Human Development in Sikkim : An Evaluation

Thesis Submitted for the Degree of Doctor of Philosophy in Arts (Economics) of the University of North Bengal.

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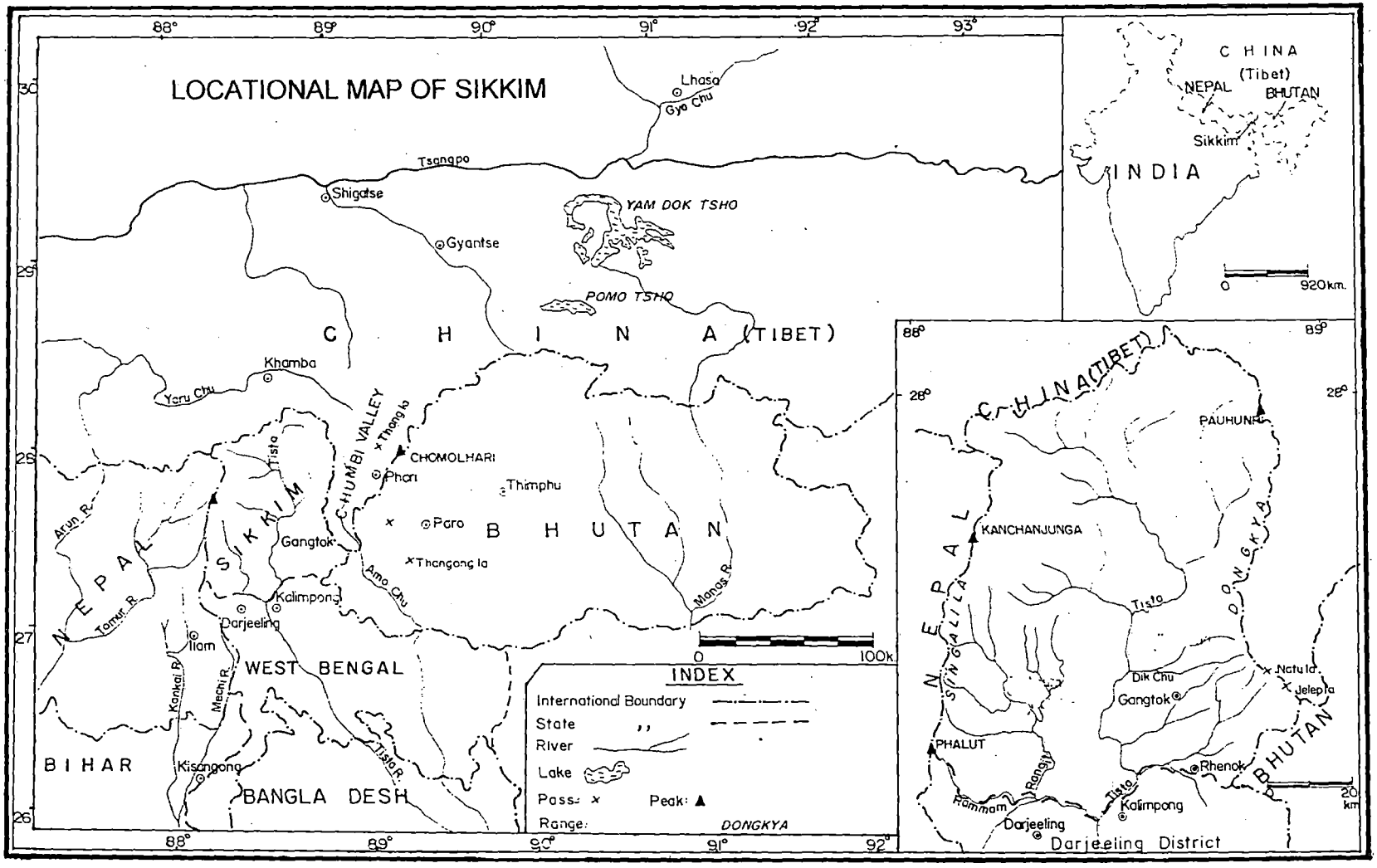
LOCATIONAL MAP OF SIKKIM
Lhasa
Gya Chu
Tsangpo
Shigatse
YAM DOK TSHO
Gyantse
POMO TSHO
C H I N A (TIBET)
Khamba
Yaru Chu
Tista
CHUMBI VALLEY
Thang la
CHOMOLHARI
Phari
Thimphu
Paro
B H U T A N
Thangong la
Arun R.
NEPAL
SIKKIM
Gangtok
Amo Chu
Manas R.
Tamur R.
Kalimpong
Darjeeling
Ilam
WEST BENGAL
Kankai R.
Mechi R.
Tista R.
BIHAR
Kisangong
BANGLA DESH
0 100k
INDEX
International Boundary
State ,,
River
Lake
Pass x Peak ▲
Range: DONGKYA
C H I N A
(Tibet)
NEPAL
BHUTAN
Sikkim
INDIA
0 920km.
C H I N A (TIBET)
PAUHUNRI
KANCHANJUNGA
SINGALILA
DONGKYA
Tista
Dik Chu
Gangtok
Natu la
Jelep la
PHALUT
Rammam
Rangit
Rhenok
Kalimpong
Darjeeling
Darjeeling District
20 km

Map: 1

Chapter - I

Introduction

Searching for New Development Strategies are the prime tasks before the modern economists and social scientists. There is a wide gulf between the growth and development and consequently Traditional per Capita Gross Domestic Production or Gross National Production which is considered to be as the most popular indicator of Economic Development has failed to explain the unequal distribution of the products of technical and economic progress. It is observed that the increase in per capita Gross Domestic Production or Gross National Income always may not raise the real standard of living of the masses. It is due to the distributional disparity, enormous increase in defence expenditure, increasing saving habit of the people & regional heterogeneity and the political establishment which are incapable to reach the fruits of development to the masses. Development is not merely an economic phenomenon, it is also closely associated with human endowments, social attitudes, political conditions and historical factors. So the Development perspective is revised which is passing through a constant "trial and error" method.

Development perspective is made more realistic when it stresses on the social, cultural, political, religious and psychological requirements with adequate emphasis on the qualitative upliftment of the human resource aiming at the need of long term benefit from it. Consequently, the concept of development has been revised to evolve a balanced development with a view to maintaining a harmony among man, nature and environment, equity and for future generations of mankind. In this context, the strategy of development of the hilly region does not differ much. But due to their geographical limitations cultural background and historical

identity, they are taking some practical problems, in implementing the developmental programmes.

To reach the fruits of development to every section of the society and to enhance the capabilities of the masses, the concept of Human Development was evolved. Human Development is a process of enlarging people's choices. The choices are infinite but at all levels of development we should consider the three essential for the people to lead a long and healthy life, to acquire knowledge and to have access to resources needed for a decent standard of living. (HDR - 1990) and the United National Development programme, under the supervision of a team of eminent economists and development professionals like A.K.Sen, Mahbub Ul Haq, Paul Streeten and M.Desia, ad, etc. has formulated a composite human development index ranging the values between Zero to one.[1]

The United Nations sponsored world summit for Social Development, in copenhagen in March 1995 has touched three points or its agenda. The struggle against poverty, social integration and the creation of productive jobs and they also recognised the UNDP's Human Development Index as better method analysing the development process.

II. Research Agenda and Identification of the Problem:

Most of the poorer countries and states are characterised by internal inequalities; between individuals, classes and regions and in many of them the inequalities are still growing. Developed countries are making rapid progress due to social consciousness and regulated population growth. The Human Development Report of 1990,'91, '92, '93 classified all countries into three broad categories i.e., more than 0.80 is regarded as high, ranging 0.50 to 0.799 is counted as medium and below 0.50 is regarded as low human development.[2] But the comparison is made without considering the stages of development, its historical, cultural trends and inherent nature. It is evident that different countries pass through different stages of development at a particular time period due to their historical, geographical, technological or other facts. There are also heterogeneous stages of

development within a country or region or ethnic groups.

The UNDP (1993) Report suggested the following measures for further development of the Human development concept.

(1) The construction of supplementary indices for specific groups of countries with low, medium and high human development.

(2) The HDR (1993) had also proposed the inclusion of new dimensions beyond the three dimension which might enrich the HDI.

(3) The HDR (1992) had tried to formulate a gender-sensitive HDI. It is evident that gender specific inequality is dominant in our society. So the essence of gender-specific HDI construction is a prime need.

(4) The UNDP (1993) Report has suggested the desegregation of HDI within the country and the desegregation is to be in the following headings :

(a) on the basis of regions (i.e., geographical location)

(b) among sub-regions

(c) Urban-Rural consideration

(d) on the basis of sex composition

(e) among the ethnic groups

(f) among the different religious groups

(g) on the basis of language spoken.[3]

Statement of the problem :-

Our study mainly concentrates on Sikkim. Sikkim is a multi-ethnic, multi-religious and multi-linguistic state. She also occupies a special geographical location. Rural-Urban disparity is prominent. It was practically a backward hilly state and urbanisation is a recent phenomenon. Hinduism and Buddhism are co-existing in Sikkim and the co-existence resulted in a social amalgamation of Buddhist and Hindu practices in social life.

Sikkim lies between 27° and 28° N latitude and 88° and 89° E longitude. To its North lies the Tibetan plateau; to the west, the kingdom of Nepal; to the east the kingdom of Bhutan and the Chumbi Valley of Tibet and to the south the Darjeeling district of West Bengal. Sikkim occupies an area of 7299 square km. Sikkim has experienced a great changes in its political structure, social structure, economic life and cultural values during the last hundred years. Planned development process was launched in 1954-61 seven years plans with the full financial assistance from Government of India. She merger with India in 26th April, 1975. But the development process of Sikkim possesses a peculiarity. The religious, cultural and social life are strongly influenced by Tibet but its political and economic life are mostly guided and influenced by India. The HDI of Sikkim may provide a better insight into the human development process. The prime consideration of human development in Sikkim is influenced by the following factors. These are

(i) geographical location

(ii) historical events

(iii) ethnic composition

(iv) religious influences

(v) natural isolation

(vi) political development.

Its spatial distribution is influenced by a host of environmental, historical, socio-cultural, economic, demographic and developmental factors. It is sparsely populated state with adverse sex ratio. In Sikkim 23.3% of houses have separate bathrooms 38.9% have separate latrines. The Hindus are in a better off condition than the Buddhists.[4] Among socio-cultural factors, education is observed as the most influential factor in differentiating people's social and demographic behaviour. In accordance with 1981 census, the population in the young age structure is very high. This is an indication of high fertility. The economy of Sikkim is mainly rural and agricultural. In this context we shall try to examine and measure the human

development condition and index. We also target to analyse various component of HDI at the macro and micro level and try to make a factor analysis of it.

III. Objective of the Present Study:

The major objective of the present study is to evaluate the present condition of human development in Sikkim. Our main hypothesis that is sought to be tasted by this investigation is that Human development as a form of Economic development has improved in Sikkim since the merger with India in 1975.

Its stresses on

(a) the assessment of broad components of HDI;

(b) the evolution of HDI for Sikkim at the state level;

(c) the trend of the human development;

(d) the spread of the developmental activities;

(e) the degree of improvement;

(f) the deficiency of human development; and

(g) further requirements and modifications.

And the next hypothesis is that human development trend must have a impact at the micro level. This investigation would try to assess and evaluate the HDI at the grass-root level too. It proposes to cover.

(a) the measure of HDI at the grass-root level;

(b) the problem related with it;

(c) the variation on the basis of ethnic composition;

(d) the religious and social impact;

(e) the local motivation and participation; and

(g) the political motivation ad acceptance.

Lastly we would try to make a comparative study between the achievements at the state level and village level. It will also try to focus and measure the disparity.

On the basis of the these considerations. We have the following research questions regrading the human development condition in Sikkkim. These are

(i) Why do we assess the human development of sikkim?

(ii) How do we evaluate the Human development condition in Sikkim Since 1975?

(iii) Is it possible to construct a HDI far state like Sikkim as formulated by UNDP?

(iv) If yes, what would be the value of the HDI for Sikkim?

(v) If not this why?

(vi) What modifications in HDI is to be made? Is there any need of inclusion of new variables?

(vii) How do we construct a HDI at the gross-root level? What are the technical problems? What are the practical problems?

(viii) Is there any variation in HDI on the basis of ethnic variation? What are the reasons behind this?

(ix) How does the religious factors influence the HDI?

(x) What is the state of the three constituents of HDI at the grass-root level and within different ethnic group?

(xi) What is the role of government?

(xii) What is the role of local bodies, implementing the concept of human development?

(xiii) What are the main hurdles, in augmenting human development?

IV. Conceptual Development and a Brief Review of Economic Development Literature :

The concept of human well-being or promotion is not an innovative notion. Rather philosophers like Aristotle suggested that social arrangements should be evaluated and judged by the extent to which they promote human welfare. The same idea evolved in the early writings of William Petty, Gregory King, Francis Quesnay, A. Laviosier, J. Lagrange. The political economists like Adam Smith, David Ricardo, Robert Malthus, Karl Marx and John Stuart Mill also had an ideological consensus regarding this issue.

The classical school, comprising of Adam Smith (1776) Malthus (1820) and Mill (1840) put forward approach to economic development than Ricardo, Senior ad others because Ricordo's system was logically very relevant but it was based or a higher degree abstraction. The basic theories, explaining the process of economic growth are same both in the classical and Marxists models and the development of the capitalist economics was a tug of war between technological progress and population growth Smith, Malthus and Mill all recognised that output depended on the size of the labour force, the stock of capital, the amount of land and the technological progress and economic development from Smith to Hensen are interrelated with these four factors. Classical economist did not include those resources which are economically useful or technological progress and they excluded entrepreneurship explicit. Entrepreneurs play a vital role in fostering investment and production opportunities but Schumpeter intelligently incorporated the role of an entrepreneur in his innovation theory of growth. His concept of development cover the following five cases: i) the introduction of new good, ii) the introduction of a new method of production, iii) the opening a new market, iv) the conquest of a new source of supply of raw materials, v) the carrying out of the new organisation in an industry, may alter the equilibrium position for ever.

Arthur Lewis and others put forward the purpose of development as widening our choices and poverty eradication. But the concepts were related to countries not with the people. So and we have tried to make a closer look at regional, district,

families or particular class level. The justification of their theory (i) economic growth would spread its benefit smoothly to the people; They also incorporated that government innervations such as progressive taxation, social services and others would feclitate the alleviation of poverty. It would restrict the concentration of benefits within a few, Thirdly the fate of the poor was not protected during early stages of development. It stressed or the building up the capital infrastructure and the productive capacity of an economy which could improve the fate of the poor in the later phase[5].

In the same line, another powerful economist Simon Kuznets also propounded Kuznets curve to show the nature of the early stages of development. It proposes that inequality increases as per capita income increases. The bottom of the 'U' curve is regarded as the turning point with greater equality, reducing poverty. A. Lewis predicts that economic development takes place when capital accumulates as a result of the withdrawal of surplus labour from the 'subsistance' sector to the 'capitalist'sector. It will increase inequality at the early stage but later on it would reduce that inequality like Kuznets curve[6].

The GNP concept neglected job and justice and promoted economic growth only. As a result G. Myrdal talked about 'labour utilization'. Practically 'labour utilisation' covers more dimensions than the demand for labour which is reflected in the Keynesian unemployment theory and the need for co-operating factors of production[7]. The major causes of low labour utilisation are living standard, attitude and institution. Nutrition, health and education are the major elements of living standard. Although better nutrition health facilities and education can be very productive forms of developing human resources in LDCs. Attitudes vary from country to country in the kinds of jobs and the third is the lack of institutions as labour exchanges, credit facilities, land ownership and the nature of the soil, for which labour utilisation varies.

Developments in theoretical economics since 1930 exerted profound influence on the formation of development economics as a district discipline. Keynes (1936) made a major break through against the classical concept. Harrod's

(1939) seminar work on growth theory influenced the concern for maximisation of savings ratio and for speedy capital accumulation and technical progress in the over populated areas of the globe.

Rosenstien-Rodan (1943) was the first economist who propounded the theory of balanced growth. The balanced growth doctrine was shared by Nurse (1953) who preferred better market mechanism as opposed to comprehensive planning in UDC. The theory of big push or critical minimum effort thesis' was a variation in the theme of 'balanced growth' one finds a striking similarity between the writings of Rosenstien-Roadan (1943) Nurkse (1953), Leibenstein (1957) and Nelson (1960), although there were obvious but minor differences in details W. W. Rostow (1960) also developed a theory of economic development.

W.A. Lewis (1954) elaborated the dual economy model for economic development. The dual economy hypothesis of Lewis sparked off theoretical and empirical research on various facets of development economics. Dale Jorgenson (1961) extended the Lewis models in terms of Coob-Douglas technology and Fei and Ranis (1964). M.Dobb (1960), A.K. Sen (1966) have made a contributory works on Development. D. Taylor (1979), (1983) and Mihir R.Rakshit (1982) applied the Cambridge theory of income distribution and effective demand to differentiate between the behaviours of various socio-economic classes. Taylor and Rakshit do provide a fresh insights about the nature of conflict among social classes over income distribution in the process of economic development.

During 1940 to 1950 the idea of growth of GNP used to be regarded as the objective goal and performance test of economic development. However, the incremental GNP does not equal opportunities to all. The prediction of A. Lewis and Simon Kuznets failed to explain the employment question at the golden age of egalitarian growth an turned the development debate to the question of income distribution. As a result, Hollis Chenery and others published the book entitled redistribution with growth in 1974. This questions were raised : Do conventional measures of growth involve a bias against the poor and how can this be changed? How can strategies of redistribution be combined with strategies of growth? Is it

possible to identify groups whose members have common characteristics and to direct strategies towards those groups? What are the principal instruments of policy[8]? Another question : Is it important to reduce inequality or to meet basic needs? In LDCs levels of living meeting basic need is more important than reducing inequality. Meeting basic needs is morally more important than reducing inequality. Reducing inequality is more complex and ambiguous than meeting basic needs. Removing malnutrition in children and women, eradicating deases or spreding education among the neglected section of the society are prominent. Meeting these basic need are more feasible than eleminiting equality[9]. Therefore the notion redistribution with growth became possible and feasible. In stead of 'meeting basic need approach' A. K. Sen suggested that development economics should concentrate on 'entitlements' of people and the 'capabilities' these entitlements generate. It forwarded a thematic shift in development economics in 1970 and the debates on poverty, inequality and income distribution was launched with Atkinson's (1970) article. A.K. Sen (1973) also made a contributory work. Mahbub Ul Haq (1971) synthesised and defined the GNP notion and propounded that we should take care of poverty as this would take care of the GNP and Pigon reformulated the notion that economic development is not a measure of GNP per capita but its distribution but the degree of steadiness or fluctuation of it over time is important (Todaro, 1977) professor Goulet and others suggested three basic components which would serve as the conceptual basis and practical guideline for understanding the inner meaning of development. These are self-sustenance (food, shelter, health & protection) self-esteem (authenticity, identify, dignity etc.) & freedom (economic & social choice).

Previously the level of living was reflected through the standard of living. This notion was completely based on the quantitative variations in object. But later on it was realised that this concept is inconsistent with the qualitative parameters which have a positive impact. The quality as a measure variable would refer to both the subjective and objective factors.

As a consequence the quality of life became a popular concept within a very short period i.e. app. two decades. As a result the concept of welfare activities

are judged or focused on the basis of the quality of life improvement rather than the macro social welfare activities. The real impact of the welfare is realised through the quality of life.

Quality converts a measure variable for the object, engaging with the introduction of the brand, 'Style of living' and style introduces the concept of culture. Taylor C.B. defines, "that complex whole includes knowledge, belief, arts, morals. Law custom and any other capabilities and habits acquired by man as a member of society. And the style of living in a group is represented by some qualitative attributes of culture.

V. Basic Human Needs Approach :

It is fact that per capita income is but one indicator of welfare, But other indicators may reveal an additional and different informations about the level of living conditions and changes. Basic Human Needs are regarded as the next logical step in development thinking. Basic need approach is superior to previous approaches to growth, employment, income distribution and poverty eradication. The basic need concept is a guideline that the objective of development is to reach all human beings. The previous concept of development was concentrated with production, productivity, savings ratio, export ratio, capital output ratio, etc. and failed to target the end. So the basic need approach reminded the fundamental concern of development, which is human beings and their needs.

The approach reached beyond abstractions e.g. money, income, employment. Talking about GNP and its growth highly abstract so the discussion was narrowed down to particular groups. Another the basic need approach appealed to member of the national and international community and was therefore able of mobilising resources. People normally don't share any thing but in crisis the used to share it for greater humanity. Meeting basic needs has some characteristics of public good. Intellectually and politically the basic need approach has great organising and integrating power.

