not appropriate for pisciculture and ponds are very rare. So the availability of fish is rare excepting the production of local reservoirs.

If we minutely analyse the table, we find that the Nepali community excluding Sherpa and Limbus consumes no beef. The religious belief plays an

active role behind it. Most of Hindu people do not take beef due to religious restriction. They regard cow and Hindu as Devata. Whereas Buffalo is taken 8.6 gm/day/person, followed by pork 5.07 gm/day/person nextly mutton 3.09 gm/day/person which is more than the other community and lastly fish is consumed 2.11 gm/day/person. It is also evident that the amount of mutton and fish consumption are far ahead than others. Along with this poultry birds eggs are also taken occasionally.

The Sherpa and Bhutia community consume maximum amount of meat e.g. 54.66 gm/day/person and 53.37 gm/day/person which more than overall average consumption. The Lepcha and Limbu belong to the second strata. Consuming nearly 30 gm/day/person and the Nepali excluding the Limbus and Sherpas consume the least amount of animal proteins, amounting 21.07 gm/day/person. Another striking feature is that whereas the Sherpa, Bhutia and Lepcha do not consume buffalo but they take beef as a major source of animal protein. It is also clear that fish consumption is very negligible among the Sikkimese. Beef and pork are the major sources of animal protein among Sherpa, Bhutia and Lepcha whereas Buffalo, Pork and chicken are among Nepali excluding Sherpas and it is clear that pork is not a common but a delicious and attractive dish among all of the Sikkimese. The main dairy products are milk, whey, chese and curds. Milk and milk products generally come from own product. Animal husbandary is very frequent in Sikkim. Milk is regarded as the balanced diet. But the availability and consumption is not upto the mark. Mal nutrition is very common among the people of Sikkim. Mostly the children, women and old-aged person need milk and milk products. From above it is seen that the per capita consumption of milk, whey, chesse, ghee and curds are 106.65, 36.19, 6.30, 3.99 and 3.32 gm/day respectively. This amount is far below the regular need.

Table - 4 : Milk and other dairy products consumption.⁶

Community	Milk	Whey	Chesse	Ghee	Curds
Nepali excluding Limbus & Sherpas	107.28	158.9	4.41	3.64	3.67
Limbu	29.69	0.00	5.37	2.15	0.00
Sherpa	92.71	1.23	16.88	8.00	13.7
Bhutia	82.23	8.77	6.36	5.07	neg.
Lepcha	10.96	0.00	0.65	0.72	0.00
Total	106.65	63.19	6.30	3.99	3.32

Unit : gm/day/person

Source : Calculated from Personal Survey.

Besides this Nepali people consume more amount of milk than other community and the lowest amount is consumed by the Lepcha. Lepcha people are backward in social and economic strata that is why they consume a little amount of milk. Another by product of milk is whey it is mainly consumed by the Nepali group mostly and chesse is consumed 6.30 gm/day/person on an average. The Sherpa community consumes 16.88 gm/day/person regarded as highest amount. There is a long tradition custom among the Sikkimese to take little amount of ghee in their food item. Ghee is consumed 3.99 gm/day/person in average but the Sherpa, Bhutia community is leading over others. Curds is another important product although it is mostly consumed among Sherpa and Nepali.

Table - 5 : Oil-sugar-salt consumption ⁷

Table : Oil-sugar-salt consumption

	<i>Mustard oil</i>	<i>Sugar</i>	<i>Salt</i>	<i>Tea</i>
Nepali	10.18	10.92	16.52	3.76
Bhutia	9.32	0.76	40.23	6.14
Lepcha	8.99	3.07	35.08	6.02
Total	9.77 gm.	7.00 gm.	23.35 gm.	5.22 gm.

Unit : gm/day/person

Source : Calculated from Personal Survey data.