This concept is relevant for any social or socio-economic context. It tries to arrest both the qualitative as well as quantitative aspects of life. To attend the objective factors the experts precisely and comprehensively reaches at the following fields namely food, clothing, housing, health, education, leisure, security, etc. The basic need approach put forward and appropriated by ILO (1976a, 1977b). Haq (1976) Stewat and Streeten (1976), Beekeman (1977), Bhalla (1977), Streeten (1977), Griffin and Khan (1978), Perkins (1978), Streeten & Burki (1978) Morris (1979) Fields (1980) but the contradiction arises when the qualitative variables are ignored at the level of data enumeration. It is well-known that the basic needs criteria is mostly culture-bound. The input culture plays a vital role in specifying the basic needs. It is realised that neither can the qualitative variables be ignored nor can the individualwise subjective perception of the basic needs be neglected (Cole, and Lucas 1979:43).

So the people themselves should decide on the scope, content and priority of their own basic needs (Ghai and Alfthor, 1977). Hopkins, (1972) described "A basic needs strategy includes mass participation of the people both in defining basic needs and decisions taken to meet basic needs (Hopkins, 1972). There must be a mechanism introduced into the planning process through which representatives of organised group choose basic needs (ILO 1977). In this manner the concept of basic need approach failed to promote a better quality of life on the basis of quantitative variables yet Dewnowski pointed out that (a) a blending of quality and quantity is an "impossible task and (b) the course of research can be so organised that qualitative variables may 'not cover all human needs but it does cover most essential of them".

There are also other attempts other than need based approach such as Gillingham and Reece (1980) to resolve the Analytical problems in the measuring of the quality of life, in the light of utility maximisation. But it is also a qurely quantitative approach. QOL :Another attempt was QOL but the quality of life indicators fails to indicate properties beyond its construction. As a POL indicator GNP per capita indicators fails to indicate properties beyond its construction. As a QOL indicator GNP per capita indicates the spending power to meet the demands

of their wants. But the inequality in the distribution is a common phenomenon. So its significance is limited in nature.

Another attempt is PQL, the concept of physical quality of life was evolved in the USA in the context of the world Development Agenda to indicate the state of well-being of nation states by a set of indices (PQLI). It was designed mainly to measure the performance of the most basic needs of the world poor.

The human development approach should also be contrasted with so-called "basic needs" approach. Though both the approaches move away from valuing income per se, the basic needs approach is still firmly centered on commodity possession rather than on functioning achievements. Human Development is a process of enlarging people's choices. The choices are infinite but at all levels of development we should consider the three essential ones are for people to lead a long and healthy life, to acquire knowledge and to have access to resources needed for a decent standard of living (HDR 1990)[10]. Human Development has two sides : the information of human capabilities - such as improved health, knowledge and skills and the use people make of their acquired capabilities for leisure, productive purposes is being active in cultural social and political affairs. There is a difference between HDR and Sen's capabilities approach (in Sen 1970,1977b). There is a greater concern with issues of personal liberty and with the general perspective of freedoms. Also in general, the fit between theory and application is not quite so easy in this complex field. The HDR's specific measurement of human development is not consistent in every respect with capability based reasoning.

Whereas the WDR looks at the reduction of poverty in terms of income, though not solely in those terms - as the fundamental objective of development, a high weights is given to the economic growth as an instrument for reducing poverty. The HDR talks a rather different view of what development is about, broadly consistent with the "capabilities approach" advocated by Sen. Human development and Economic growth are closely connected. People contribute to growth and growth contribute to human well-being. Economic growth is not the end of human development. It is one important means. Human development places on human

capabilities which Leads the misconception that it is limited to social sectors e.g. health and education. These investments in people are vital, but they are only one part of the picture. It stresses the need to develop human capabilities. But it is equally concerned with how those capabilities are used - by people who can participate freely in social, political and economic decision making and who can work productively and creatively for development.

The influence of Prof.A.K.Sen is predominant in the formation of the conceptual underpinning of Human Development. The meaning and measurement of human development, proposing a new composite index has been prepared by a team of eminent economists and distinguished development professionals, like Gustav Ranis, Amartya K.Sen, Stewert, Meghnad Desai, K.Griffin, A.R.Kvan, Paul-streeten and Herbert Wulf, under the overall guidance of Mahbub ul Haq.

The process of economic development is guided by two types of factors, economic and non-economic. The economic development of country is dependent on its natural resource, human resource, capital enterprise, technology, management etc. these are classified as economic factors. But it is not possible so long as, the social institutions, political conditions and moral values in a state do not encourage development. The social institutions, culturals attitudes, moral values, institutional and political conditions are non-economic factors.

The development process is an integrated achievement of economic factors and non-economic factors of development. In this consequences, Development criteria consists of two aspects simultaneously; the quantitative aspect and the qualitative aspect and the concept of Human Development is an admixture of both the aspects. In this approach Gross Domestic production is taken as a purely economic factor; on the other hand the literacy achievement is a prolonged non-economic factor, largely related with the qualitative aspects of development and lastly the health indicators or demographic factors has two way aspects economic and non-economic[11].

Growth and redistribution of income was the central theme for the development Research centre of the World Bank and the sussex Institute of

Development studies. How Redistribution with growth could increase the productivity of the small scale, labour intensive and informal sector ? It is suggested that a proportion of incremental income would be taxed and channelled into public services to raise the productivity of the poor. So the question arises how economic growth affects the reduction of inequality and poverty. The solution lies in the distribution of assets, the policy of the Government, the technology, the scope of export and the rate of population growth. Although the conversion of the means on ends varies difficulty among the people. It varies on the basis of the rate of metabolism, the sex, the age, the climate, entertainment etc.

Human development can be defined as the Abraham Lincoln's definition of Government. It is development of the people, for the people, by the people. It implies the economic social as well as political dimensions of development. When it promotes skill, efficiency and productivity, it is directly correlated with the economic aspect and when it eradicates social beliefs, taboos and checks population through family planning measures, it works as non-economic factors.

Human development pin points the ultimate goal of the exercise : man and women as ends to improve the human condition, to enlarge people's choices there are six reasons why we should promote human development. Firstly, Human beings are both ends in themselves and means by production. Secondly it proposes better and higher productivity. It is well - accepted that an educated, well nourished and healthy labour force is more productive asset in the society. It is widely recognised by World Bank that nutrition, education and health services has a positive and justified impact on production.

Thirdly, the concept of human development lowers down reproductivity and population growth too. Controlling infant mortality raising health standards, it may lead to lower down population growth. It also lowers down the desired family size. It has also an impact on lowering down the fertility rates and the emphasis of better education for girls pay off in smaller families sooner. Fourthly, human development is good for the physical environment. It is recorded that the poor are a care and the main victim of environmental degradation. The health of

the physical environment largely depends on the degree of poverty. Although the impact of population growth and population density on the environment is more controversial - Fifthy the reduction in poverty contributes to a healthy civil society, democracy and greater social stability and costly it has a political appeal too in also proposes political freedom.[12]

In this regard UNDP incorporates three prime components in their study. We know that - life expectancy at birth depends on the incidence of mortality rates which in turn depend on a large number of factors such as the occurrence of epidemics, the prevalence of diseases, the level of nutrition attained by the people, the level of living conditions care of women, infant mortality, fertility, etc. The importance of life expectancy lies in the common belief that a long and healthy life is valuable.

Secondly knowledge-literacy rates are only crude reflection of access to education. Yet literacy is a persons's first step in learning and knowledge building. It raises social consciousness and eliminates superstitions. In accordance with Schultz, there are five ways of developing human resources, "(i) health facilities and services, broadly conceived to include all expenditures that affect the life expectancy, strength & stamina, and vigor and the vitality of the people (ii) on the job training, (iii) formally organized education at the elementary, secondary and higher levels (iv) study programme for adults...". Schultz, Harbison, Moses, Beeken, Bowman, Kuznets and a host of other economists reveal that investment on education brings a greater increase in national income than the expenditure on dams, roads, factories, etc[13].

The third component is command over resources needed for a decent living - is most difficult to measure. It requires data on access to land, credit, income and other sources. So the most available data on per capita income or per capita gross domestic product is taken into account. These GDP data are improved by using purchasing power parity comparison and make adjusted real GDP.

There is a controversy over the items, included in the Human Development index. They are very critical over the issues of qualitative aspects. But practically

it should be remembered than Human Development is a much richer concept than others.

There are different reasons why human indicators are less misleading the income per head. It is established fact that literacy and life expectancy are much less skewed in their distribution than income. Literacy (Adult literacy) and mean years of schooling range between 0 to 100 and 0 to 9.5 yrs respectively. On the other hand the life span of a man is limited by nature, irrespective of all the achievements of modern medical facilities. But the upper limit of the third component, income is simply unpredictable - Although a limited percentage lies in this group due to different reasons. Secondly the average nature of the human indicators is a good reflection of the distribution. Thirdly any upward movement in human indicator obviously is a good reflection of improvement of human condition, some might be critical over the sex basis improvement of education and life expectancy.

Fourthly where as per capita GNP analysis may cause relative deprivation in others, but this is not possible for human indicators. Specially the benefits of health and education spreads all over the society.

Per Capita income gap is widening internationally day by day but out aim is to reduce international gaps in human indicators is remarkable and feasible. The gaps between infant mortality, literacy, life expectancy, nutritional levels are reducing sharply at the international level while in terms of income the picture is gloomy[14].

Human freedom must include economic, social and political rights. But these are not measured or analysed jointly. The human development index is an attempt to measure economic and social rights and the extent to which they are realized. A new political freedom index (PFI) could look specially the political rights. The HDI changes slowly over time but PFI fluctuates rapidly. Yet the intrinsic human development not only depends on economic and social factors but also on the political aspects too. Political freedom indicators depends on (1) personal

security (2) Rule of law (3) Freedom of expression (4) political participation(5) Equality of opportunity.

VII. Related Study

The above literature suggests the need for a new measure of development which is related to more pragmatic approach of development and the earlier cited Human Development notion is an application of it. United Nation Development programme has propounded a challenging notion, defining Human Development (HDR - 1990). The main theme of the report was concentrated on the growth of Gross Domestic Production but its main concern was how this growth translated into human development in various countries. The report was mainly based on three essentials of human life for its all round development. These are longevity (which is apprehended by life expectancy), knowledge (which is approximated by literacy rate) and living standard (appropriated by the log of real GDP per capita based on PPP).[8]

It also forwarded a comparison between the GNP per capita ranking with the newly composed composite Human development Index among the nations. The report (HDR - 90) also categorised the human development index as low below 0.5, medium (between 0.5 - 0.799 interval and high human development (above 0.8).

The second UNDP report in 1991 had the theme of financing human development and the role of the Government. It revealed that the readily available life expectancy was re-appropriated by current life expectancy and the knowledge variable is enriched; adopting mean years schooling with literacy rate. Lastly the income variable is radically revised. In 1990, logarithmic income was accepted and a zero weight is given (UNDP 1993) above the poverty line. But in 1991 Atkinsons formulation for the utility of income is taken. The report covered 160 countries.

The 1992 Report explored a new direction. It investigated the links between

human development and environment and secondly between human development and global markets. It also proposed a further development of the composite Index and wade practical suggestions for translating human development. The concepts of sustainable development gender -sensitive HDI, Income distribution Adjusted HDI, provincial and rural HDIs are widely accepted for discussion with due priority. Political freedom was incorporated as an essential element of human development in this report. It had a coverage of 160 countries.

The 1993 Report was mainly concentrated on people's participation. It revealed the essence of disaggregating the HDI within a country. Thus, disaggregation is feasible between rural-urban, by ethnicity or by region and in 1993 a disaggregation by ethnic groups has been attempted for a small number of countries. The maximum and minimum limit of HDI are reformulated and the notion of modified Human Development Index is accepted. This MHDI is comparable over time.

Sudhir Anand and Martin Ravallion's work (1993) has made a delicate comparison of HDR and WDR (World Development Report)[15] and Toshiyuki Mizoquehi's work has attempted to identify the standard of living by some Macro and Micro indicators. Lastly A.K.Shiv Kumar's attempt has revealed the inter-state difference in HDI within a country. It pin-points the practical need of the study of disaggregated HDIs.

National or Unified HDI concept takes the whole country as an unit. But within each country there is a wide disparity of HDI among the different regions, ethnic and religious groups, between urban and rural areas and sexed, climatic zones. As a consequence we need disaggregating HDI within a country which would be very useful to the planners and policy makers. Disaggregating HDI needs disaggregating data by which we can make internal human development analyses.

But there is some difficulty relating to the absence of disaggregated data in health, life expectancy and income. Life expectancy is a proxy variable of health indicators. But the quality of public health in the backward region largely depends on infant mortality, mortality at young age & maternal mortality. As a result the

improvement of basic capabilities through health parameters requires a vigorous analysis and discriminate treatment. Regional heterogeneity; religious disparity and ethnic differences are prominent in Sikkim state. These differences are truly reflected in consumption pattern, sanitation system and other health enhancing factors. But reliable data are not available in this backward region.

Literacy is closely related to the concept of culture and heritage of a society. Each culture appreciates the effort to promote literacy. In this context it may be mentioned that cultural literacy may vary with the universal literacy. In many cases it is noted that functional literacy is below the recorded literacy. Literacy plays a significant role in promoting the basic capabilities. But the vocational education, on the job training and non-traditional mode of acquiring education are not included in the literacy rate; though these enhances basic capabilities. The motivation to be literate is a prime factor in the backward region to spread the literacy mission. Inaccessibility, natural hazards and the lack of basic needs hinder the growth of literacy in the backward region.

Income, is the most decisive factor in determining human development. Command over resources is the prime condition of decent living but the income indicator is very difficult to measure. People living in mountainous areas need more energy from food and fuel and more expenditure on clothes and shoes because they lose more energy in the colder temperature. So we have to go through the detail characteristics of this hilly state, Sikkim.

Conclusion :

There is a close associationship between Human Development and Human Resource Development. Human Resource Development is primarily concerned as a means of development rather than ends of Development. It is only associated with the supply side of the development but the demand side is kept untouched. Whereas the term human development implies both the process of enlarging people's choice and the level of well-being achievement. Besides basic needs satisfaction, it also focuses on both the production and distribution of commodities

and the expansion and use of human capabilities.

The primary concern of human development is to ensure that the poors have access to basic needs and obtain sustainable livelihoods. For this, macro level planning is not sufficient, obviously the focus must be on the basic needs, capabilities, priorities and mass involvement. It is obligatory local participation through local bodies like Panchayat and the decision-making power to be adjusted with the government policies. Hence, the relevance of Micro-level planning and its target to be evaluated.

The local bodies may play a vital role in reaching the concept of Human Development Programme to the mass. This requires a proper organisation and mechanism of local bodies which would perform as the work head of the macro policy. The local bodies are best suited to perform various functions in the sphere of education, health and preservation of ecological balance, because of their intricate knowledge of local area.

Human development not only incorporates the three basic component it has also to consider the political set up and freedom of the state. Historical, cultural and geographical identity are the latent causes behind the performance and development of the state. Inaccessibility and immobility are to be considered. These regions need a special human development programme which must not be in conflict with the traditional customs and beliefs.

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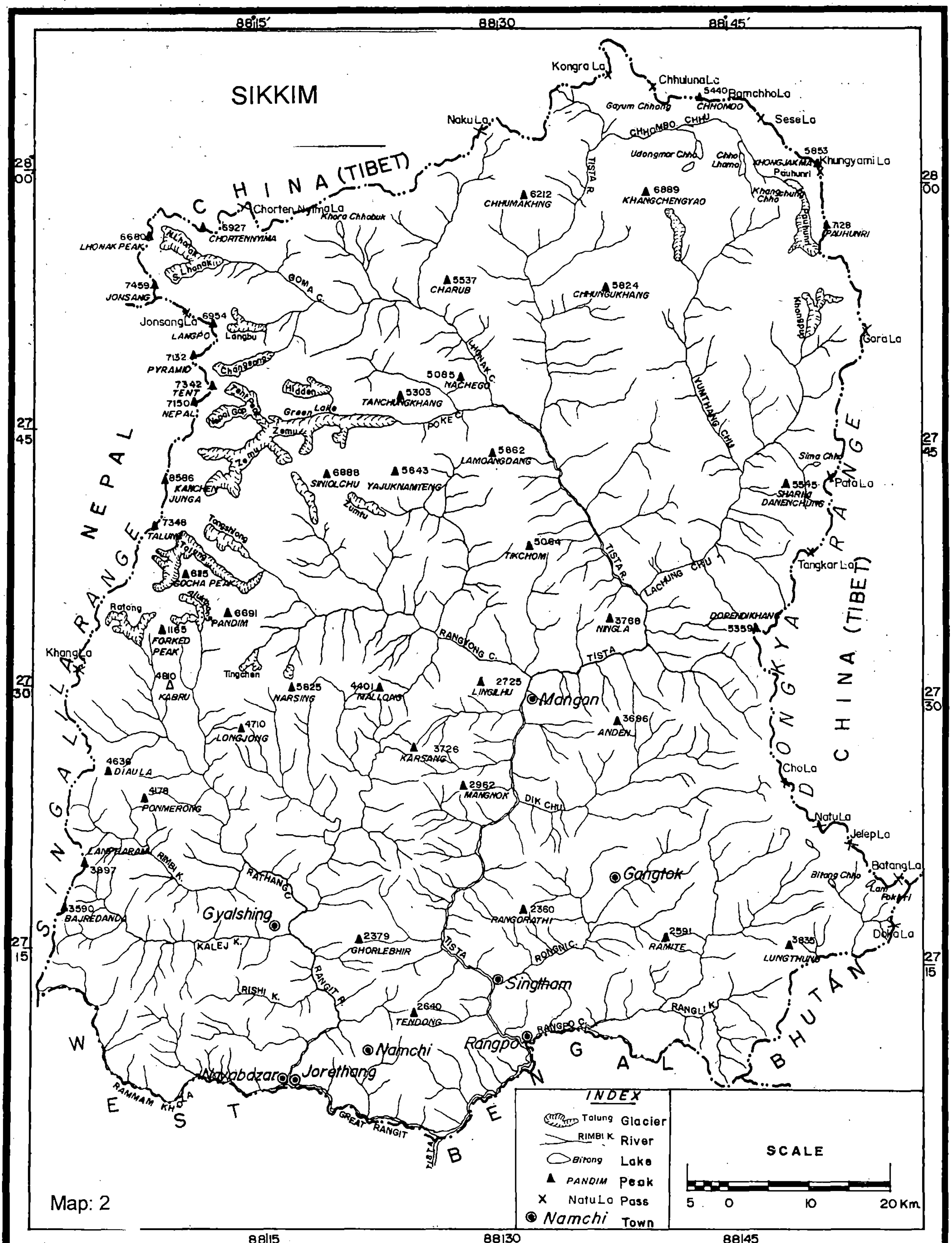

SIKKIM
CHINA (TIBET)
NEPAL
SINGALILA RANGE
DONGKYA RANGE
CHINA (TIBET)
BHUTAN
WEST BENGAL
Kongra La
Chhuluna La
5440 Bamchho La
Sese La
Naku La
Gayum Chhong
CHHOMOO
CHHOMBO CHHU
Udongmar Chho
Chho Lhamo
KHONGJAKMA
5853
Khungyami La
Pauhunri
TISTA R.
Chorten Nyima La
Khora Chhobuk
6927 CHORTENNYIMA
6680 LHONAK PEAK
N. Lhonak
S. Lhonak
6212 CHHUMAKHNG
6889 KHANGCHENGYAO
Khangchung Chho
7128 PAUHUNRI
7459 JONSANG
Jonsang La
6954 LANGPO
Langbu
BOMA C.
5537 CHARUB
5824 CHHUNGUKHANG
Gora La
7132 PYRAMID
Changsang
7342 TENT
7150 NEPAL
Hidden
Green Lake
Nepal Gap
Zemu
LHONAK C.
5085 NACHEGO
5303 TANCHUNGKHANG
POKE C.
YUMTHANG CHU
5862 LAMOANGDANG
8586 KANCHENJUNGA
6888 SINIOLCHU
5643 YAJUKNAMTENG
Zumtu
Sima Chho
Pata La
5545 SHARING DANENCHUNG
7348 TALUNG
Tongshiong
Talung
5084 TIKCHOMI
TISTA R.
LACHUNG CHU
Tangkar La
6115 KOCHA PEAK
Ratong
6691 PANDIM
1165 FORKED PEAK
3768 NINGLA
DORENDIKHANG
5359
RANGYONG C.
Khang La
Tingchen
4810 KABRU
5825 NARSING
4401 MALLOAG
2725 LINGLHU
Mangan
TISTA
3696 ANDEN
4710 LONGJONG
3726 KARSANG
4636 DIAULA
Cho La
2962 MANGNOK
DIK CHU
4178 PONMERONG
Natu La
Jelep La
LAMPHARAM
RIMBI K.
3897
Batang La
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Lam Pokhri
RATHANG C.
3590 BAJREDANDA
Gyalshing
2360 RANGORATHI
Doka La
2379 GHORLEBHIR
2591 RAMITE
3835 LUNGTHUNG
KALEJ K.
RONGNI C.
TISTA
RISHI K.
RANGIT R.
Singtham
2640 TENDONG
RANGLI K.
RANGPO C.
Namchi
Rangpo
Naya Bazar
Jorethang
RAMMAM KHOLA
GREAT RANGIT
TISTA
88|15′
88|30
88|45′
28 00
27 45
27 30
27 15
INDEX
Talung Glacier
RIMBI K. River
Bitang Lake
PANDIM Peak
Natu La Pass
Namchi Town
SCALE
5 0 10 20 Km.

Map: 2

Chapter II

Sikkim : A general overview

Sikkim is a tiny state in the eastern Himalayan region surrounded by vast stretches of Tibetan Plateau in the North, the Chumbi Valley of Tibet and Bhutan in the East. Darjeeling district of West Bengal in the South and Nepal in the West. The state is almost rectangular in shape, being 113 kilometers long and 64 kilometers wide. The state has no open valleys and no plains but has varied elevations ranging 300 metre to 5,500 metre above mean sea level, consisting of lower hills, mid hills, higher hills, Alpine zones and snow bound peas (glaciers). The main highest peak is Kanchenjunga. The Rangeet and Tista rivers form the main channels of drainage North-South.

Rainfall & climate : The state is subjected to heavy rainfall. The mean annual rainfall varies from 2000 mm to 5000 mm. Major rainfall is received between may to September and there is a great variation in temperature depending on the altitude of a region. There is high degree of variation in climate and vegetation which ranges from sub-tropical to alpine. The ranges are tropical (below 610 mts), subtropical (610 to 1524 mts), temperate (1524 to 2743 mts), sub-alpine (2743 to 3962 mts) and alpine (3962 to 5182 mts).

The climatic condition of the region or state plays a significant role in determining the consumption factor, housing, sanitation, health condition and environmental degradations etc. Agricultural production and economic activity of a region depends on the geographical factors. That is why we have to make a closer look through these factors.

Land use : Land use pattern depends on the topographical features of the state. The whole of Sikkim from the view of land utilization can be divided into

six major zones. However the crop growing zone and the forest zone have an economic importance. Maize, rice and pulses are cultivated up to 2000 mts. At higher elevations wheat, barley and potato are grown & hardy crops like buck wheat and barley, are grown up to 3000 mts. As the altitude increases, the temperature decreases and consequently the cropping pattern changes and the crop yields (productivity) declines and so do cultivated plots. The population density also decreases with increase in altitude and this is due to inaccessibility and natural constraint in food production and supply. The food habit and consumption pattern of people also curves towards the local production. So the land use pattern and soil composition directly affects the health, hygiene and economic status of the people. The total area of Sikkim is 7299 square kilometers of which, total operated area is 15.37%. Forest is 36.15% and 39% of the total geographical area is under snow and alpine pasture.[1]

The state is enriched with luxuriant vegetation of different types. Forest is an important source of state income. It includes not only timber, but also bamboo, fuel wood, fodder, minor forest produce, medicinal plants and wild life.

Composition of population : According to population census 1991, population of Sikkim is 4.05 lakhs indicating a decennial growth of 28.1 per cent which is 4.6 per cent higher than the Indian average and 22.6 per cent lower than the decennial growth rate of sikkim, 1981. Sex Ratio is estimated at 878 which is much lower than the Indian average. 41 per cent of the total population have been participating in gainful economic activities as main workers. Among the total workers 88% are engaged in agricultural occupation which contributes about half of the Net State Domestic Production. Another notable feature of the Sikkim is the rate of female participation in economic activity. It is 53 per cent which is highest among the all state and more than double the All India average. As regards annual growth of population, the birth rates are consistently falling from 32.4 per thousand in 1981-83 to 30.4 in 1988-89 and the death rate has gone down from 9.8 to 8.8 during the same period[2].

The decennial growth of population since 1901 shows a massive increase,

this happened not only due to the increase in birth rate but also due to the Nepali migration which was initiated by the British and it became a continuous process up to the present day also. Nepali migration also altered the ethnic composition in Sikkim[3a]. The present population of Sikkim is mainly composed of Napless, Lepchas, Bhutias and the plains men. It is a fact that lepchas are regarded as the original inhabitants of this area.

Buddhism, Hinduism and Animism are dominant religious sects. In sikkim, it is very difficult to classify them. Most of Nepalese are Hindus but a few like Sherpas are Buddhists. Bhutias are mostly Buddhists. The popular religion both of the Hindus and Buddhists is based on a daemon and in this there is no deep cleavage between the two sects. Nepali groups are always within the general framework of Hindu caste system.

There are fourteen ethnic groups in all over Sikkim. The Lepchas, Bhutias, Serpas and Tamangs are Buddhists while a section of the lepchas are found to be of Christianity conversion and all others are Hindus. The ethno-historical features of the various population groups are presented below.

Lepchas : The lepchas are regarded as the original inhabitants of Sikkim. Their original religious belief was animists but now-a-days most of them are converted into Buddhism. Previously their main profession was hunting and shifting cultivation but they are landowners or agricultural labour. They are highly concentrated at Dzongu area of North Sikkim; they are vile and submissive in nature and culturally they are isolated from other groups and their common language lepcha is different from Indo-Tibetan group which originated from Tibeto-chinese language family.

Bhutias : The next prominent ethnic group is Khambas, popularly known as Bhutias which is originated from the word 'Bhot' means Tibetan. They profess in Buddhism and very strong, hardy and good tempered. They are mainly engaged in Agriculture and Trade, although some of them are still herdsmen and breaders of sheep and yaks, which is their original profession. They are spreaded all over Sikkim but highly concentrated at lachen and Lachung, two river valleys in North

Sikkim. Bhutias had a traditional conviction with Tibet regarding their social, religious and trade route. But the war of 1962 put restrictions on their traditional life and economy. So the political system has changed their traditional economic system.

Nepali

(i) **Sherpa** : They are mainly found in West Sikkim. There is a striking similarities between Bhutias and Sherpas. Most of them are marginal farmers and agricultural labourer. They are followers of Buddhism and their language belongs to Tibeto-chinese stock.

Tamangs : It accounts nearly 5 per cent of the total population. Their main profession is agriculture. They had come from central Tibet are followers of Buddhism and their language is Tibeto-chinese Stock.

Brahms and Chettris : This group consists of nearly 20 per cent of the total population. They are spreaded all over Sikkim except North. They are followers of Hinduism and their language Nepali is of Indo-European stock.

Pradhans (Newars) : The Newars were the first people of Kathmandu valley, from where they immigrated into sikkim. They are followers of Hindu. Their main occupations are trade and handicrafts.

Rais : It is composed of nearly 14 per cent of the Sikkim population. They are concentrated in the western and southern districts. They follow Hinduism and speak in Tibeto-chinese language. Their main profession is agriculture.

Limbus : This is another group of Rais, they are known as Subbas which means headman.

Gurungs : They are of the ancient Nepalese group but they follow Hinduism. They are known as the old Mongoloid mountains people of Nepal. They immigrated into Sikkim during the last two centuries.

Mangars : This group is related to Newars and they are Hindus by religion

and their language belongs to Tibeto-Chinese stock. The mangars are the largest old ethnic group of Nepal, immigrated into Sikkim. They are mostly spread in West and south districts.

Scheduled Castes : This group consists of five castes namely damai (Tailors), Kami (Smiths), Lohar (Blacksmiths), Maji (Fisherman) and sarki (Cobbblers). These Sects have immigrated from Nepal and India and they follow the Hindu religion. The agriculture sector is controlled by the nepalese, who are laborious and practice intensive agriculture. Traditionally all land belongs to Kazis and kazis operated through Mandals. The land reform of 1982 was unsatisfactory. The original inhabitant Lepchas practice subsistence agriculture. The Bhutias are pracitsing pastoral economy on high lands.

Most of the trades in Sikkim are in the hands of marwaris, Biharis and some of them of the Lamas. Indo-Sino war has sealed the fate of Bhutia traders. Most of the commercial and industrial enterprises are controlled by the marwari, Bihari and Madesia traders (outsider) from the Indian plains.

Table 2 : Distribution of Ethnic Groups by Religion and language in Sikkim[3b]

Sl. No.	*Ethnic Group*	*Religion*	*Language*	*Percent*
1.	Lepchas	Buddhism/ Christianity	Lepcha (Tibeto-Burma)	12.8
2.	Bhutias	Buddhism	Bhutia (Tibeto-Burma)	14.1
3.	Sherpas	Buddhism	Sherpa (Tibeto-Burma)	3.7
4.	Tamangs	Buddhism	Tamang (Tibeto-Burma)	5.0
5.	Brahmans	Hinduism	Nepali (Indo-Aryan)	8.4
6.	Chhetris	Hinduism	Nepali (Indo-Aryan)	11.6
7.	Pradhans	Hinduism	Nepali Newari	3.5
8.	Rais	Hinduism	Nepali Rai	14.6
9.	Limboos	Hinduism	Nepali Limboo	9.4
10.	Mangars	Hinduism	Nepali Mangar	2.6
11.	Gurungs	Hinduism	Nepali Gurung	6.1
12	Scheduled Castes	Hinduism	Nepali	5.9
13.	Trading communities			2.2

Administrative posts are dominated by the Bhutia and Nepali community and there is a infighting among different ethnic groups. Next the white-collor profession is a new phenomenon in subsistence Sikkim economy. The academic ad technical persons are coming mostly from Indian plain but the scenario is going to alter with the moment up of education system, in the state.

Population distribution :

The population of Sikkim is heterogeneously distributed. This settlement is influenced by the environmental factors, historical facts, socio-cultural factors, economic constraints, natural settings, developmental factors and demographic factors. The geographical factors such as terrain, soils, natural resources and accessibility are the major factors affecting the spatial distribution of population. And another economic viability and changing developmental thrust has an impact on the population distribution. It's merger with India and the inflow of central assistance has altered and attracted population from the neighboring countries.

Sikkim is divided into mainly four administrative districts and eight sub-divisional area. The districts are East, West, South and North and each district possesses two sub-division. East district consists of Gangtok and Pakyong sub-division and West is composed of Gyalshing and Soreng, South consists of Namchi and Ravongla and lastly North is sub-divided into Chungthang and Mangan. The rivers Tista and Rangit are the two natural dividing lines.

Now to make a closer look into the population distribution we have to analyse the following table : 3

District wise Area and population (1991 Census) of Sikkim State [4]

Dist.	Area (sq. km.)	Population 1991	1971 Density	1981 Density per sq. km.	1991 Density per sq. km.	Forest percent to Total Area
1. East	954	178452	90	145	187	54%
2. West	1166	98161	-	64	84	64%
3. South	750	98604	70	101	131	40%
4. North	4226	31240	-	6	7	Mostly by Forest & glaciers
Sikkim	7096	406457		45	57	

Source : Census Report Sikkim 1981, 1991

The forest distribution has an impact on population distribution. This is evident from the above table. The East district has the highest density, being its 54 per cent land area is covered by Forest, of 187, although the increment was 55 during 1971-81 but it has increased by 42 in 1981-91. In West district the density was 64 in 1981 but it rose to 84, occupying the third position and the West district is adding 30 persons in each decade and the North shows a marginal increase of one person.

Migration is a crucial factor, influencing the population distribution of the state. Nepali and plains men immigration is a common feature; Nepalese are coming from Nepal and Bhutias are from Tibet.

Agriculture :

The contribution of agriculture sector to economic development lies in providing increased food supply to the expanding population, helping in the expansion process of small scale and tertiary sectors creating employment opportunities, increasing rural income and improving the welfare of the rural people. In Sikkim food production dominates the agricultural sector. It is a primitive and subsistence economy. The income elasticity of food is very high; it is nearly 0.8 to 0.9 per cent.[5] Moreover, the increase in population is due to rapid decline in mortality rate and slow reduction in fertility is also due to the extended modern health care system.

Rural purchasing power is very low due to the lack of marketable agriculture surplus. So the market for manufactured goods is very small. Increase in rural income as a result of agricultural surplus tends to improve rural welfare. Peasants start consuming more food specially of a higher nutritional value in the form of superior quality cereals, eggs, ghee, milk, fruits, etc. They build better houses fitted with modern amenities like electricity, furniture, radio, fan etc. They also posses bicyeles, motor cycles, watches, readymade garments shoes etc. They also receive direct satisfaction from such services as schools, health centres, irrigation, banking, transport and communication facilities. In this context we are making a closer look to the state of agriculture in Sikkim.

Agriculture contributes the lion's share of state income and employment. Rural population mainly depends on the agriculture and the proportion of main workers engaged in agriculture has been marginally reduced from 73.73 per cent in 1981 to 72.12 per cent in 1991. It occupies almost half 49.16 per cent of Net State Domestic Production.[6] As NSDP or per capita income is the reflection of economic condition of the state and economic development as well as Human Development. It is customary to analyse the details of the agriculture condition of the state. In Sikkim, cropping intensity widely varies with the ecological diversity and elevation. Cropping intensity and pattern influence the economic life and food habit of the people of a particular climatic zone. It has an extended impact on

health, housing, sanitation and environment too.

Sikkim has an inherent natural barrier of increasing area under cultivation and so intensive, multiple and diversified cropping practices are being accepted. As the population increases the availability of per capita land declines.

Table 4 : Availability of percapita land per head[7]

Type of land (hectare)	1981	1991
1. Net cultivable land	0.31	0.24
2. Operated area for agriculture use	0.34	0.27
3. Land for non-agriculture use	0.27	0.21
4. Pasture and culturable waste land	0.23	0.18
5. Forest	0.83	0.65

Source : Sikkim : A statistical profile, B.E.S. Gangtok.

Percapita cultivable land declines at the rate of 0.07 hectare within a decade whereas the decennial growth rate of population decreases at the rate 22 per cent within the same period though total population increases at a decreasing rate. So the intensive cultivation, and increasing use of plant nutrients both in terms of organic and inorganic fertiliser are the only answers besides high yielding variety seeds. Productivity of agriculture directly varies with irrigation facilities and fertiliser consumption.

Table 5 : Performance of Agriculture: A Comparative profile[8]

Item	*Sikkim*	*National*
1. Percentage of gross irrigated area cropped area (1986087)	11.9	31.4
2. Consumption of fertiliser per hectar of cropped area (kg) (1988-89)	13.4	62.2
3. Yield per hectare (kg/hc)		
(i) Total cereals	1355	1574
(ii) Total pulses	933	575
(iii) Total food grains	1217	1369
4. Per capita production of foodgrains	130.3	193.8

Source : Sikkim : An Economic Survey 1991-92.

It depicts that irrigated land, fertiliser consumption and per capita production is much below than national average. Interestingly, it may be mentioned that per hectare yield of pulses in Sikkim is much higher than national average.

Table 6 : Districtwise variation of crop production (.000 Tonnes)[9]

	North	*East*	*South*	*West*	*State*
Maize	4.24	13.83	15.40	20.48	53.95
Rice	1.74	8.86	3.04	7.07	20.71
Wheat	1.74	5.00	3.17	4.19	14.10
Barley	0.13	0.32	1.20	0.53	1.18
Pulses	0.07	1.38	1.79	2.17	5.41
Potato	2.45	8.30	4.15	18.60	33.50
Cardamom	1.205	1.132	0.754	0.709	3.8
Gross Cropped Area	12526 (14.04)	24484 (27.54)	26147 (29.31)	26043 (29.20)	89200 (100)

Source : Sikkim - A statistical profile - B.E.S.

It is evident that North district occupies only 14.04 per cent of the total cropped area. The cultivation pattern is also primitive and mixed farming is observed. It produces maize as the major cereal followed by potato, rice and wheat. The South district has the maximum cropped area, followed by West and East. The production of maize is nearly four times higher than North district followed by potato, rice and wheat. The West district produces highest amount of maize among the four districts i.e., 20.40 (.000 tonnes). The West district also leads in cardamom production whereas the East district produces maximum amount of

rice among the four districts followed by West and South. It also leads in wheat production. Potato and ginger cover maximum area in the West district.

Apart from food grains production, state has increased its oilseeds production specially rape seed, mustard and soyabean in recent years. It is also initiated sun-flowers in selected areas. Potato has played an important role in the development of agriculture in Sikkim. Sikkim potato is famous for seed among the neighbouring states. Sikkim potato are used in the same year as seeds.

Besides production of main agricultural crops, state has taken adequate measures to develop horticulture which has large potential in the state. The horticulture department is also encouraging the farmers in adopting fruit crops, vegetables and other tubers and rhizometic crops which have a large potential in the state.

Animal Husbandry : The animal husbandry sector has been providing supplementary income to a large no. of families, specially in rural areas. The overall achievement in milk, egg and wool production during the last three five year plans.

Table - 7[10]

Item	*Unit*	*5th plan*	*6th plan*	*7th plan*
Milk	000ML	10.95	19.00	27.00
Egg	Million	1.25	3.50	12.00
Wool	000kg	24	24	28

Source : Sikkim - An Economic Survey - 1991-92, B.E.S.

It is evident that milk production increased nearly 3 times from 5th to 7th plan and egg production raised to 10 times but the wool production showed no remarkable change. Per capita milk consumption is about 170 milliliter, whereas egg consumption is estimated 30 eggs per person per year. The nutritional status of the people depends on the protein intake is not significant.

There are 9 veterinary hospitals, 25 veterinary dispensaries, 54 stockman centres, 51 veterinary doctor, number of animal treated is 1,61,221 and vaccinated 28,001.[11] Besides this infrastructure the livestock composition is in accordance with 1988 census. There are 1,83,385 cattels, 3,088 buffaloes, 1,09,143 sheep and goat, 5,354 yaks (mostly in north Sikkim), 1368 horses and ponies, (concentrated at North Sikkim), 31,207 pigs, 41 donkey and mules (north mainly and 2,56,840 poultry.[12]

Forest :

Sikkim is a state of flora and fauna. It is endowed with abundant wealth to which thrive some rare and endangered wild life species, the tourism, hydro-electricity and agro-based industries. These assets are gradually degraded and depleted, resulting an alarming situation of environment. The high incidence of soil instability, loss of top soil, degeneration of good agricultural land and shrinking catchment areas of river system have become major concern. It is customary to preserve 60 per cent of the total geographical area under forest cover in hilly regions; sikkim has at present 36.30 per cent of total geographical area under forest of which 40 per cent area is under threats of degradation. Out of total forest areas of 2650 sq.km., under reserved, Khasmal and Goucharan areas are 2261 sq.km., 285 sq.km.,and 104sq.km. respectively. Afforestation is the crying need against the continuous degradation of forest. During the last decade from 1979-80 to 1990-91, 19,434 hectares have been covered under the afforestation programme and 777.79 hc. have been brought under quick growing species and fuel wood production and 5385.50 hectares have been covered under social forestry upto 1991-92. [13]

Irrigation :

Irrigation is an essential input bringing improvement in agriculture and the Government created an irrigation cell in power dept. in 1976. Under this scheme,

the minor irrigation plants are feasible depending on the topography and terrain of the state. During 1986, a separate department was created to the rich water resource towards the development of agriculture. The districtwise distribution of the number of channels, length, area covered and the potentials are given.

Table 8 : Channels [14]

District	*NO.*	*Length (km.)*	*Area covered (Hect.)*
North	52	57	1575
East	223	197	7228
South	52	106	33017
West	86	130	3857
Total	413	490	15961

Source : Irrigation Dept. Govt. of Sikkim

Sericulture :

There is a high degree of potential for sericulture in Sikkim due to conducive climate. But the growth is not sufficient. The forest department maintains three nurseries namely at Roraghang, Marring and Namthang covering an area of 345 acres. During 1991-92. The three farms produced 13241 kg of cocoons which is 34% lower than the previous year.

Fisheries : The feasible area of pond fishery development is estimated around 110 hectares. There are four seed fish farms. During the year 1991-92 2,80,000 fingerlings were distributed which is 12% higher than the previous year. Fish production has gone up to 96 tonnes from 95 tonnes in the previous year.

Table 9 : Fisheries [15]

Particular	*Unit*	*1981-82*	*1991-92*	*1992-93*
Fish production	Tones	24	95	97
Fish seed production	Million	0.05	1.00	1.00
Fish seed farms	No.	1	5	5
Nursery area	Hect.	0.6	2	2.2

Source : Sikkim at a glance - 1993.

Industry :

Since merger with India, four districts of Sikkim are declared as industrially backward and the Directorate of industries was entrusted with the complex task of industrial development. In August 1976, the Industrial Training Institute was set up at Rangpo to supply the trained technicians.