The per capita consumption of mustard oil, sugar salt and tea are 9.77 gm, 7gm, 23.35gm. 5.22 gm per day respectively. Medical prescribed requirement of fat and oil is 35 to 40 gm per person per day. But it is far below the required level and the need of fat and oil is more in this state. Sikkim is a cloudy and rainy state. There is also discrepancy of consumption among the different groups of the people. It is highest among the Nepalis and lowest among the Lepcha. The reason is not community composition but due to the socio-economic strata. Another item is sugar. It requires 30 to 40 gm per person per day. But it is evident from the table that it is consumed 7gm per person per day. The consumption of sugar is highest among Nepalis, i.e. 10.92 gm and lowest among Bhutias, i.e. 0.76 gm. In case salt the per capita consumption is 23.35 gm and it is highest among the Bhutias i.e. 40.23 gm and lowest among the Nepalis, it is 16.52 gm. The consumption of tea is 5.22 gm and it is highest among Bhutias and lowest among Nepalis.

Raio and squash are the main vegetables taken by the people of Sikkim. Besides these pumkin cabbage are also taken by them. The consumption of vegetables depends on seasonal variation and locally availability the per capita consumption of Raio, squash and pumkin is 62.22 gm, 138.02 gm and 54 gm

respectively. Beside this potato, Kerala, Bora, Bringle, Mula, Tomato and bean are taken by them. The per capita consumption of potato, kerala, tomato, mula, green bora and bean are 33.98 gm, 17.24, gm, 10.12 gm, 7.37 gm, 18.40 gm and 2.83 gm per day respectively. Although the consumption of vegetables is largely influenced by local availability and seasonal variation. It is obvious that they practically largely depends Raio, Squash, Pumkin and potato for their daily meal. Of them the food value of Raio, Squash and pumkin is very low. The Green vegetables which are regarded as the main source of vitamins and minerals are not regularly available.⁸

The consumption of chilly is 10.01 gm and ginger is 3.63 gm and onion is 10.9 gm per person per day. The consumption spices and Haldi is 1.15 gm and 0.56 gm respectively.⁹ From this we conclude that the consumption of spices is very low. Their cooking and consumption pattern also remain traditional. They frequently take half-boiled or dry food or meat.

Alcoholism and Tobacco Consumption

Alcoholism and smoking are very common in Sikkim. Alcoholism is very common in adult population and in both sexes in Sikkim. Consumption of alcohol starts quite early in life. Alcoholism and smoking has a direct impact on the mortality, ill health, lung cancer and lastly on the life expectancy of the people. It also reduces the workings efficiency.

Liquor consumption Rakshi : It is a very common and popular kind of alcohol in Sikkim. By fermenting millet and buckwheat it is prepared as an almost universal drink by the people of Sikkim. Earlier the Brahmans and the Gurungs did not indulge in drinking Rakshi and Tumba. Now-a-days some people do drink. The Rais prepare drinks at their home.

The Lepchas are very fond of liquor. They prepare two types of liquor depending on the concentration - Chi and Tumba. Tumba (local beer) is prepared from kodo by fermentation. Kodo is thoroughly washed with cold water a number of

times. After it has soaked in hot water for some time, a fermenting agent called pho is applied. Pho is extracted from local herb. Now-a-days Millet (kodo) with yeast is kept for four to five days till fermentation process is over. To prepare the drink, the fermented millet is kept in a bamboo containers and hot water is poured on the seeds. The freshly prepared hot drink is drunk with bamboo straw.

Chi - It is prepared by the process of distillation from wheat, maize, rice or even millet. The distillation is carried out in large copper vessels. This drink is stronger and more intoxicating than Tumba. The strength depends on the number of times the distillation has been done. White topioca tubers are also used for Chi preparation. They are cut into small pieces and placed in a bamboo container for 10-15 days in the stream to wash off the poison. Then these pieces are sun-dried and are boiled in water till cooked, then fermented with yeast and kept for two days, then they are transferred to big pots and used after 10-15 days. Sherpas and Bhutias are fond of chhang, a home-brewed beer of cereal grains, the Nepalese are fond of Rakshi, a home made distilled millet liquor.

Besides the traditional and home made liquor, they also purchase beer and liquors from the market. Sikkim is famous for its distillery industry. Foreign liquors are also consumed by them.

Next to alcohol the common addiction is tobacco among the people of Sikkim. The consumption of tobacco is equal among both the sexes.

Fuel consumption : Energy is the wheel of development in now-a-days. All the development process are directly or indirectly connected with energy. It is needed in all such major spheres of life which are directly connected with man's survival and progress e.g. in cooking, lighting, heating and etc.