Table 10 : Industries[16]

Particulars	*Unit*	*North*	*East*	*South*	*West*	*State*
Provisional registered small units	No.	274	797	201	131	1403
Permanent registered small scale units	No.	5	179	39	20	243

Source : Sikkim at a glance - 1993 (as on 3.3.93)

In economics, an entrepreneur is an economic leader who possesses the ability to recognise new commodities, new techniques, new sources of supply of labour force etc. to enhance the industrial sector. The state has not been able to

establish any regular system of collecting industrial enterprises. Yet the contribution of the industrial sector to state domestic product has been found to be steadily increasing from 1980-81 to 1987-88. As a result of more than 50 entrepreneurship motivation and development programmes conducted where more than 1200 perspective entrepreneurs attended. Although 173 units were registered with the industry department in the 1990. Only 25 units were found to be registered during the year 1991-92 providing an employment to about 316 persons. Only two district industrial centres are there at Jorethang and Gangtok serving to the needs of all four districts and a growth centre is planned at Mazitar at East district.

Power :

Power is known as the "Wheels of Development" for its key role in economic development. Sikkim possesses a high potential for generation of Hydroelectric power but unfortunately it could tap about 0.3 per cent of its water resources for generation of electricity. Water is regarded as renewable resource. So there is a longer perspective of development of Sikkim in future. Yet cent per cent electrification of villages and towns has been achieved by the end of 1992. In recent years, there is a short fall of 12.4 MW which is expected to reach about 19.3 MW by the end of 8th plan. During 1991-92, 27.0 MKWH energy were purchased from outside the state to meet the domestic demand. In 1991-92, 47 per cent are used in domestic sector; 38 per cent are used in the industrial and commercial sector and rest 15 per cent have been used for public lighting and transmission loss is estimated at 22 per cent.

Present picture of power project :

Table 11 : Generation units in Sikkim as on 31.3.92[17]

Sl. No.	*Name of Power Plant*	*Location*	*Year of commissioning*	*Installed capacity (MW)*	*Generation (MW)*
1.	Jali Power House Rongnichu Stage I	Topakhani	1962	2.50	1.50
2.	Rimbi stage I	Rimbi West	1970	0.60	0.04
3.	L.L.H.P.	Ranipool East	1979-80	12.00	6.0
4.	Rongnichu Stage II	Topakhani East	1988-89	2.50	2.0
5.	Rimbi stage II	Rimbi West	1988-99	1.00	0.5
6.	Chaten Micro Power	Lachen North	1988-89	0.10	0.05
7.	Lachung Micro Hydel	Lachung North	Feb.1992	0.20	0.20
8.	DPH. Gangtok	Gangtok East	1958 81-82	1.70	stand by
9.	DPH, Ranipool	Ranipool	1979-80	1.0	

Source : Power Department, Govt. of Sikkim.

Table 9 : Installed Capacity & Generation [18]

District	*1979-80*		*1991-92*	
	IC(MW)	*G(MKWH)*	*IC(MW)*	*G(MKWH)*
No	-	-	0.1	0.25
East	14.5	22.54	17.0	34.65
South	-	-	-	-
West	0.6	0.57	1.6	4.38
Total	15.1	23.11	18.7	39.28

Source : Power Department, Government of Sikkim.

Transport and Communication :

Sikkim entirely depends on road transport system, it is inevitable that roads and bridges is of pre-ponderant importance in the economic development of state. Proper Transport and communication facilities are the essential component of modern development.

It enriches the quality, skill and efficiency of the population. Since Sikkim embarked upon its developmental experience in the year 1954, a significant improvement has been made in terms of quality, standard as well coverage of the net-work in the state. At the beginning of the first plan, there were only 19 km. rough road from Rangpo to Gangtok and a few kms. in and around the capital, by the end of 1992 total road net work has been classified into National high ways, state highways, Major District Roads and other district roads.

The break up of roads by type :

Table 12 : Type and Kilometer of Roads[19]

Sl No.	*Road type*	*Year 1979-80*	*1991-92*	*Change*
1.	National highway	40	40	0
2.	State highways			
	(i) Surfaced	584	780	196
	(ii) Unsurfaced	0	157	157
	(iii) Total	584	937	
3.	Major district roads			
	(i) Surfaced	347	266	
	(ii) Unsurfaced	00	180	
	(iii) Total	347	446	
4.	Other Districtt Road			
	(i) Surfaced	321	114	
	(ii) Unsurfaced	00	706	
	(iii)Total	321	820	

Source : S.P.W.D. State highway includes GREF.

Above table reveals that National highway remains constant during the period 1979-80 to '91-92 but the state highway both surfaced and unsurfaced have increased remarkably there is a close parity of growth in use major roads and other District Roads.

Besides this there are 1 head post office, 17 sub-post offices, 170 branch post offices, 14 public call office and one combined office and in case of

Telecommunications, the facilities include one telegraph office, 15 telephone exchanges, 30 P.C.O, 7 P.A.B.X.S. There are 2525 telephone users in the state.[20]

Cooperation : The cooperative movement in Sikkim launched with the establishment of 35 Multipurpose Co-operative Credit Societies. These were implemented during fifth five year plan for the purpose of providing institutional credit to the agriculture sector. Decentralisation of financial institutions is first and foremost condition of economic development . During the sixth plan period, the co-operative sector was extended to consumers co-operatives and Milk-co-operatives. In the 7th plan, the activities of the cooperative sector was further diversified and consolidated by opening of new societies, increasing memberships, handling and distribution of essential commodities and consumer items, distribution of agricultural inputs, procurement and marketing of farm produce etc. At present there are 252 Co-operative societies in Sikkim under 13 different categories.

Table 13 : Capital Endowment of Co-operative Societies as on 31.3.92 (in lakhs) [21]

Sl. No.	*Type*	*Paid up capital*	*Working capital*	*Reserve fund*
1.	MPCs	13.02	161.00	2.00
2.	Consumer Cop.	11.22	34.85	15.64
3.	Dairy Cop.	3.17	64.00	0.55

Source : Cooperative Department, Govt. of Sikkim Gangtok.

For the 8th plan the logistics of cooperative movement, proposes to consolidate its structure, extending its net work towards agro-based industries, village industries and artisans like Blacksmithy, Tailoring, Floriculture, Poultry, Piggery and weavers cooperatives as well as reviving the sick units. An integrated Cooperative Development Project was taken.

Banking & Small Savings and Insurance :

Sikkim has made a significant improvement in banking sector during the last decade. The banking facilities have increased manifold during last 12 years. The scheduled commercial banks has initiated their operations in the state in 1966 and State Bank of Sikkim started functioning in 1968. At the end of 5th plan, there was only one unit in Gangtok but by the end of 1991-92 it has expanded its branch throughout the state covering all districts. There are 54 bank offices all over Sikkim in 1991-92, of them 56 per cent of total branches are located in rural areas which is a signifient achievement. There are 10 bank units in Gangtok, including private and public. There is one bank office for every 7709 persons in the state. However, in urban areas, on an average, for every 1676 persons, there is one bank which is very significant.

The comparative study of the per capita deposits as on 1990-91 indicate that Sikkim has a much higher per capita deposits among all the North-Eastern states including all India average whereas per capita credit from Banking sector is found to be much lower in North-Eastern states including Sikkim, compared to all India average. The credit deposit Ratio works out to be 21 per cent for all the public sector banks in Sikkim. The performance of the public sector Banks (except SBS & SBL) during ,91-92 reveals that out of Rs. 20.97 crores advance, only 32.05 has been extended to priority sectors. Direct advance to agriculture was in the order of Rs. 3.50 crores, to small scale industries, craftsman and other qualified entrepreneurs Rs. 3.45 crores and to transport operator Rs. 3.11 crores which constitute 11.31%, 11.14% and 10.04% of the total advance respectively.[22]

Table 14 : Banking Structure[23]

Sl. No.	*Name of Bank*	*No. of branches*	
		1979-80	*1991-92*
1.	State Bank of Sikkim	9	21
2.	State Bank of India	1	18
3.	Central Bank of India	0	9
4.	United Commercial Bank	0	2
5.	National Bank of Agriculture & Rural Development	0	1
6.	Sikkim Bank Limited	0	4
	Total		55

Source : Lead Bank, SBI Gangtok.

Small Savings : The small savings is playing a crucial role in Sikkim and recently it has been a useful source of financing the developmental programmes in the state. However, the overall performance during the year 1991-92 has been found to be sluggish compared to 1990-91.

A comparative statement of some of the main items included under small savings are presented here for 1990-91 to 1991-92.

Table 15 : Small Savings : Sikkim (in lakhs)[24]

Sl. No.	*Item*	*Year 1990-91*	*1991-92*	*% Variation*
1.	Savings Bank (Gross)	30.75	32.78	(+) 6.6
2.	Savings Certificate	6.22	8.30	(+) 33.44
3.	Recurring Deposits	11.31	17.50	(+) 54.73
4.	Indira Vikas	58.91	54.42	(-) 7.62
5.	Public Provident Fund (Gross)	4.98	2.70	(-) 45.78
6.	Monthly Income Share	3.07	2.25	(-) 39.19
7.	National Saving Scheme	6.51	3.94	(-) 39.48
8.	Kisan Vikas Patra	110.21	76.63	(-) 30.47

Source : Post and Telegraph Department, Govt. of Sikkim.

In terms of item, recurring deposit and saving certificate has showed a remarkable improvement during the period, the variation is 54.73% and 33.44% respectively. Except Saving Bank all other item had to face a set back. Out of them public provident fund, monthly income share and National Saving Scheme has declined sharply. These sector should be improved. Beside life Insurance Corporation, General Insurance and National Insurance Companies are starting their business recently.

Tourism : Travel from earliest times has held a fascination of mankind. It not only encourages to explore new places and seeks a change of environment and experiences, but also contribute to the economy of the state. Tourism also can make a tremendous contribution to the improvement of social, political and religious understanding and is an important means of promoting cultural exchange and international co-operation. The climate of Sikkim is celebrious and its scenic

beauties are excellent. Sikkim has high potentials for development of Tourism which may contribute substantially in the form of spin-off benefits to overall health of the economy. The tourist traffic to the state has gone up 5 times during the last decade. During the year 1993, 70,365 domestic and 7,360 number of international tourists have visited Sikkim.

Table 16 : Growth of Tourist Traffic [25]

Particulars	*Unit*	*1991*	*1992*	*1993*
Domestic	No	61,360	68,048	70,365
Foreign	No	6,187	6,904	7,360

Source : Sikkim at a glance- 1993.

Hotels, Restaurantsa and Guest Houses [26]

Particulars	*North*	*East*	*South*	*West*	*State*
Hotels	7	88	12	10	117
Restaurants	13	130	19	16	178
guest houses	9	13	7	15	44

Source : Sikkim at a glance - 1993. B.E.S.

The infrastructural base in the form of tourist transport and accommodation is to be increased. The numbers of room accommodation has gone up 26 per cent whereas no. of beds has gone up by 22 per cent which is quite significant.

Role of the state :

In order to overcome the rigidities inherent in the underdeveloped regions, the state must play a positive role. The problems are so acqute that these cannot be left to the free working of the economic forces. In a backward state like Sikkim in the early phases of development, investments will have to be made in those directions which promote interest economics by creating economic and social overheads like power, transport, education, health etc. So it is necessary to control over production, distribution and consumption of commodities. For this purpose the government has to devise physical controls, monetary and fiscal measures. Some problems are discussed below ;

(a) Institutional framework : The economic development of a region largely depends on the socio-cultural attitudes of the people. Sociocultural factors are very prominent in Sikkim. This society possesses religious and cultural tradition which are not conductive to economic development. The institution framework does not encourage national individualistic behaviour and the spirit of competition and enterprise. Its economic development is to proceed social attitudes, values and institutions entrenched in the joint family, the caste or kinship and in religious beliefs must go change.

(b) Organisational changes : The size of market and the organisation of labour market play an important role in economic development. Besides the organisation and development of financial institutions to help the growth of agriculture and industries can be taken by the state.

Labour is mostly immobile in this state. The majority of the people live in rural areas and are engaged in agricultural operations for a limited period. So they are underemployed or disguised unemployed. Information lack aggravates the situation.

Social and Economic Overheads :

The need for basic services like transport. Communication, gas, electricity, irrigation works is imperative for future development. The government should formulate a plan for the development of the essential services on a priority basis.

Education : Economic as well as Human development is not possible without education. An education programme has to be wide and varied. There is the need for primary education so that every child of school going age may receive compulsory education. In order to provide material for universe of basic education and for larger educational facilities, more secondary schools are required to be opened. At the same time, training institutes are needed for imparting instructions to mechanics, electricians, artisans, nurses, teachers, agricultural assistants etc. It is regarded that the state should initiate a long term programme of educational expansion and reform.

Public Health and Family Planning : As masses are the ends and means of development so the state should undertake positive measures to improve public health. To increase the efficiency and productivity of labour, the health of people must be progressively improved. Public health measures include the improvement of environment sanitation both in rural and urban areas, removal of stagnant water, better housing, clean water supply, better sewage facilities, control of communicable diseases, provision for maternal and child welfare, health education and family planning etc.

Agricultural Development :

Agriculture is the predominant occupation in Sikkim. It contributes more than half the share of the state income. Despite this, agriculture remains in a state of stagnation. In Sikkim, the holdings are uneconomic and fragmentated and the land tenure system is defective. The peasants are poor, illiterate and ignorant. They lack organisation; they do not possess sufficient motivation for making improvements in land.

The success of the agricultural development will, however, depend upon land reform measures by the Government. Land reform measures include : (1) abolition of intermediaries; (2) security of tenure of tenants; (3) right to purchase land which tenants cultivate; (4) compensation for permanent improvements made on land by tenants; (5) to limit the rent charged by landowners; (6) fixation of ceilings on agricultural holdings and (7) consolidation of holdings.

The development of the co-operative societies and the functioning of the govt. machinery is necessary to improve the agriculture sector. The Programme aims at raising agricultural productivity through the use of better techniques of cultivation, better seeds, fertilisers and adoption of improved agricultural practices. It stresses on the improvements of irrigation, road communications, health and sanitation services in the rural areas. This programme also concentrates on the development of agro-type village industries, and fish, poultry and dairy products. Overall it aims at to attack the five giants - disease, hunger, ignorance, squlor and unemployment along with mental outlook of the rural people.

Industrial development : The Sikkim Govt. is taking keen interest in the development of industry. The private sector is primarily engaged in the manufacture of a small consumer goods for domestic consumption. Sikkim's development is mainly state sponsored because of the absence of local entrepreneurs. The state governed industrialisation programme and some fundamental institutional changes the Govt. has created Sikkim Industrial Development and Investment Corporation to look after and spread up industrial development of the state. The government of India has also recognised the SIDICO.

Besides this, District Industrial centres have been established to provide all the support and services to the enterprises. The Government of India declared all the four district as "No Industry Districts". So Sikkim will be eligible for central investment subsidy and 75 per cent Central transport subsidy for industrial needs.[27]

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Chapter - III

Design of the Study & Methodology.

Methodological Notes & Sample design

The Human Development Report (1990) provides a composite human development index and this HDI is modified in 1993 to make it comparable over time. Its major components are life expectancy at birth as health indicator, Adult literacy as education indicator and per capita real Gross Domestic production as income indicator[1]. But the data deficiencies is a major problem in underdeveloped region and Sikkim also suffers from the hurdles of basic data deficiency.

The present study area is sub-divided into two categories. Firstly we will make a macro level study of the economic development as well as human development condition on the basis of secondary and official data since 1975 onwards and a comparison is to be made among the four districts of Sikkim. Next an intensive based micro level study would be made at the grass-root level. Micro study would be done mainly on the basis of primary as well as secondary sources. The study will rely on the analysis of cross-section as well as time series data. Various econometric and statistical tools would be used to estimate the parameters of specified econometric models.

The method of the present study followed here is based on an analysis of 645 respondents of four districts of Sikkim. The total number of villages were 30 and total number of urban areas are four only.

In North district five villages and one urban area have been chosen. Out of 577 households 60 households were surveyed.

In the South district, 8 villages and one semi-urban area have been chosen. The total number of respondents was 162. The villages were selected purposively.

In the East district, 9 villages and one urban area (southern) were selected. Out of 1892 households, 255 households were surveyed.

In the West district, 8 villages and one urban area (Gylshing) were chosen. Out of 1114 households, 168 were surveyed.

Population, ethnic composition, accessibility and convenience were the major factors that led to the choices of these villages and urban areas. More than 90 per cent of the sample were collected from villages and a minimum amount of sample was surveyed from urban area. The percentage of urban population is very low in Sikkim. It is a new phenomenon in Sikkim. That is why a greater emphasis is given on the rural front.

The method of the present study followed here is based on analysis of the panchayats and the revenue blocks were chosen purposively. Accessibility, convince, language accommodation and ethnic compositions were major factors that led to the choice of gram panchayats and revenue blocks.

For the choice of framed sample units we obtained the list of households of each revenue block from the respective panchayats and Block Development office. For drawing the sample we adopted the "Circular Systematic Sampling method".[2] [Murty, 1979, pp.139-46]. Circular systematic sampling consists in selecting at random a unit from the first K-units and also selecting the one of the N-units. This and every K-th unit and thereafter includes in the sample in a cyclical manner until the sampling units are obtained, suppose N-units of the population are numbered from 1 to N and the sample size n is to be selected such that K is the integer nearest to (N/n).

The apparent advantages of the method over simple random sampling method are the following : (a) it is much easier and quicker to draw a systematic sampling, (b) intuitively systematic sampling seems likely to give more precise estimate than simple random sampling. The method, however, has many drawbacks

too. We have adopted this method basically, due to its simplicity and also because it is very often used by Indian National Sample Survey.

In our study for revenue blocks

K=6.98=7

State - Sikkim

Table - 1 : Sample distribution[3]

	North	*South*	*East*	*West*	*Total*	
Rural	48	114	203	154	549	(85.12)
Urban	12	18	53	14	96	(14.88)
Total	60	162	255	168	645	(100.00)

so the total sample Household = n = 645

Rural sample = 549

Urban sample = 96

and the total Household = N = 4505

So the ratio = K = (N/n) = (4505/645) = 6.98 7 (approximately)

District - North[4]

Sl. No.	*Revenue block*	*Major Community*	*Minor Communities*
1.	Lingdem	Lepchas	Bhutias & Newars
2.	Tingchim	Lepchas	Bhutia, Tamangs
3.	Gangtok	Lapchas	-
4.	Rongong	Bhutias	Pradhans, Lepchas, LImboos, Tamangs
5.	Phodong	Bhutias	Tamangs, Limboos
6.	Mangam	-	Lepcha

Source : Personal Survey

Table - 2 : District-North[5]

Sampled Blocks and no. of Households

Sl. No.	*Sample Revenue Block*	*Total Househod*	*Total Population*	*No. of Sample Household*	*No. of Sample Population*
1.	Lingdem	N_1=94	429	n_1=10	50
2.	Tingchin	N_2=82	478	n_2=10	53
3.	Gangtok	N_3=71	401	n_3=8	45
4.	Ronogong	N_4=87	410	n_4=10	49
5.	Phodong	N_5=89	432	n_5=10	56
6.	Mangam(Urban)	N_6=154	780	n_6=12	65
Sub Total		577	2937	60	318

Hence $N_1+N_2+N_3+N_4+N_5+N_6=577$

and $n_1+n_2+n_3+n_4+n_5+n_6=60$

So the ratio = $N_i/n_i = 577/60 = 9.61=10$ approximately

Table - 3[6]

District : South Sikkim

Community Composition of Sample Block

Sl. No.	*Revenue Block*	*Major Commnities*	*Minor Community*
1.	Sripatam	Limboos Brahamans	Rais, Bhutias, Chetries, Tammangs.
2.	Zarung	Rais	Chhetris, Bhutias Gurungs & Limboos
3.	Namphok	Limboos	Brahamans, Chhetris, Rais.
4	Mangbruc	Lepcha	Chhetries, Serpa, Rais.
5.	Bakkhim	Sherpas	Bhutias, Lepcha, Gurung, Rais, Others
6.	Kewzing	Bhutias Lepcha, Sherpa	Brahaman, Cheetris
7.	Delep	Rais, Bhutias	Lepcha, Chhetri, Sherpa, Tamangs
8.	Lingzo	Lepcha, Chhetri	Rais, Bhutias, Brahaman, Limboos
9.	Ravangla (Semi-urban)	Rais, Limboos	Chhetris, Sherpas, Bhutias

Source : Personal Survey

Table - 4[7]

District - South

Samples Blocks and Number of Households

Sl. No.	*Sample Revenue Block*	*Total Household*	*Total Population*	*No.of Sample Household*	*No. of Sample Population*
1.	Sripatam	N_1=135	759	n_1==31	160
2.	Zarung	N_2=93	507	n_2=12	67
3.	Namphok	N_3=134	724	n_3=32	165
4.	Mangbrue	N_4=22	119	n_4=9	50
5.	Bakkhim	N_5=153	811	n_5=21	112
6.	Kewzing	N_6=40	258	n_6=12	71
7.	Delep	N_7=52	367	n_7=10	69
8.	Lingzo	N_8=75	437	n_8=17	94
9.	Rabongla (Urban)	N_9=218	1200	n_9=18	101
		922	5182	162	889

Hence $N_1+N_2+N_3+N_4+N_5+N_6+N_7+N_8+N_9=922$

$N_i=922$

i=1

and $n_i=162$

i=1

9Ni(i=1)/9ni(i=1) = 922/162 = 5.69 = 7(approximately)

Table - 5[8]

Districtt - East

Sl. No.	*Revenue Block*	*Major Communities*	*Minor Communities*
1.	Thintek Rais.	Chhetris, Brahammans,	Limboo, Lepchas, Newars Gurungs and Mangars.
2.	Tumen	Brahamans, Bhutias	Lepcha, Chhetris, Rais.
3.	Rolep	Rais, Gurungs	
4.	East Pendam	Tamangs, Brahamans.	Chhetris, Rais.
5.	Nampok	Bhutias	Chhetris, Rais, Newars.
6.	Lingzey (Sumen)	Chhetris, Rais.	Lepcha, Tamangs, Brahaman, Limboo, Gurung.
7.	Dung Dung	Newars, Brahamans.	Bhutias, Chhetris, Limboos Mangars.
8.	Amba	Chhetris, Brahamans.	Lepcha, Sherpa, Newars, Rais
9.	Nampong	Bhutias,Chhetris, Lepchas	Tamangs, Gurungs, Newars, Limboos
10.	Singtam (U)		

Source : Personal Survey

Table - 6[9]

District - East

Sl. No.	*Revenue Block*	*Total Household*	*Total Population*	*No. of Sample Household*	*No. of Sample Population*
1.	Tintek	136	817	32	163
2.	Tumen	291	1729	53	241
3.	Rolep	68	392	15	82
4.	East Pendam	100	883	20	107
5.	Namok	77	430	15	88
6.	Lingzey	94	504	18	102
7.	Dung Dung	100	564	17	101
8.	Amba	100	552	22	124
9.	Nampong	48	255	11	64
10.	Singtam	878	4043	52	245
		1892	10169	255	1317

Hence 10Ni = 1892 and 10ni = 255

i=1 i=1

So the ratio = 1892/255 = 7.419 8 (approximately)

Table - 7[10]

District - West

Sl. No.	*Revenue Block*	*Major Communities*	*Minor Communities*
1.	Singling	Tamangs,Limboos	Sherpas,Bhutias, Rais, Gurungs, Chhetris.
2.	Chota Samdong	Limboos, Gurungs	Tamangs, Lepchas.
3.	Darap	Limboos, Lepchas	
4.	Deythang	Bhutias, Brahamans, Lepchas	Tamangs, Chetris, Rais, Limboos, Gurungs.
5.	Mangmo	Gurungs, Sherpa, Lepcha, Tamangs	Rais, Tamangs, Limboo, Limboo, Newars.
6.	Gangyap/ Ganggep	Lepcha, Bhutias	Limboos
7.	Lingchom	Newars, Rais, Tamangs.	Bhutias, Brahamans, mangars
8.	Radhu Khandu	Chhetris, Lepchas.	Newars, Brahamans, Rais.
9.	Gyalshing (U)	Bhutias, Pradhans	Tamangs.

Table - 8 [11]

District - West

Sl. No.	*Renenue Block*	*Total Household*	*Total Population*	*No. of Sample Households*	*No. of Sample Population*
1.	Singling	100	662	14	82
2.	Chota Samdong	91	484	13	72
3.	Darap	167	849	25	137
4.	Deythang	120	729	23	126
5.	Mangmo	91	533	14	83
6.	Gangyap	67	434	14	79
7.	Lingchom	203	1071	37	178
8.	Radhu Khandu	144	876	32	172
9.	Gyalshing(U)	127	745	14	75
		1114	6383	168	1004

Hence 9Ni = 114 and 9ni = 168

i=1 i=1

So the ratio = 9Ni/9ni = 1114/168 = 6.63 7 (approximately)

Nature of the Query :

The following schedules and items would be covered to assess the different aspects of life and the Human Development condition in general.

Schedule-I - General

It would provide the general information regarding the study area.

Schedule-2 - Village Schedule

This schedule is to be filled at village level for information regarding village concerned. It would cover the village statistics relating to land utilisation, irrigated area, cropping pattern, wages paid to agricultural labourers, ownership, livestock, transportation, communication facilities, food habits, housing and culture, etc.

Schedule-3

This schedule provided full information about the people under the headings

(i) General information - (a) Name of the informant (b) Name of head of the household (c) caste, sub-caste, S.C., S.T., (d) Income, (e) Type of Family etc.

(ii) Educational parameter and achievement and facilities available and adoption.

(iii) Living standard - (a) Type of residence, (b) Sanitation, (c) Facilities available and utilisation etc.

(iv) Composition of the household - (a) Members (b) Their relation, (c) Age - Sex, (d) Occupation and other factors.

(v) Information relating to Demographic factor.

(vi) Health and Disease - (a) The concept of disease, (b) Disease incidence (c) Medical facilities, (d) Clean water supply and (e) Methods relating to preventive

health care, sanitation and personal hygiene etc.

(vii) Consumption schedule - Detailed about consumption pattern and amount should be collected to analyse the nutritional and other aspects of human development and to find variation among different ethnic groups.

(viii) Political participation, social consciousness and voting behaviour should assess to evaluate their political rights and freedom.

Reference

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Demographic characteristics of Sikkim

Family size and its nature, population structure and its composition and other demographic aspects have a closer relationship between the quality of population and the quality of life. Age-Sex composition of population is an important part of demographic analysis. It influences the present and future birth rate, death rate and migration pattern of a community. It provides an idea of labour force, school going children, voting population, old-age, dependency ratios etc.. The balance between the sexes is an important aspect of population structure. Many economic and as well as social relationship are closely related to the balance or disparity between the number of males and females. The various population parameters e.g occupation structure and migration rates are influenced by the sex-ratio. In our economy women contribute a larger unaccountable share and their labour is an important part of the fiscal system.

Sex ratio is a good indicator to barometric scale to identify the disparity between female-male not only in composition but also it indicates other vital indicators. Th position and social status of women are reflected through sex-ratio. Favourable sex-ratio indicates a higher social or better male-female parity in social system. Sex-ratio is in favour of female in western countries but it is in favour of male in India except the state Kerala.

The unfavourable sex-ratio arises due to the following reasons:

(i) The loss of more females at the lower age bracket is due to insufficient attention to infant mortality and health care.

(ii) Due to the poor health care system and ignorance, a higher proportion of death occurs among the females at the time of puberty due to functioning disorder.

(iii) In developing countries, female child lies below male child in social strata and there is a social negligence towards female child due to economic causes.

(iv) Female death rate is higher at the reproductive age group (15-19-20-24 years). This occurs due to ignorance, poor health care system, malnutrition, higher fertility and quick pregnance.

(v) There is a sharp fall of sex ration in age group (20-24) due to the evil effects of early marriage and inexperience to tackle the problem of maturity at the age group (15-19).

Another main reasons for differentials in sex ratio is the differences in mortality pattern observed in different populations. From the time of birth, a female child in India is at a disadvantage and the discrimination against females continues throughout their life. The high degree of maternal mortality is due to excessive child-bearing, discrimination in proper medical attention and nutrition etc.

Hence overall sex ratio of Sikkim is 875 whereas in West Bengal it is 940 and Kerala 1068 and India 944.

Age Specific Sex Ratio in Sikkim[1]

Table - 1

Age group	*Sex ratio*
0-1	1082
2-4	936
5-9	992
10-14	974
15-19	934
20-24	833
25-29	774
30-34	800

35-39	661
40-44	886
45-49	800
50-54	783
55-59	698
60-64	696
65-69	800
70+	888
Total	875

Source : Calculated from Personal Survey.

From the above table it depicts that during (0-1) age group the sex ratio is very favourable. Hence the no. of female child exceeds the male child. All though the proportion is also favourable for the next groups but at (10-14) age group the ratio seems to be most unfavourable due to child and infant mortality. It further declines at the following age groups due to maternal death. It reaches at lowest at the (40-44) age group. The variability is very high and heterogeneous due to the high order disparity to female.

Age-sex distribution of the surveyed population in (Rural-Urban) areas of Sikkim [2]

Table - 2

Age	*Male*		*Female*		*Total*	
Group	*No.*	*Percent*	*No.*	*Percent*	*No.*	*Percent*
0-1	74	(3.39)	80	(4.86)	154	(4.36)
2-4	125	(6.64)	117	(7.1)	242	(6.882)
5-9	252	(13.39)	250	(15.18)	502	(14.23)
10-14	229	(12.17)	223	(13.54)	452	(12.81)
15-19	198	(10.52)	185	(11.24)	383	(10.86)
20-24	223	(12.38)	194	(11.79)	427	(12.103)
25-29	181	(9.62)	140	(8.50)	321	(9.09)
30-34	135	(7.17)	108	(6.54)	243	(6.88)
35-39	124	(6.58)	82	(4.98)	206	(5.84)
40-44	88	(4.68)	78	(4.738)	166	(4.70)
45-49	70	(3.72)	56	(3.42)	126	(0.357)
50-54	60	(3.188)	47	(2.85)	107	(3.03)
55-59	43	(2.28)	30	(1.86)	73	(2.07)
60-64	23	(2.12)	16	(1.94)	39	(1.105)
65-69	20	(1.06)	16	(0.97)	36	(1.02)
70+	27	(1.4)	24	(1.47)	51	(1.45)
	1882	100.00	1646	100.0	3528	100.00

Source : Calculated from Personal Survey

A total population of 3528 was surveyed in 645 families living in 642 household in rural and urban districts of East, West, South and North Sikkim. It shows that 36.52 per cent of the population is below 14 years of age and infants about 3.88 per cent.

The percentage of the total population is under age 15 and above 65 years is considered as the 'dependent ages'. Hence the relative position

Table - 3 [3]

State	*Less 15 years*	*65 and above*	*Dependent age percent*
Kerala	30.3	6.0	36.3
West Bengal	35.7	4.4	40.1
Sikkim	36.62	4.16	40.78
Arunachal Pradesh	43.2	2.6	45.8
India	37.7	4.8	42.5

It reveals that the young age structure is higher and the dependency per cent is better than Arunachal Pradesh, although it is very high

General Marital Fertility Rate (GMFR)

The GMFR is more defined measure of fertility that general fertility rate. It accounts only the number of married women in the child-bearing age.

The GMFM =(137 X 1000)/Married women in c.b.a.=137000/784=174.74

Another study by V.Bhasin show the GMFR is 163.98 in Sikkim. Marital status has a significant and important role in our society. Since only marriage legalises reproduction and hence it directly influence the fertility and over demographic composition of the population.

Age sex distribution of surveyed population in East district (including urban areas) [4]

Table - 4

Age Group	*Male*		*Female*		*Total*	
	No.	*Percent*	*No.*	*Percent*	*No.*	*Percent*
0-1	32		28		60	4.55
2-4	47		41		88	6.68
5-9	94		95		189	14.35
10-14	89		82		171	12.98
15-19	71		73		144	10.93
20-24	78		80		158	11.99
25-29	62		57		119	9.04
30-34	52		40		92	6.99
35-39	46		32		78	5.92
40-44	36		26		62	4.70
45-49	27		15		42	3.19
50-54	22		15		37	2.80
55-59	17		10		27	2.05
60-64	10		5		15	1.14
65-69	9		5		14	1.06
70+	14		7		21	1.59

Source : Personal Survey

In East district 36.75 per cent is below 15 years and 4.25 per cent above 5 and above. So the dependency per cent is 41.0. It had only 4.10 per cent of the population below one year. The sex ration is 875.

Age-sex distribution of the surveyed population in West district (including Urban Sample)[5]

Table - 5

Age	*Male*		*Female*		*Total*	
Group	*No.*	*Percent*	*No.*	*Parent*	*No.*	*Percent*
0-1	23		20		43	4.28
2-4	36		32		68	6.77
5-9	71		63		134	13.35
10-14	63		63		126	12.55
15-19	56		58		114	11.35
20-24	62		64		126	12.55
25-29	45		46		91	9.06
30-34	38		32		70	6.97
35-39	34		27		61	6.07
40-44	30		18		48	4.78
45-49	22		16		38	3.78
50-54	17		14		31	3.08
55-59	12		9		21	2.09
60-64	5		5		10	0.996
65-69	6		4		10	0.996
70+	7		6		13	1.294
	527		477		10004	

Source : Compiled from personal Survey.

35.55 per cent of the population is below 15 years of age and 4.28 per cent is 65 and above in West district. It had only 3.68 per cent of the population below one year. The sex ratio is 905. This ratio is higher than state average.

Table - 6

Age sex distribution of the surveyed population in south district[6]

Age	*Male*		*Female*		*Total*	
Group	*No.*	*Percent*	*No.*	*Percent*	*No.*	*Percent*
0-1	18		20		38	4.27
2-4	36		28		64	7.12
5-9	73		66		139	15.635
10-14	59		56		115	12.935
15-19	47		44		91	10.24
20-24	56		47		103	11.58
25-29	45		38		83	9.34
30-34	32		27		59	6.63
35-39	26		23		49	5.51
40-44	21		17		38	4.27
45-49	18		16		34	3.82
50-54	15		12		27	3.04
55-59	10		8		19	2.02
60-64	6		4		10	1.124

65-69	5	4	9	1.01
70+	7	5	12	1.349
	474	415	889	

Source : Calculated from Personal Survey.

In south district 38.59 per cent of the total population is below 15 years and 3.94 per cent is 65 above. The dependent percent is 42.52. It is very high. The age structure is young biased. The sex ratio is 875. This ratio is almost equal to the state average although the dependency ratio is higher.

Table - 7

Age-sex distribution of surveyed population in North district [7]

Age	*Male*		*Female*		*Total*	
Group	*No.*	*Percent*	*No.*	*Percent*	*No.*	*Percent*
0-1	6		7		13	4.088
2-4	17		15		22	34.90
5-9	22		18		40	12.58
10-14	23		17		40	12.378
15-19	19		15		34	10.69
20-24	16		14		40	12.58
25-29	15		13		28	8.80
30-34	12		10		22	6.91
35-39	11		7		18	5.66
40-44	10		8		18	5.66
45-49	7		5		12	3.77

50-54	6	6	12	3.77
55-59	4	3	7	2.20
60-64	2	2	4	1.257
65-69	2	1	3	0.94
70+	3	2	5	1.57
	175	143	318	

Source : Compiled from Personal Survey.

North district had 34.90 per cent of the total population below 15 years and 4.08 per cent above 65 years and above. The sex ratio is 817 which is below than the state average, out of the four districts in Sikkim, North had the most unfavorable sex ratio.

Table - 8

Sex-Ratio in the Sample Population of Four district (8)

District	*Male*	*Female*	*Total*	*Sex Ratio (F:M)*
East	706	611	1317	865
West	527	477	1004	905
South	474	415	889	876
North	175	143	318	817
Sikkim	1882	1646	3528	875

Source : Calculated from Personal Survey

Table - 9

Family Structure of population survey [9]

No. of persons in Family	*No. of Families*	*Percentage*
1	12	1.7
2-3	158	24.47
4-5	280	43.5
6-7	177	18.2
8 and above	78	12.1
	645	100.0

Source : Personal Survey

Average Family Size=5.47 (app.)

The survey was conducted on 645 families and it is seen that average family is 5.47 app.

Table - 10

Districtwise Birth rate in surveyed population[10]

District	*Birth*		*Total*	*Birth per 1000*
	Male	*Female*		
East (n=1317)	26	28	54	41.00
West (n=1004)	18	19	37	36.8
South (n=889)	15	18	33	37.12
North (n=318)	6	7	13	40.88
Total (n=3528)	65	72	137	40.88

Source : Personal Sample Survey

Data was collected on all the births for the year 1992-93 in sample population. The birth rate was calculated a 41.00, 36.8, 37.12 and 40.88 for East, West, South and North districts of Sikkim respectively. The overall birth rate was recorded 38.83. Highest birth was recorded in East district and lowest in West district.

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10. Ibid

Chapter - IV

Education Profile of Sikkim

Education plays a crucial role in rousing the interest among the people for improving their economic condition and for creating a healthy and clean environment to live in. Only wide spread education can bring a radical change in their social and economic life. It is wellknown that the Sikkimese economy and society are largely guided by their traditional and religious customs. So there is a need for intensive programme for Human Resource Development or Man-power planning which is closely related to the concept of Human Development. Human resource Development relates to the long range development of semi-skilled, unskilled and skilled man power requirement of the economy and plan educational priorities and investments in human resource development so as to enlarge employment opportunities and to eradicate the social barriers for development. Schultz, Harbison, Denison, Kendrick, Moses, Bowman, Kuznets and a host of other economists reveal that the important factor responsible for the rapid growth of an economy largely depends on the expenditure on education.

According to Schultz there are five ways of developing human resources : "(i) health facilities and services, broadly conceived to include all expenditures that affect the life expectancy, strength and stamina, and the vigour and vitality of the people; (ii) on the job training, including old type organised by the firms, (iii) formally organised education at the elementary, secondary and higher levels; (iv) study programme for adults that are not organised by firms, including extension programmes notably in agriculture; (v) migration of individuals and families to adjust to changing opportunities".[1] So in a wider sense investment in human capital means expenditure on health, education and social services.

Harbison proposes that for investment in education to be more effective for rapid growth, adequate incentives should be provided to men and women to engage in those kinds of productive activities which are needed to accelerate the modernisation process. The status and remuneration attached to occupations should be in accordance with the high priority needs for economy.[2] Rural unemployment and educated unemployment due to drop-outs should be reduced by for reaching programmes of modernisation of agriculture and nextly, appropriate measures should be taken to replace all the trained personnel along the modern lines. Moreover, insufficient attention has been given to the traditional agriculture sector. Agricultural education, adult education, women education and on the job training programmes are not sufficient in the state like Sikkim.

The progress of education in Sikkim has been extremely slow during the period 1981. The literacy rate was 34.05% lower than the Indian rate 36.07%. The female literacy of Sikkim was 22.20% which was very unimpressive.[3] On the other hand little is done on the field of adult education. Adult education helps in changing the outlook of farmers and villagers, eradicates the social superstitions and paves the path of development. Sikkimese society is largely influenced by its religious, traditional customs and geographical isolation. Professor G.Myrdal in his Asian Drama (1968), told, "Education takes many forms.... There is no common denominator. Any attempt to analyse the impact of health on education measures with taking other policy measures into consideration involved the logical".[4] Practically the input-output relationship is not so easy in case of educational outlays.

There is an ethnic diversity in Sikkim and its natural isolation, historical and religious factors are so prominent that the traditional input-output would not result properly. In this consequence, the expansion plan for education should be matched with the local demand of the society and its sentiment. There are certain deterrant factors which come in the rapid development of a region, most important of these are geographical isolation, inadequacy of economic overheads like transport labour, technology etc. In Sikkim, the distributional aspects of development is not homogeneous in nature. The developed regions are generally confined to urban

centres, the greater part of the state remaining in the backwaters of economic regeneration.

Infrastructure is the basic condition for the rapid and homogeneous spread of education. The establishment of proper education institution is the foremost condition. At the very beginning, the literacy rate was very low, especially among women. During merger, there were only 228 primary, 29 middle and 7 higher secondary schools. But during 1979-80 the composition of the educational institution changed radically and its growth was observed vertically and horizontally. The total number of institution rose at 470. Within a decade, the total number was raised more than doubled. During a short span from 1984-85 to 1989-90 the total number of schools again doubled and reached at 1288 of which 528 pre-primary, 519 primary, 173 middle, 54 secondary and 14 Higher secondary schools. As the population of Sikkim is widely scattered, the terrain and transportation facilities are not adequate. So that the children can attend only in short distance schools. Some villages are also isolated in Sikkim;

Table 1. : Growth of Educational Institutions in Sikkim by type[5]

Year	*Pre Primary*	*Primary*	*Middle*	*Secondary*	*H.Sec.*	*Total School*
1975-76	-	228	29	-	7	264
1979-80	85	309	44	24	8	470
1984-85	198	478	121	54	13	666
1989-90	528	519	173	54	14	1288
1990-91	-	510	122	57	18	707
1991-92	697	527	122	63	18	1427

Source : Education Department, Govt. of Sikkim. Gangtok.

Specially the La-cheng and La-chung valley of North Sikkim. The physical features, i.e., weather of Sikkim specially temperature, rainfall and relative humidity sharply varies one place to another place. Considering all these constraints it would necessary to open many new schools, so that education can reach door to door. There are 1427 schools in total in 1991-92. There was a wide gap between male-female enrolment during the period 1975-76, the male enrolment proportion was 65.67 and female proportion was 34.33. So it is evident that the traditional Sikkimese society has a clear basis towards male child and negligence towards female child. The breeds of sex differentiality in literacy germinate from the very beginning of the education and extends towards the value judgment of the society and social factors.