Customarily fuel source is divided into two broad groups - (i) commercial sources coal, kerosene, electricity and other petroleum products and (ii) Non-commercial sources like firewood, agro-wastes, crop residue, dung cake etc.

Relative shares ¹⁰

Table - 6

Relative Shares

<i>Fuel</i>	<i>Terai Region(a)</i> <i>(W.B)</i>	<i>Sikkim (b)</i>	<i>NCAER(c)</i>
Firewood	57.74	91.78	64.3
Agro-wastes	28.7	5.57	17.5
Dung Cake & others	13.56	2.65	17.6
	100.00	100.00	100.00

Source : M.Phil. Dissertation, Personal Survey, NCAER.

From the above table it is clear that firewood with 91.78 relative share plays a dominant role in the fuel consumption pattern in Sikkim whereas the relative share is 57.74 per cent in the Terai region. The relative share shows that Firewood is the prime source of fuel in comparison to other like agro wastes. Large forest base and local availability of the major causes behind the consumption of firewood as the major source of fuel. Per capita consumption levels for non-commercial fuel :

Sample based non-commercial fuel consumption pattern is given here. In the Terai region (W.B.), the per capita consumption of non-commercial fuel is 1216.26 kwh in electric equivalent and 176.36 CR in coal equivalent. In the per capita per annum consumption of firewood varies from 1156 CR to 7524 coal replacement and the survey result shows a per capita per annum consumption of 1021.4 CR in coal equivalent which 5.8 times more than the Terai region. It varies from 5 to 10 times higher than the terai region. Per capita per day consumption of ranges from 3.21 kg to. 4.52 kg.

The harsh climatic condition and the regional variations in temperature is very prominent. The climate of North district largely varies from others. Again within the same district there is also diversity in climatic condition. The state is composed of mainly by four hills. The hilly state and cooler climatic conditions need more fuel and the 64% of the state is under forest and the fuels are collected without cost and easily are the another reasons.

Commercial fuels

The major source of commercial fuels are electricity, kerosene, coal, gas and other petrolium products. The relative shares in the terai region and the survey area of Sikkim.

Table - 7¹¹

Fuels	Terai(a)	Sikkim(b)
Kerosene	62.00	44.09
Coal	34.60	N.A
Electricity	2.02	50.35
L.P.Gas	1.45	5.01
Others	0	0.54
	100.00	100.00

Source : M. Phil. Dissertation by S.Debnath 1992 Personal Survey

There is a high constraint relating to the relative shares of kerosene and electricity. In Sikkim, officially all the villages are electrified, officially all the villages are electrified not all the households. Kerosene is selling at Rs. 2.85 per liter. But the consumption share is low, it is due to the availability of electricity & low purchasing power of the masses. Local coal is available at a few places. The free availability and easy cumbustion of firewood restricts the consumption of

coal. The share of electricity is 50.35 is very high as compared to Terai region of North Bengal. L.Petroleum Gas is confined in the urban areas and among high income groups.

Per capita consumption of commercial fuel ¹²

Table - 8

Consumption

Fuels	Sikkim	Terai
Kerosene	20.33 C.R.	26.22 C.R.
Coal	-	14.63 C.R.
Electricity	23.21 C.R.	0.85 C.R.
L.P.Gas	2.31 C.R.	0.62 C.R.
Others	0.25 C.R.	-
	46.10 C.R.	42.32 C.R.

Source : M.Phil Dissertation by S.Debnath,1992 & Personal Survey

The per capita commercial fuel consumption is 46.10 CR in the surveyed area of Sikkim. Electricity occupies the leading position in commercial fuel consumption, followed by kerosene. The consumption of commercial fuel does differ very much from the Terai. It is due to the traditional and natural life style of the inhabitant. Generally in this region days start with the sun and it ends with the sun too. The need of fuel for lighting or cooking is limited in nature. The illiteracy restricts more consumption of commercial fuels.

In the National Council for applied Economic Research survey it is observed that income elasticity of domestic energy consumption is very low and lies between 0.18 and 0.20. Saral Gopalan mentioned that there is certain inelasticity in demand for fuel irrespective of income. In the Terai region, the income elasticity of firewood calculated at 0.026 which is irresponsive.

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