Table 2 : Educational Enrolment in Sikkim since 1975.[6]

Year	*Boys*	*(Propor tion)*	*Girls*	*(Propo-*	*Total tion)*	*Growth*
1975-76	13764	(65.67)	71.95	(34.33)	20959	(100.00)
1979-80	30852	(61.17)	19580	(38.83)	50432	(100.00)
1984-85	50103	(60.63)	32528	(39.37)	82631	(100.00)
1989-90	58450	(54.68)	48446	(45.32)	106886	(100.00)
1990-91	59971	(54.12)	50846	(45.88)	110817	(100.00)
1991-92	61437	(53.9)	52412	(46.04)	113849	(100.00)

Source : Sikkim - A Statistical profile (1979-92), B.E.S.

The proportion analysis depicts that it was most unfavourable during 1975-76 and there was a havoc improvement during 1989-90 it stood at 54.68 male and 45.32 female child due to the enormous increase in infrastructural facilities. There is an improvement of the male-female child enrolment gulf, whereas during 1975-76 it was 31.34, it came down to 7.92. Undoubtedly this is a clear demarcation of

reduction of sex-basis and the social position of the girl child is going to improve day by day.

The spread of education is an essential need to make all round development of Sikkim. The whole education system in the state is managed by the state excepting a few. The development strategies brought about appreciable results in terms of establishment of educational institutions all over the state. The announcement of the New Education policy has strengthened the qualitative aspects of education. As per 1991 census, 56.94 per cent of the population of age 6 years and above are literates which above the all India average by 4.73 per cent. The following table shows the literacy position in the four districts and also reveals the disparity between male and female.

Table - 3[7]

Literacy - 1991 (per cent)

	Total	*Male*	*Female*
Sikkim	56.94	65.74	46.69
North	53.47	63.64	40.69
South	54.08	63.18	40.69
East	65.13	73.10	55.66
West	45.62	54.92	35.26

Source : Census Report - 1991, Sikkim.

From the table, it is evident that the East district has achieved the highest per cent of literacy i.e., 65.13 and it is lowest in west district. The gulf is more than 20 per cent. The sex basis is very prominent in literacy achievement and the female literacy is always lagging to male. The highest male literacy is obtained in the East district i.e., 73.10 per cent, however the achievement of the West district

is lowest. The highest female literacy is obtained in the East district i.e., 55.66 per cent and the lowest is attained by the West district i.e., 35.26 per cent. In order to bridge the gaps in the literacy in different parts of the state, efforts are being made to identify literacy deficient areas.

Beside formal education, the state is also promoting the traditional institutions, non-formal education and adult education. The emergence of Ashram and Navodays are of new dimensions-

Table - 4

Class-wise (Broad) Enrolment of students[8]

Class	*1979-80*	*1990-91*	*1991-92*	*30.9.93*
Pre Primary	2550	14793	15135	17129
Total Primary	42234	87291	88459	92282
	(83.74)	(78.77)	(77.69)	(73.6)
Total middle	6409	14814	15998	20760
(VI-VIII)	(12.7)	(13.36)	(14.05)	(16.56)
Total				
Secondary	1406	6653	6975	7619
(IX-X)	(2.78)	(6.00)	(6.13)	(6.07)
Total Higher	383	2059	2417	3528
Secondary	(0.76)	(1.86)	(2.12)	(2.81)
Degree College				1181
Law College				(0.94)
	50432	110817	113849	125370

Source : Sikkim at a glance. 1993, B.E.S. Gangtok.

The growth rate of enrolment during the period 1979-80 to 30.9.93 is 148%. This is a remarkable progress. The sub-total of preprimary and primary has jumped from 42,234 to 92,282 during the period. Not only enrolment number but also the compositional aspects of total enrolment, focuses a closer look in the qualitative aspects. The proportion of primary section has reduced by more than 10 per cent during 1993 whereas middle enrolment share has increased by nearly 4 per cent. It implies that primary enrolment was more significant during 1979-80 but with the spread of educational infrastructure and development process the total number and share less increased in latter on phases. The increase in share of the secondary and Higher Secondary are 3.29 and 2.05 per cent respectively. So the yearwise break up shows that there is a qualitative change in enrolment process.

Table - 5

Districtwise enrolment during 30.9.93 [9]

	North	*East*	*South*	*West*	*State*
PrePrimary	1743	5881	4961	4544	17129
	(20.86)	(9.79)	(17.5)	(15.88)	(13.66)
Primary	4837	36111	16919	17286	75153
	(57.9)	(60.1)	(59.7)	(60.41)	(59.94)
Middle	1244	10436	4493	4587	20760
	(14.89)	(17.37)	(15.86)	(16.03)	(16.56)
Secondary	383	4289	1443	1504	7619
	(4.5)	(7.14)	(5.09)	(5.26)	(6.07)
Higher	145	2178	512	693	3528
Secondary	(1.73)	(3.63)	(1.8)	(2.42)	(2.81)
College	-	1181	-	-	1181
		(1.96)			(0.94)
	8352	60076	28328	28614	125370
	(6.66)	(47.91)	(22.59)	(22.82)	(1.00)
Population enrolment ratio	3.74	2.97	3.48	3.43	3.24

Source : Sikkim at a glance 1993. B.E.S. Gangtok.

There is a wide disparity in spread of enrolment in Sikkim. If we made a cross-section study of the four districts, we would observe that the East and West district in a better condition than its counterpart South and North district. Out of 100, 47.91 per cent enrolment is observed in the East district and 22.82 per cent,

the second highest is obtained by the West district and if the population-enrolment ratio is lowest in the East district i.e. 2.97 and the next ratio is 3.43 in the West district. Whereas the enrolment per cents are 22.59 and 6.66 in South and North district respectively and the population-enrolment ratio is 3.48 and 3.74 respectively.

There is a wide disparity within the class enrolment in the four districts. So the efforts are being made to identify the deficiency in terms of enrolment and districts.

In Indian Education scenario, dropouts at the lower classes are very significant. The drop-out rates are also vary. It is estimated that nearly half of children who enter class I drop out before reaching class V and another hard reality is that two thirds of the children drop out before reaching class VIII. The main factor which accelerates this high rate drop out at the lower class, is socio-economic reasons of the state and is supplemented by socio-cultural factors.

At the higher level of education, there are obvious limitations in terms of infrastructure, there is only degree college and law college at Gangtok. With this aim a new B.ED. college is established at Namchi and there is need of another degree college and technical colleges.

Table - 6

Drop-outs

1993-94 (in percentage)[10]

	Class I-V	*Class I to VIII*	*Class I to X*
Sikkim			
Total	62.27	78.43	86.82
Male	63.18	78.83	87.37
Female	61.19	77.93	86.21

Source : Centre for monitoring Indian Economy Pvt. Ltd. p. 188

In Sikkim the drop-out rate is very high in comparison to other states, at class I-V, the rate is 62.27 whereas the Indian average shows it is 36.32 i.e., nearly half. At classes I-VIII, the rates are 78.43 per cent and at classes I to X, the decline is 86.82 per cent i.e., only nearly 13 per cent remains in the system. Yet there is a interesting and contrasting characteristics that is the female drop-out rates are always less than male counterpart in comparison to other states.

Table 7 : Govt. Educational Institution and their districtwise distribution - 1993.[11]

Particulars	*North*	*East*	*South*	*West*	*State*
Pre-primary	76	235	205	207	723
Primary School (lower-upper)	56	165	149	161	531
Junior High School	12	43	36	27	118
Secondary School	07	20	19	18	64
Senior Secondary School	02	14	03	03	22
Teacher's Traning Institute	00	01	00	00	01
Law College	-	01	-	-	01
Degree College	-	01	-	-	01
Total	153	480	412	416	1461
Population(%)	7.69	43.90	24.26	24.15	100
Institution(%)	10.47	32.85	28.19	28.47	100

Source : Sikkim at a glance 1993. B.E.S. Gangtok.

Hence we are making a cross-section analysis of educational institution is Sikkim - 1993. 7.69 per cent of the total population live in North district which account for 10.47 per cent (to all taking to rather) of the total education institute. The harsh terrain and inaccessibility require setting up more schools in North Sikkim. The La-cheng, La-chung & Donzoua valleys are isolated. There are 76 pre-primary, 56 primary and 12 Junior high schools and the number of schools declines in the upper state i.e. only 7 secondary and 2 Higher Secondary schools.

Two higher secondary schools are located at Mangan and Chungthang. Besides these, there are 20 monasteries in North district, there are also spreading Tibetan and traditional teaching in the North.

The East district is more advanced in terms of quantitative and qualitative measures. Nearly 44 per cent population of Sikkim lives here with about 33 per cent of the total educational institute. The total number of institution is 480 which consists of 235 pre-primary. 165 primary, 43 junior and 34 secondary (higher) and another notable feature is that the only college i.e. Sikkim Government College is serving the quest for higher knowledge among the upgrown Sikkimese. There are also one Law college and Teachers' Training Institute in East Sikkim. The transportation and communication system is comparatively better than other districts and good teachers are also available to continue the institutions. Yet there is the derth of different types of vocational institutions and training course which would provide a direct incentive to develop the capability of the people. Education system would be formulated in such a manner that the raised human capability could be translated into Human development, raising the over all quality of life. Besides these, there are maximum number of monasteries i.e. 22 in East district. Of them Tibetan Institute at Deorali is famous for their continuous effort in enriching the traditional as well Tibetan type of social teaching.

In case of West and South district there is an striking similarity in their educational set up. Nearly 28 per cent population of the total Sikkim occupies 24 per cent of the total educational institution each. In both the district there is no college or higher study centre. Although recently a B.Ed. college is proposed to establish at Namchi, South district. There are 12 monasteries in West district, of them Pemayangtse monastry is oldest and famous persuicy traditional teaching, near pelling and in the South occupies 20 monasteries, a little bit better than West district.

In the pre-primary sector both the district occupies nearly equal number of institutions, but the west is ahead of south in respect to primary schools whereas the South is in a better position in terms of Junior high school i.e., 36 but the West

contain 27 only. There is no remarkable difference regarding the secondary and higher secondary school. The composition of the number of educational institution is of pyramid shape, implies that the modern education is a new phenomenon and it is of primary nature. The main emphasis was given to spread of basic education quickly among the people. The absence of any college; any vocational training institute and a few number of senior secondary schools implies that the mean years of schooling is very low in terms of quantity and quality too.

Table - 8 : Teacher Pupil Ratio as on 30.9.93[12]

Stage	*No.of*	*No. of Teacher*	*Ratio(T:S)*
Pre-primary	17129	723	1:23
Primary	75153	4284	1:18
Jr.High School	20760	1109	1:19
Secondary School	7619	724	1:11
Sr.Secondary School	3528	264	1:13

Source : Sikkim at a glance 1993, B.E.S. Gangtok.

Pupil-teacher ratio is one of the crucial indicator to measure the education imbalances in an education system. The pupil-teacher ratios of high Human development are primary 28 and secondary 17 in 1990 and in low human development countries excluding India, it is 43 and 23 respectively in 1990. In Sikkim, being a backward state the primary pupil-teacher ratio is 18 and in Junior level, it is 19 and at secondary and senior secondary level, these are 11 and 13 respectively. Apparently the pupil-teacher ratio in Sikkim is similar to the high human development countries. Basically it is due to two reasons. Firstly the rapid expansion of primary schools and massive investment in education and secondly the drop outs at higher level, non-availability of school and less interest in higher

education reduces the pupil-teacher ratio at the secondary level. As the pupil-teacher ratio falls the education imbalances declines and tends towards better education. Public expenditure on education as the percentage of total expenditure during the 8th plan period is proposed 10.00 per cent in 1992-97 whereas during the annual plan (1992-93) it was 9.09 per cent and in 1994-95 it was 7.59 per cent. It reveals a declining tendency. If we compare with India it was 11.2 during 1990. So the share is below the national level. Sikkim is in primary stage of education, so it requires more share in this regard to nourish the educational upliftment of the state. In spite of the efforts put in by the state government for spreading education, the education facilities have only touched the fringe of the population. The people are still shy of sending their children to school because of a subsistence economy and non-availability of labour. Parents need the help of the children in minor agricultural operations and, fodder and fuel collection for the family. This is one of the major cause behind the low pupil-teacher ratio in backward Sikkim.

Although low pupil-teacher ratio is a good indicator of balance education but the ratio declines so sharply i.e. 23 in pre-primary to 11 in secondary is due to social and economic causes not due higher development in education imbalances.

Table - 9 : Literacy Rates by sex to total population[13]

Year	*Male (%)*	*Extent increase*	*Female (%)*	*Change (%)*	*Total (%)*	*Change (%)*
1971	25.37	00	8.90	00	17.74	00
1981	43.95	17.58	22.20	13.30	34.04	16.30
1991	54.16	10.21	17.74	15.54	46.48	12.45

Source: Compiled from Census Report 1971, 81, 91, Govt. of India.

Variation in Literacy

The quality of people of a state largely depends on the rate of literacy and its progress in the desired direction. In 1971, the literacy rate in Sikkim was only 17.74 per cent lower than the Indian average. Even during 1981 the literacy rate in Sikkim was 34.04 per cent which is also lower than the Indian rate of 36.07 per cent. Not only the literacy rate is very low but also there was a wide gap between the rate - female literacy rate. The female literacy rate was 8.90 in 1971 which is very poor as compared to male literacy rate 25.37 per cent. After merger, during 1981 overall literacy rate has increased but the gender disparity stood at nearly 21 per cent. The male literacy has increased 17.58 per cent during the decade while the female literacy was achieved 13.30 per cent more than 1971.

The education facilities were quite inadequate as the socio-cultural taboos restricts many girls to attend school. The population of Sikkim widely scattered, the terrain, the transportation and the climate do not permit children to travel relatively short distance to attend school. Except few places, villages are set apart and children from different villages can not attend the same schools. Some villages and valleys are isolated in Sikkim by natural barrier. The socio-economic status of the population is not in favour of acquiring proper education.

In 1991, the literacy rate by sex to total population is 46.48 and there is an impressive change of 12.41 per cent from 1981. Another significant improvement is that the extent of change in female literacy is higher than the change in male literacy in comparison to 1981. Although the progress is significant but the achievement of female literacy rate is a revolutionary change.

In 1991, the literacy rate in Sikkim excluding the age group (0-6) year and 56.94 per cent higher than the Indian rate of 52.21 per cent. During this decade the achievement is so significant that it suppresses the national level, although the male-female gap remained more or less 20 per cent. The sex - disparity in literacy remain stagnant, instead of decline. This havoc change is possible due to the enormous growth of educational institute and large investment in education sector. Education lies in the concurrent list of state and centre, as Sikkim became a part of

India, a huge amount was spent to spread the basic education as soon as possible and the low literacy rate among woman hinders the spread of literacy in the state.

Table - 10 : Literacy Rates on the basis Rural-Urban & sex composition (variation in percentage only) and districtwise 1981-1991[14]

State / *District*	*Sector*	*Area (in sq.km.)*	*Literates* *Persons* %	*Males* %	*Females* %
Sikkim					
	Total	7.096	12.43	10.21	15.54
	Rural		14.09	11.69	17.06
	Urban		15.99	13.25	17.98
North	Total	4226	12.69	11.48	15.48
	Rural		12.86	9.91	11.53
	Urban		30.15	9.91	11.53
East	Total		12.95	10.49	15.83
	Rural	954	15.37	12.63	19.02
	Urban		37.18	13.52	17.45
South	Total		11.38	8.58	15.06
	Rural	750	12.14	9.40	15.06
	Urban		19.11	11.57	25.30
West	Total		13.20	11.57	15.12
	Rural	1166	15.35	11.72	15.19
	Urban		12.23	11.43	14.53

Note - Including the population (0-6) years.

Source : Calculated from Census Report 1981,1991 Govt. of Sikkim.

Nearly 9 per cent of the total population live in urban areas of Sikkim. Urbanisation is a recent phenomenon in Sikkim. The rate of change of literacy is 12.43 per cent during the period 1981-91. In urban area the variation is little better than rural area, the rates are 15.99 and 14.09 respectively which is quite natural. But the extent of increase of female literacy i.e. 15.54 is higher than male literacy i.e. 10.21 per cent. Not only in the rural males are also lagging behind the female by the extent of literacy increase but also the urban rates are also far behind the extent of increase in literacy in urban females. The increase of variation of female literacy depressing the male literacy would reduce the disparity in literacy, reducing the gap. Female literacy only 2.57 per cent population live in North district. The variation in percentage is 12.69 during 1981-91. Urban population is very low but its extent of change in literacy is faster i.e. 30.15 than rural areas where nearly 98 per cent population lives. This is because two factors; firstly the two main valleys La-cheng and La-chung are practically isolated from the modern education system and secondly the Bhutia composition and their monastic education system.

In East district, the positive variation in percentage is nearly 13 with 17.86 per cent urban population to the total population. The proportion of urban population is highest among all other districts, reveals a highest increase of 37.18 per cent in literacy during the period 1981-91. The variation of percentage change in urban population is greater than rural males. But in case of female, the change is in favour of rural i.e. 19.02 in comparison to urban i.e. 17.45.

The south district depicts a variation in percentage of literacy 11.38, in which the urban change i.e. 19.11 is far ahead of rural literacy change during the period. Whereas in case of male-female scenario, the variation in literacy percentage among female i.e. 15.06 is nearly double than the male rate i.e. 8.58. With respect to rural-urban males, the urban positive variation i.e. 11.57 suppresses the rural male literacy variation i.e. 9.40. In case female rural-urban, the rural female literacy variation, i.e. 15.59 is lower than the urban female literacy variation. Although the composition of urban population is 2.61 but the variation in literacy is far ahead of the bulk rural population. The variation in literacy percentage is to be improved to uplift the quality of life of the rural people.

The proportion of urban population in West district is lowest, i.e., 1.80, most of the people resides in the rural area. The overall growth rate in literacy is 13.20, with rural variation 15.35 and urban lower than rural i.e., 12.23. The progress in rural literacy is progressive and desirable. In case of male literacy variation between rural urban and overall is nearly 11 per cent and in case of female the variation in percentage is nearly 15 per cent.

There are very significant disparities regarding the rural-urban and male-female literacy. Gender bais is very prominent in backward states like Bihar, Madhya Pradesh, Rajasthan and Uttar Pradesh. So adequate study is to be done to evaluate the progress of literacy. To measure rural-urban disparity and gender inequality and to find direction and to prescribe policy we have to study the extent of variation in literacy percentage. Eastern Himalayan region covers eastern parts of Nepal, Sikkim, Tibet, a few parts of West Bengal and Arunachal. There is a close regional, similarities among them. But in case of literacy, there is a large variation among them. The literacy rate of Sikkim, i.e., 56.94 per cent is far ahead of the literacy rate of Arunachal Pradesh, i.e., 41.95 and it is almost equal to West Bengal. Not only this the literacy rate of Sikkim is more than the All India average, i.e., 52.21 per cent. Consequently the progress in literacy is very significant. Although the literacy rate of Sikkim is far behind the literacy rate of most advanced state, Kerala, i.e., 89.79 per cent. The massive progress in literacy is possible in Sikkim during last ten years. State Government has given a great deal of emphasis on education. There are primary schools in almost all villages.

Table - 11 : Literacy rate 1991[15]

	Persins	*Male*	*Female*	*Difference*
India	52.21	64.13	39.29	24.84
Sikkim	56.94	65.74	46.69	19.05
Arunachal Pradesh	41.59	51.45	29.69	21.76
West Bengal	57.70	67.81	46.56	21.25
Kerala	89.79	93.62	86.13	7.49

Source : Census India 1991, Govt. of India.

The male literacy is 65.74 per cent in the state which is more than eastern himalayan state. Arunachal Pradesh and Indian male literacy rate. But the state is lagging behind neighbouring West Bengal and Kerala. In case Kerala, the variation in literacy is nearly 30 per cent. But in case of female literacy, the condition of Sikkim is better than Arunachel i.e. 29.69 per cent and all Indian female literacy rate i.e., 39.29. It is equal to West Bengal. The female literacy rate of Kerala is 86.13 per cent which is 40 per cent more than Sikkim. As a consequence proper care should be taken to improve the female literacy rate of Sikkim. The socio-cultural and socio-economic condition hinders the growth female literacy in the state. Girls are not sent to school as they are needed at home to look after small children or do other odd jobs, e.g. cooking, fuel collection and etc. at home.

Gender sensitivity is very prominent in all the underdeveloped countries and regions. Even within each country there are very significant educational disparities between the sexes. The male-female literacy difference is 24.84 per cent in India. Although there are large variation in literacy among Sikkim. Arunachal Pradesh and West Bengal. But there is a striking similarities regarding the sex disparities. The differences are 19.05, 21.76 per cent respectively. It depicts a difference of nearly 20 per cent between the sexes and the trend is irrespective of the socio-economic or socio-cultural status of states. So the factors affecting this

may have a closer similarities which are inherent in the system.

Table - 12 : Age-specific literacy distribution -Male[16]

Age group Educational Status	6-14	15-19	20-44	45-47	60 & above	all
Illiterate	150 (39.3)	18 (8.9)	105 13.8)	16 9.3)	20 28.8)	
Upto V Standard	179 (46.9)	110 (55.8)	413 (54.3)	72 (41.8)	31 (44.9)	626
VI-VIII	40 (10.8)	33 (16.8)	102 (13.5)	53 (30.5)	15 (21.2)	203
IX-X	13 (3.5)	25 (1.26)	84 (11.0)	21 (12.2)	3 (3.8)	133
XI-XII	0 (0)	9 (4.5)	39 (5.2)	8 (4.7)	0 (0)	56
Graduate	0 (0)	3 (1.4)	8 (1.00)	1 (0.5)	0 (0)	12
Professional	0 (0)	0 (0)	6 (0.7)	1 (0.5)	1 (1.3)	8
Post Graduate	0 (0)	0 (0)	4 (0.5)	1 (0.5)	0 (0)	5
Total	382 (100.0)	198 (100.0)	716 (100.0)	173 (100.0)	70 (100.0)	

Source : Calculated from Personal Survey.

Being an Indian state, Kerala reveals a smaller difference of 7.49 per cent. It shows that the achievement of overall high literacy and 90 per cent has reduced the disparity between the sexes. Consequently it can be concluded the declining trend of disparity between the sexes indicates not only a better progress of literacy but also with greater social justice that radically changes in the economic and social life.

A total of 645 households were surveyed covering four districts of Sikkim. The total number of population is 3528 with 1882 persons male and 1646 female. To evaluate the educational status of the surveyed people. We exclude the population of (0-6) age groups because formalschooling starts at the age of six in India. Excluding 0-6 age groups. The total number of male population stood at 1584.

The educational status are classified in the following manner. e.g. illiterate and literate implies a person who can both read and write with understanding in any language. Literate persons are sub-divided into upto V standard, class VI-VII, class IX-X, class XI-XII, Graduate, professional and post graduate. To make a clear understanding the population is grouped into five age-specific categories. The categories are 6-14, 15-19, 20-44, 45-49 and 60 and above age groups. Besides the number of people into different categories, their percentages are also given in the brackets.

Out of 382 people in 6-14 age group nearly 47 per cent population belongs to the literacy bracket of up to V standard and 39 per cent in the category of illiterate. This high rate of illiteracy is due the socio-economic backwardness and socio-cultural factors. The poor parents show a little interest to send their children to school. In the next group i.e., 15-19 age groups, there are 198 people, of which the highest number of literacy upto 5th standard i.e. 55.8 per cent is observed and

followed by 16.8 and 12.6 per cent in the VI-VIII and IX-X classes respectively. The illiteracy rate is lowest i.e. 8.9 per cent. The drop outs due to socio-economic and socio-cultural are major factors behind the stagnation and concentration of literacy at the upto V standard.

The lion's share of people belongs to 22-44 age groups. Out of 761 male people, 54.3 per cent population has concentrated their education upto V standard. It implies that the spread of education in vertical direction is limited in nature. The basic requirements of literacy is more crucial than the quest of higher studies. The literacy rate is 13.8 with 105 population and the literacy rate declines sharply at a lower level at higher studies. These rates are nearly 13,11,5 and 1 for the VI-VIII, IX-X, XI-XII, and graduate level respectively. In Sikkim, the literacy mission and educational infrastructure gained the momentum during the last decade. Before merger, the educational infrastructure was very poor and insufficient to meet the requirements and rousing interest about education. A large number of population of this age groups belongs to before merger Sikkim. That is why the concentration at a lower level and the balance growth in upper layer of education is not observed.

Lastly, the next age groups, (45-49) years & 60 and above contain a population 173 and 70 respectively of which 9.3 per cent and 28.8 per cent are illiterate. In the (45-49) years of age bracket, better literacy rates are observed upto V standard and VI-VIII classes respectively. The rates are nearly 42 and 30 per cent respectively. In the (60 and above) age groups, about 45 per cent population lie in the upto V standard, most of them only can read and write and 21 per cent in the next strata of education. There is not a single number of graduate or post graduate in this group. Basically these people started their journey life long before the merger of Sikkim with India. These people have suffered due the poor infrastructure of educational facilities, non-availability proper guidance and control, poor communication system, less investment to education and lack of social consciousness. The economy is very much subsistence and sensitive to cultural and social taboos. Besides these, religious education and traditional occupation were very significant to them. They were less interested in modern education.

Table - 13 : Age-specific Educational Status of Women (in years) [17]

Age group/ Educational Status	*6-14*	*15-19*	*20-44*	*45-49*	*60 & above*	*Total*
Illiterate	239	28	107	31	26	
	(64.2)	(15.5)	(17.8)	(23.7)	(48.5)	
Upto V Standard	98	110	324	64	20	518
	(26.0)	(59.4)	(53.9)	(47.8)	(36.8)	
VI-VIII	28	20	77	20	4	121
	(7.6)	(10.5)	(12.8)	(14.8)	(6.6)	
IX-X	8	19	57	12	5	93
XI-XII	0	6	26	2	1	35
	(0)	(3.5)	(4.4)	(1.30)	(0.7)	
Graduate	0	2	5	2	0	9
	(0)	(0.7)	(0.8)	(1.30)	(0)	
Professional	0	0	3	1	0	4
	(0)	(0)	(0.5)	(0.6)	(0)	
Post Graduate	0	0	3	1	0	4
	(0)	(0)	(0.4)	(0.8)	(0)	All
	373	185	602	133	56	1349
	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	

Source : Calculated from Personal Survey.

Out of total 1646 female, 1349 belongs to the age group beyond (0-6) years. There are 373 female in the (6-14) years of age group of which 64.2 per cent is illiterate and 26 per cent has the literacy range up to V standard. As compared to male illiteracy, the female illiteracy rate is very high in this age group. This is a clear case of social disparity and gender bais to education. Even in now-a days, the education facilities are restricted to girl child. Most the girls are diverted to household works fuel collection, to look after the siblings and old persons in the family rather than school.

In the (15-19) age group, there are 185 females of them nearlyn 60 per cent belongs to up to V standard group and 15 per cent in the illiterate group and nearly 10 per cent in VI-VIII and IX-X classes. Due a large number of drop outs the concentration is highest in the upto V standard group. The socio-economic and socio-cultural taboos also restrict further study. There is a striking similiarities in case of male and female in this bracket. Early marriage is another important factor alongwith household engagement.

The largest number of female, numbering 602 lies in the age group (20-44) years with nearly 14 per cent illiteracy. The high stagnation in literacy is observed in upto V standard categories, i.e., 53.9 per cent. The reasons are high dropouts marriage, poor and inadequate infrastructure during the beginning of their educational life. The spread of modern education in Sikkim is last 10 to 15 years phenomonon. The distribution of education in the upper sphere is limited. It is nearly 12,9,4,0.8,0.5 and 0.4 per cent respectively in the upward direction. Consequently the mean years of schooling is not impressive among in this age group. The achievement of primary education is not sole aim of literacy mission, the depth of education enlarges the legal rights and status given to them, employment opportunities and demographic factors and it leads to a positive contribution to human development process as a whole.

In the (45-49) age group nearly 48 per cent female out of 133 has the educational record upto V standard and nearly 15 per cent belongs to (VI-VIII) brackets. Almost 24 per cent females are illiterate as compared male of this age

group. The female attainment is very lower. Poor educational achievement reflects a poor status of women in the society. Basically, in a primitive isolated state like Sikkim, the females were used as a means of reproduction and household management. Due the pastorial and subsistence economy, a large proportion of women has to perform work for economic and livelihood reasons. Whereas 15 per cent women attained upto VI-VIII standard of education, the male rate is double than the female, indicates a higher disparity or gender bais in education. Not only this, the next categories are also lagging behind in comparison to male educational status in this group. The state of women education is very poor in the 60 and above age groups. Merely basic education is observed among 36.8 per cent of the women and the illiteracy rate is very high nearly 50 per cent. The spread of education is also poor in the upper ladder. In comparison to male the female educational status is far behind in this age group. These women are of pre-merger Sikkim and the social progress, urbanisation, spread of communication and educational institutions were not sufficient and adequate to rouse the social demand and necessity of education among them.

Women educational status is very significant in uplifting the socio-economic, socio-cultural and demographic factors of the society. 15-49 age group is very crucial. The age group is regarded as the reproductive age group, as the fertility of Sikkim is very and the maternal death is also very high. To improve the condition of infant mortality, child care, population control and over the spread of education, the women of this age groups have the major responsibility in sharing the shoulder in the society. But the educational status in Sikkim is practically frezzed in the category of upto V standard. The bottleneck of the system is should be open. Women literacy is more vital than male literacy, not only in rousing the social and legal consciousness but also nourishing the demographic and vital factors of life and spreading better education campaign. The literacy rate which is accounted for 15 years and above age groups, is considered to be the adult literacy rate.

Table - 14 : Adult literacy and years of schooling [18]

Educational Status	*Male*		*Female*	
	No.	*Total years of schooling*	*No.*	*Total years of schooling*
Upto V standard	626	952	518	728
VI-VIII	203	1131	121	782
IX-X	133	997	93	902
XI-XII	56	631	35	380
Granduate	12	156	9	126
Profession	8	85	4	40
Post Graduate	5	70	4	55
All	1043	4022	784	3013

Source : Enumerated from Personal Survey.

Total population male 1882

Total population female 1645

Male adult literacy rate = (1043 X 100) / 1882 = 57.056

Female adult literacy rate = (784 X 100) / 1646 = 47.63

Combined adult literacy rate = {(1043 + 784) X 100} / 3528 = 51.78

Mean years of schooling for male =2.137 years

Mean years of schooling for female = 1.83 years

Combined mean years of schooling = 1.994 - 2 years

The male adult literacy rate is 57.056 per cent and the female adult literacy rate is obtained at lower level of 47.63 per cent. In accordance with 1991 census, the gender disparity is nearly 19 per cent between the sexes whereas in case of adult literacy the gulf reduces to almost 10 per cent. It implies that young age structure of Sikkim has a greater impact on the overall education system and achievement. A huge amount of investment and improvement is done during the last decade. It is seen that in the 6-14 age group. The female illiteracy, i.e. 64.3 per cent which more than male illiteracy 39.3 per cent of the same age group. The education trend of lower age groups influences the literacy achievement and widens the gender bais.

From the table it is seen that the main educational thrust is concentred upto XI-XII and standard and it is mostly frezzed at VI-VIII standard of education. As a consequence the mean years of schooling is not impressive and significant. The mean years of schooling for male is 2.137 years and for female it is 1.83 years. The shows that the overall adult literacy of the survey population is 51.78 per cent and the mean years of schooling is 1.994 years. The United National Development Programme has classified all the countries in to three board categories with respect to the human development conditions attained by the different countries. These are high human development, medium human development and low human development. The high human development suggests a high adult literacy rate of 97.3 per cent with 9.8 years as mean years of schooling whereas the medium human development shows an adult literacy of 80.4 per cent and 4.8 years as mean (19) years of schooling. The low human development countries is composed of mainly developing, under-developed and undeveloped countries reflects a lower adult literacy of 47.4 per cent with 2.0 years as mean years of schooling. India belongs to low human development category. During 1992, it achieved an adult-literacy rate of 49.8 per cent and 2.4 mean years of schooling. The position of India among the low human development countries is little bit better both in respect of adult literacy and means of schooling.

Table - 15[19]

Regions and countries and state	*Adult literacy 1992*	*Mean years of schooling 1992*
High human development	97.3	9.8
Medium human development	80.4	4.8
Low human development	47.4	2.0
India	49.8	2.4
Nepal	27.0	2.1
Bhutan	40.9	0.3
Sikkim (1993-94)	51.78	1.99

Source : Human Development Report - 1992.

During 1993-94 the adult literacy rate of Sikkim is 51.78 per cent which is more than national average 49.8 per cent during 1992 but the mean years of schooling is 1.99 years which is less than the Indian average. It implies that the spread of education has got momentum recently. The state Sikkim is in a better position is respect of neighbouring countries Bhutan and Nepal. The adult literacy rate of Bhutan and Nepal is less than Sikkim. The mean years of schooling of Bhutan is 0.3 years which is far below Sikkim but the mean years of schooling of Nepal is a little better than Sikkim. There is a close social, religious and economic identity among the states, So the comparison is made.

It is also above the Indian average, although the mean years of schooling is marginally below than the low human development category but it far below the Indian mean years of schooling. It indicates a poor and inadequate educational inheritage of Sikkim.

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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 love in double storeyed houses, the upper floor proving the kitchen, the bed room an 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 notches bamboo. The space beneath the house serves as a cattleshed.

In Dzongu, as the climate is extremely wet, there is a wide overheading roof, which often project 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 unhygiene condition with cow-dung pilling 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 incroporates 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: 1[1]

	East	*West*	*South*	*North*	*Sikkim*
Kutcha	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 kutcha 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 terian 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 cent[2]. 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 latrines[3].

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 distract 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 note in perpetuating an insanitary environment and certain infections diseases are transmitted by animal sources of infection such as urine, faces, wool, hair, saliva etc. Certain intestinal parasites like tapeworms and Asearis 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 terain 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, flouride and iodine is the major contributory factor for diseases like dysentery, diarrhoeas and cholera, which are quite common.

Table - 2[4]

Districtwise Drinking water

	District			
Source	*East*	*West*	*South*	*North*
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 nearly 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. Expect 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 infeasted with cockroaches, leeches, mice and other rodents and insects like mosquitoes and housefiles. 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 files like Musca, Blue botle, sarcophege were seen almost everywhere. Improper disposal of night soil and human exereata 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 - 3[5]

Districtwise percentage of Families according to method used for Exereta Disposal

Method used	Districts			
	East (n=255)	*West (n=168)*	*South (n=162)*	*North (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 defaceation 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 form 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. In 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 herse 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 - 4[6]

Major material composition for housing in Sikkim

Wall	*Roof*
(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 - 5[7]

Percentage distribution of households living in different houses

	1981	*1991*	*1981*	*1991*	*1981*	*1991*
	Pucca		*Semi-pucca*		*Kutcha*	
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 kutcha 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 kutcha 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 kutcha houses. In urban area, the percentage of kutcha 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 - 6[8]

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

	Electr city	*Safe Water*	*Toilet*	*Electri city & Safe*	*Toilet & Safe Water*	*Electr city & Toilet*	*All Three*	*None*
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-brone 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 brone 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 hygenic 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.

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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 Lanchen 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 sps. 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]

Community	*Rice*	*Maize*	*Millet*	*Wheat/Atta*	*Total*
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/day[4]

Table : Pulse Consumption Pers on/day

	Kalo-dal	*Masur dal/day*
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 an 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]

Community	*Beef*	*Buffalo*	*Pork*	*Chicken*	*Mutton*	*Fish*	*Total*
Nepali exc-ludingLimbu &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 fisk 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 calori than that of the plane people. The meet 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 excl-uding 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

	Mustard oil	*Sugar*	*Salt*	*Tea*
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 numberof

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 donw. 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

Fuel	*Terai Region(a) (W.B)*	*Sikkim (b)*	*NCAER(c)*
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 - 7[11]

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.Petrolium 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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Chapter - VI

Health Scenario in Sikkim

Health Condition :

Health condition implies the broader sense of "quality of life" rather than the absence of illness of diseases in general. Health situation reveals the entire socio-economic structure of the total population of a region or state. In UNDP Report 1990 the life expectancy was widely accepted as the reflection of total health condition of a country or a community as a whole. As a result health may be defined as a combination of physiological development associated with the reduction of mortality, child mortality, morbidity and etc. and the capacity of both mentally and physically creative. The following are main determinants of health situation; of them the indirect factors includes the overall environmental, geographical condition, social and religious organisation and the economic production and distribution and on the cultural traits of the population. Direct factors are the status of health services which incorporates, infrastructure, organisation, resources mobilisation and flow, output of the health services, sanitation system. The most vital factor is nutritional status of the people which depends on economic condition and food habits of the people and this can be measured through the morbidity, mortality, nutritional and physiological development of the individuals of a given community.

(i) Infrastructure : The health infrastructure is well established in all four districts of the state.

Hospitals :

1. Referral Hospitals : There is one 300 beded referral hospital at the capital town, Gangtok. It has Departments of medicine, cardiology, surgery, pediatries, obs. & Gys, orthopaedics, Eys and ENT, opthalmology and psychiatry. With this another 500 beded special hospital has been sanctioned at Tadong, near Gangtok, with an estimated cost of Rs. 22.70 crores.

2. District Hospitals : There are four district hospitals one each at Singtam in East district Gyalshing in West district, Namchi in South district and Mangan in North district. Namchi hospital is 100 beded and all the hospitals have laboratory facilities and the rest three district hospitals should be upgraded in the 8th plan.

3. Primary Health Centres : Decentralisation of health care system is a vital part of its functioning. As a consequence there are 23 primary health centres these are evenly distributed in the various districts. There are 7 PHCs in East, seven in West, three in North and six in South.

Each centre covers 10,000 to 20,000 population. All the PHCs except two have electricity in the premises and telephone facility is available only in Jorethang PHC. All the PHCs have bed strength of 10 beds. Seventeen out of 23 PHCs are housed in government buildings and three are in rented building and other 3 have been sanctioned recently.

Sub-Centres :- Sub-centres are the part of the distributional aspect of health system. There are 6.7 sub-centres (PHSCs) under each primary health centre. There are 142 PHSCs in the state and each covers a population of 1600 to 3000 approximately. Sixty three of the 142 PHSCs have residential quarters for ANMS, MPWS and IV staff.

Table - 1 : Health Infrastructure in Sikkim [1]

Items	*North*	*South*	*East*	*West*	*Sikkim*
1. Hospitals	1	1	2	1	5
2. PHCs	3	6	7	7	23
3. PHSCs	19	37	45	40	141
4. Beds available	80	160	445	110	665
5. Patients treated					
(a) Indoor	2125	1703	6268	2141	12237
(b) Outdoor	42495	52932	52355	68081	21563
6. ICDS centre	56	100	126	98	380

Source : Health Department, Govt. of Sikkim.

The above table depicts that the number of population per PHC and PHSC are highest and lowest in East and North district respectively. This variation occurs due to the variation in population density in the respective districts.

Integrated child Development Scheme : ICDS is centred in all the districts. There are 405 sanctioned ICDS projects, out of them 375 are functioning in 1990.

Table - 2 : Districtwise ICDS Centres [2]

District	*Sanctioned*	*In working position*
East	130	127
West	100	93
North	75	58
South	100	97
Total	450	375

Source : Health Department, Govt. of Sikkim.

Health Guides : Health guides are playing a vital role in the state health care system. Its district wise distribution is as follows :-

Table - 3 : Health guide distribution [3]

District	*Male*	*Female*	*Total*
East	45	27	72
West	41	8	59
North	46	5	51
South	51	10	61
Total	183	60	243

Source : Health Department, Govt. of Sikkim.

There are total 243 health guides in the state during 1990, comprising 183 male and 60 female. Staffing pattern of PHCs is similar to that recommended by Govt. of India. Two medical officers have been sanctioned for every PHC. Ten

PHCs have been sanctioned 3 medical officers. All PHCs have vehicles and 80% possess an ambulance. There are also ANM Training School and the school is affiliated to West Bengal Nursing Council and is admitting about 28 students per year.

(ii) National Health Programmes : All health programmes instituted by Govt. of India are implemented in Sikkim. Goitre is endemic in the state with a very high prevalence. Under the goitre control programme the sale of non-iodized salt has been banned in the state and a research centre has been established at Namchi for diagnosis, treatment and research in iodine deficiency disorders. Although leprosy is not a big health problem, a 20 beded temporary hospitalisation ward has been established in Tadong in East district. A bunch of new programmes have been identified for implementation during the 8th plan period. These are :

(i) National Mental Health Programme (ii) Control of AIDs (iii) Cancer Control (iv) Dental Health (v) Diarrhoeal Disease Control Programme (vi) A.R.I. Control Programme.

Social Welfare Programmes for Women and Children :

Social scientists have recognised that in all spheres of life women are discriminated against and their accessibility to various welfare services such as education, health, employment etc. is far less than their male counterparts. The situation is very worse in the remote areas of rural Sikkim. Mortality and morbidity are perhaps much higher among females resulting in a continuous decline in the sex ratio. In this consequence the state has initiated a number of social welfare programmes, aiming at the improvement of the lot of the women and children, the physically handicapped, the aged and the weaker section of the society.

A social welfare wing was established in 1976 and this wing was brought under the department of Health in 1985. The activities of the social welfare wing are as follows in Sikkim :

(i) Distitute homes : There are four distitute homes being run by voluntary agencies/social welfare wing with Grant-in-aid from the Govt. of Sikkim. They are situated at Chakung, Kaluk, Pelling and Gangtok. Each of these homes cater for 50-100 children.

(ii) Creches : There are 65 creches all over Sikkim. These are run by various voluntary agencies under the supervision of state social Advisory board. Ninety per cent of the cost for running these creches is being given by central social Welfare Board, New Delhi and the remaining 10% is given by the state. (iii) Day Care Centres : There are two day care centres being run in Gangtok and Pelling by Sikkim Women's Council and D.L.Y.T.

Welfare Scheme for Women : This scheme include the following (i) Working women's Hostel : A hostel with a capacity of 90 women is being run by social welfare wing, Govt. of Sikkim. Another hostels has been built at Namchi and would be run by the Sikkim Women's council. It also proposed to build one more hostel at Gaylshing (ii) Training of Rural women for income generation: Participation in economic acitivity is a crucial component of human development. Proper training could improve their social position. Viewing this point, training Centres are established in the following places and the emphasis was given in the traditional knitting, tailoring and embroidery sector. The centres are distributed in the following places : (a) Turuk (b) Ranipal (c) Tibet Road, Gangtok (d) Arithang, Gangtok (e) Gyalshing (f) Pelling. These centres are run by various women's organisations with the grant-in-aid from the state government. (iii) Training Cum Production Centres : The Arithang social Welfare Association runs such a centre at Arithang, Gangtok. Another such centre is run at Gyalshing by a local Women's organisation.

Welfare schemes for Physically Handicapped : A number of welfare schemes have been instituted for hanidicapped men, women and children by the state. Of them (a) Stipend/scholarship : Stipend Rs. 150 is given to blind, deaf and dumb for their education in special institutions outside Sikkim. They are also trained in professional courses like teaching, physiotherapy, music/dramatics. Scholarships

are also provided to disabled children studying in general schools from class I to XII. (b) Sheltered Workshops : Handicapped children are trained in spinning, cane, and bamboo work, candle and chalk-making etc. (c) Supply of Aids and appliances : Various appliances like crutches, wheel chairs, hearing aids, callipers, folding stick etc. are supplied to neeedy persons free of cost, spectacles are also provided free of cost to the poor patients.

Growth of the Health Infrastructure :

Since merger with India, Sikkim has experienced a multi-dimensional transformation in all facets of the state. The basic infrastructure of health and its growth from 1975 depicts the true picture of its achievement in health facilities.

Table - 4 : Health infrastructure in Sikkim [5]

Year (0)	*No. of dist. hospital*	*PHC*	*PHSC*	*No. of beds*
1975-76	5	-	26	337
1979-80	5	15	32	628
1984-85	5	18	82	705
1989-90	5	20	132	795
1990-91	5	22	136	795
1991-92	5	23	141	975

Source : Health Department, Govt. of Sikkim Gangtok.

The health status in Sikkim reveals a clear picture of improvement from the following figures :

Table - 5 : Patients and Beds [6]

District	*Beds available in no.*		*Indoor*		*Outdoor*	
Year	*79-80*	*91-92*	*79-80*	*91-92*	*79-80*	*91-92*
East	380	445	4817	6268	98085	152355
West	90	110	1576	2141	50114	68081
North	70	80	1673	2125	31456	42495
South	90	160	862	1703	27792	52932

Table - 6 : Registered Health Personnel [7]

Type(Year)	*79-80*	*91-92*
Doctors	35	123
ANMs	109	348
Staff Nurse	5	25

Source : Sikkim : A Statistical Profile. 1979-92 Planning a Development Deptt.

Table - 7 Growth of ICDS Centre[8]

Growth of ICDS Centre

District	1979-1980	1991-1992
East	75	126
West	75	100
North	71	56
South	75	100

Source : Sikkim :- A statistical profile- 1979-92

Traditional health care (Jhankri) and Ayurvedic institution. There is one Ayurvedic institution with 10 beds and four doctors and one nurse and it has treated total 7128 patients.

Family Welfare Programme :

National Family Welfare Programme is being implemented in Sikkim since 1976-77. It is fully centrally sponsored programme although the programmes is in existence in India since 1951. The motto of the programme has been to implement as people's programme. Practically the family welfare programme is a composite package which includes control of birth rate, maternal and child health and immunization. The health infrastructure of Sikkim is mentioned detail in our previous section. Mass education, media activities, social consciousness and adult literacy are being taken regularly in order to educate the couple to adopt small and healthy family norms. The quality of life largely depends on these factors.

The long terms demographic goals laid down in the National Health Policy is to achieve birth rate of 21/1000, death rate of 9/1000. Natural growth rate of 1.2%, infant mortality rate of 60/thousand live birth and 60 per cent couple protection rate of 2000 A.D. However the state has achieved as on 1990 birth rate

of 26.4/1000, death rate of 7.3/1000, infant mortality rate of 96/1000and couple protection rate of 20.6% and growth rate of 1.91. This reveals that the target laid down in National Health Policy may not be achievable specially because of low couple protection rate.

The family welfare programme was implemented in the state only after 1976-77.

The programme as implemented in the state of Sikkim at different level as follows :

(a) State Family Welfare Bureau : To monitor the whole functioning of the Welfare Programme, State Family Welfare bureau is formed under the Directorate of Health and Family Welfare. Secretary, Health.

(b) District Family Welfare Bureau : District Family Welfare is started functioning very recently. It is yet cover in all districts of Sikkim. In the East district, the Centre is functioning at singtam, headed by District Family Weifare Officer. In West, South and North Districts no Bureau has been sanctioned.

(c) Rural Family Welfare Centre at Primary Health Centre Level: There are total 23 PHCs in the whole state of only seven PHCs are provided with rural family welfare centre. Rural area is inaccessible and stiff terai restricts the mobility of the facilities. The facilities to be extended in all PHCs to eradicate and uplift the barriers and the standard of living of the rural people.

(d) Post Partum Programme : Under this programme, State is running lone District level Post Partum centre at the state headquarter,Gangtok attached with urban Family Welfare Centre. Two districts of West and South had been implemented with sub-district level post partum units.

(e) Universal Immunization Programme: Universal Immunization Programme launched by Government of india in 1985 headed by State E.P.I officer and was extended to the East district of Sikkim in 1986-87 and in the rest of the districts in 1986-87. The focus of attention being infant and pregnant women with a goal to achieve 85% coverage of infants with B.C.G, Measles vaccination three

doses of DPT and OPV and 100% immunization of pregnant women with doses of T.T vaccine by 1990.

There are various reasons for short fall in the coverage of pregnant women. The reasons are reviewed from time to time and some important reasons are: (i) Difficult in identifying the pregnant women due to inaccessibility of both health personnel as well as pregnant women to avail services, (ii) Lack of imformation and awareness of benefit of immunization of women during pregnancy (iii) Cold chain system : The success of the programme depends on maintenance of efficient cold chain system. The state has well developed this system with generators provided for each PHCs to use during power failure.

(f) Research and Training : Research & Training is an essential part of the medical or health care system. State is having one ANM Training centre headed by Principal Nursing officer with capacity of training 40 trainees yearly.

(g) Transport : There are 23 vehices available under Family Welfare. more vehicles are required to meet the communication system more compact.

(h) Training at Indigenous dias : Target of 50 dias per year have been set for the state training. We have already trained 321 women from villages in1993.

(i) Village Health Guide Services : Presently 237 villafe health guides are working in different villages.

National Leprosy Eradication Programme in Sikkim :

The National Leprosy Eradication programme was launched in Sikkim from 1976 and the programme was projected then as the National Leprosy Control programme. During 1981 and onwards it became a hundred per cent sponsored scheme reframed as National Leprosy Eradication Programme, aiming total eradication of the disease from the country by 2000 A.D. Initially the programme was started by a medical officer I/C Leprosy unit. The unit ws established in all four districts.

Infrastructure of the State leprosy Programme :-

1. Line of control

(i) D.H.S.	
(ii) jt.D.H.S.(cd)	District Level
(iii) Programme Officer	Mid Level
(iv) Medical officer	District Level(ULC)
(v) N.M.S, U.L.A.& P.A.W.	

2. Physical Infrastructure

No	
(i) Leproy control Unit (L.E.C.)	1
(ii) Urban Leprosy Centre (U.L.CL)	4
(iii) Survey Education Treatment (S.E.T.)	21
(iv) Temporary Hospitalization Ward (T.H.W)	1

3. Staffing Pattern

There are total of 75 staff under NLEP programme recently. Out of them, the main functions of NLEP is case detection, screening alongwith temporary hospotalization and lastly bactorial examination. NLEPis an essential part of the health care system. Yet it faces so many drawbacks. These are of two fold. Firstly structural pattern is sufficient as prescribed by the Central government. There is lack lof sample Survey Assessment unit, Reconstructive Surgery unit and Leprosy Rehabilative Promotion unit. Therefore, the infrastructure existing in the state is lagging behind the central rule.

Expect this it also run through functionl problems. Firstly there is no District Leprosy officers in any one of the district. Secondly there is a requirement one medical officer for every Leprosy Cure Unit. Due to the shortage the apppointment is delayed or deferred. Thirdly there is no proper staff at G.B.Pant Hospital.

Table - 8 (a) National Leprosy Eradication programme

Year	*New cases detection*			*Case discharged*		
	Target	*Achieved*	*%*	*Target*	*Achieved*	*%*
1990-91	80	33	41.2	50	3	6
1991-92	50	27	54.0	100	19	19
1992-93	50	36	72.0	100	10	10

Source: Health Department,Govt. of Sikkim, Gangtok.

The table : 8 depicts a poor performance and achievement. The case detection per cent increases but the physical achievement and case discharged proved only the existence of NLEP.

School Health Programme :

The school health programme has a wider outlook to the improve the quality of life in future as well as present. The objective is to prepare younger generation to adopt measures to remain healthy and utilize educational facilities to widen the social consciousness and serve their families and community at large. This programme was initiated in 1977 and the facilities were provided to school children from class I to V. It includes Medical check up, Immunization, school Health Education and Teachers Training. Urban School Health Unit is based at S.T,N.M. Hospital and in the districts. District Health Education Officer and PHC team are providing such services. School Health Education is provided from District in the form Health talks, Quiz, Essay Competition and mini exhibition.

Main Problems :- (i) There is no separate infra-sturcture for school Health Programme in the Districts. (ii) There is no medical officer under school Health Programme in Districts which amounts to variation in coverage. (iii) There is lack of fund in promoting the programme effectively. (iv) Sikkim is a hilly state. So communication is a major blockade and there is no adequate vehicle to monitor the programme.

Table - 8 (b) School Health Programme

Academic Year	Estimated schools	Coverage (%)	Beneficiaries	Training of teacher
1990	450	333 (74)	20,343	83
1991	450	340 (75)	12,394	85
1992	450	345 (76)	25,808	81

Sorce : Health Department, Govt. of Sikkim.

Special campaigns organised : (i) Diarrhoeal diseases (ii) Population Education (iii) AIDS (iv) Durgs (v) Nutrition (vi) Personal hygiene/sanitation (vii) communicable diseases. The joint training is the programme mainly to reoriented the Health workers (male and female), Anganwadi on the different kind of diseases and its prevention. During 1990-92, the following programmes were organised. These are (i) Health camps 196 (ii) Film show 200 (iii) Exhibition 309 (iv) O.T.C. 41 (v) Drama competition 4 (vi) Quiz competition 8 (vii) Panchayat Camp 41 (viii) Joint Training 80 (ix) Seminar 14.

(iii) Social custom & belief :

The human development condition in Sikkim state is directly related to the ecology, human settlements, economic pursuits and aminities available. The quality

of life is largely depends on the economic, social as well as political atmosphere of the region. It is well accepted that development should be matched with human need and well-being. Well-being has physical, mental, ethical, socio-economic, political and ecological dimensions.

The state of health in population groups of Sikkim has been affected by ecological and socio-cultural factors like climate, terrain, isolation, belief and poverty. The factors affecting the health of these population groups can be divided into two categories :- those factors which are responsible for spreading diseases in the people; those factors which affect the health of the people in an indirect ways. The factors which are responsible for producing disease are (i) settlement pattern and state of cleanliness; (ii) personal hygine; (iii) consumption pattern; and (iv) addiction. Factors which affect health indirectly are (i) religion and family outlook on health; and (ii) health care system -

Religion and Family outlook :- Religion has been held responsible for many differences and norms affecting the fundamental values and behavioural patterns in life including health behaviour. In Sikkim, Lamaism, Hinduism and Animism are practised by different ethnic groups, but it is very difficult to classify them accurately. Some Nepalese are Hindus and others are Buddhists, while the Lepchas are animists and Buddhists. The religion of the scheduled castes is uncertain, although they have been classified as Hindus. There is no proper demarcation between Hindu and Buddhist sect. Even the Brahman joins with other peasants, both Hindus and Buddhists in making regular contributions to the Buddhists monasteries in order that the Lamas may protect his crops from hails.

Lepchas are the original inhabitants of the state. Among the Lepchas, the conception of gods is vague, and apparently, it had not attained maturity when it was superseded by Buddhism. The primitive religion was dominated by the concept Bon thing, who might be called a shamar, a medicine man.

For the Lepchas, illness is something that may be caused by spirits of envy, hatred and quarrelling. Illness may be prevented by leading a good clean life and not causing trouble of others. The Bhutias, on the other hand, believe in witchcraft

and sorecry. Their belief in witchcraft and soreery offers a possible contrast between the scientific and cultural reality. They believe that they have at least partially solved the problem and their partial solution contributes a great deal towards the shape of the Bhutia cultural system.

The Lepchas believed in two types of spirits - (i) good spirits Rum and (ii) evil spirits - Mung. It is impossible for an ordinary men to deal directly with the spirit world and to know the exact cause of their trouble. When a man is ill, a Bon-thing is called who burns incense to know wheather it is Rum or the Muns who are troubling the sick persons. Then by counting the rosary and throwing the dice he discovers what is troubling the patient and sacrifices. In case of a sick woman a Mun is called. Mun is a woman who sings and calls up the Rum.

According to the Lepchas, the cause of human suffering is mainly due to supernatural intervention. Its explanation is entirely different from that of Lamaism. In Lamaism the cause of suffering is desire, physical need, sensuous desires and the natural tendency to develop attachments to things and persons. The Lepchas and Bhutias rituals primarily serve to insure that a person will have a long and healthy life and suffer few misfortunes. Both perform curing and purification rites and maintain similar beliefs about the supernatural and man's responsibility to it. The rites are held to produce a harmonious relationship between man and supernatural. They also serve as social occasions where a large numbers of people come together for conversation, drinking and general gaiety.

Illness and death are attributed to a number of malignant spirits who have to be propitiated by various ceremonies. A few of these super-natural beings like sang group Mung, there are also some benevolent supernatural beings like Kun Kung, the guardian spirit of life. The Bhutias of Lachen and Lachung are Buddhist and believe in basic principles of merit and sin. They also believe in a vast array of gods and spirits who must be propitiated at the appropriate time for general welfare of society.

Finally, village religion includes the primordial tradition of shamanism. The Pau's primary function is to cure illness. He goes into a tranee and

communicates with spirits in order to discover why they have afflicted the patient with illness and how to appease them. Sometimes he performs diagnosis with the help of a plate full of rice. He goes on shaking the rice plate till the symbol of the evil spirit appears in the plate. The Pau performs Phuphi by offering money, eggs and clothes which have been circulated thrice over the patients head to the malignant spirit. These things are thrown out and only cloths are brought back. It is believed that the person will get cured within three days. Only if he is not cured will he go to the Lama or the primary Health Centre.

Like the Bhutias, Sherpas are of Mahayana Buddhism sect, The Sherpas believe in a great number of malignant spirits. The Sherpas perform rituals to appease these spirits with aid of two types of ritual practitioners - the Lamas and the spirit media. Illness and other misfortunes are caused by the activities of Witches - Pem or Sondim. The shamans, village lamas and Lamas do similar curing rituals with similar structure, but shaman work is not considered as religious work. The shaman's primary function is to cure illness. He goes into a trance and communicates with spirits in order to discover why they have afflicted the patient with illness and what they require for leaving the patient.

The Tamangs also belongs to Mahayana Buddhism and like other Bhuddhist groups believe in numerous evil spirits. These spirits are considered the cause of illness among humans. They practice Jhankrism. Jhankrism in its original from is a kind of shamanistic cult. The Tamangs call their Jhankri (shaman) priest their Bompo. He drives away the spirits when people fall ill. He worships and sacrifices animals.

The next group is Newars. The Newars also practices Jhankrism. The Jhankris are called in case of illness and spirits and are considered as the cause of illness.

All Nepali groups, the Brahmans, Chhetris, Rais, Limboos, Managars, Gurungs and scheduled castes are Hindus. Jhankrism is not peculiar to anyone Nepali group but is found among all of them.

Among the Rais, the religious leader who presides over ceremonies is called Ngopa. He becomes possessed by spirits and announces the verdicts of the gods. The Ngopa also acts as a physician and tracts the people by propitiating gods and spirits during an illness.

The Limboo (Subba) community is closely related to the Rai community in that it has a number of local deities of mountain and rivers to worship. The Limboos have two different kind of religious leaders known as the Shamba and the Fedangba. Either of these can conduct rituals on behalf of their clients to ward off evil spirits and treat their clients when they fall ill. The Mangars are Hindus and have Brahman priests who lead then in the same pattern of religion as practised by the Brahman - Chhetris. Like the Mangars, the Gurungs have Ghyabre priests to ward off evils and perform purificatory rites. The religion of the scheduled castes is uncertain but their beliefs regarding health, illness and spirits possession are other Nepali groups. They believe in the Jhankris and send for their help in case of illness etc.

(iv) Health care system in Sikkim :

A health care system is concerned with the ways and mans in which people organise themselves to take care of the patient. These different categories of illness are treated accordingly. Diseases caused by supernatural beings are treated with worship and devotion accompanied by animal sacrifice. Diseases caused by magical means are treated by erocism. These system involve rituals, the medicineman or exorcist and the patient.

The concept of health and hygiene among the people of Sikkim is not very high. The drainage system is extremely poor and at places animals and human beings live side by side, there are no preventive health care measures as such which are taken by population groups to avoid illness. The only preventive measures being taken by them are periodic village and family rituals towards of evil spirits.

The majority of the people in Sikkim has no idea about the causation or preventive of diseases. The belief in the interference of a supernatural agency is

very strong in the context of health and diseases. Different spirits and deities are believed to be connected with different types of diseases. All deities have their own respective departments and area of influence, effect and control as well as nature of actions. However, they have started to realist the efficacy of scientific method of treatments and prevention and evidence by their ready acceptance of the small-pox vaccination.

The state of personel hygiene was found to be very poor almost all the population groups of Sikkim. In this respect the Lepchas and the Bhutias were the dirtiest. The Nepalese on the other hand, take more frequent baths, but they are otherwise no better. Most of them are extremely reluctant to change and clean their clothes; wash their hands, mouth and teeth, and to clean themselves after defecation. This state of bad personal hygiene for which the climatic conditions and diffienltics in procuring may be partly responsible, has greatly contributed to the wide spread prevalence of pedienlosis, worm infestation, skin diseases including scabies, dental troubles like caries, Pyorrhoea etc. foung amongst them. The majority of the people also go without any footwear. Because of cold climatic conditions the people of Sikkim always sleep inside the house and due to the shortage of space, close to eact others. In such a situation, coupled with low frequency of bathing, washing and changing of clothes, louse infestation is prevalent. Lice are known to be carriers of epidemic typhus and relapsing fever.

Health Scenario in Sikkim :

A cross section and time series analysis of the health infrastructure and investment of Sikkim is given here. The comparison is made with Kerala, which is regarded as the demographic laboratory of India, not only this, it also occupies the highest human development index among Indian major states. The per capita Net state domestic product i.e. per capita income is low in comparison to 17 major states in India. But Keral's achievements are quite high and exceptional. The HDI for Kerala is 0.651 in 1987. (11) As consequence the achievement of Sikkim is compared with Kerala and beside this all India figures are given to make the matter

more comprehensive and more significant. We are discussing one after another.

(i) Hospitals : Hospitals are inseparable and the most ingredient part of health factor. The total number of hospitals per one lakh population is given here:[12]

Table - 9 Hospitals/Lakh pop. : Comparison growth

Total (yr)	*1976*	*1981*	*1986*	*1988*	*1991*
Sikkim	1.90	1.58	1.39	1.32	1.24
India	0.72	0.99	1.02	1.25	1.32
Kerala	2.52	2.98	1.20	7.35	7.02

Source : Annual Report, 1991-92, Ministry of Rural Development.

During 1976, there were 1.90 hospitals per lakh population which declined at 1.24 in 1981; whereas the Indian number was doubled during the same period. In case of Kerala, the matter is completely different. During the period 1976-91, the number of hospitals per lakh population was tripled which is a major achievement of the state. It is possible due to low population growth and improved vital indicatory where as in Sikkim, the gowth rate of population is very high and the stagnant condition of basic health programme. So in terms of hospital, the plight of Sikkim is lower than National average and nearly six times lower than Kerala in 1991.

(ii) Beds : Number of beds per lakh population is shown here.[13]

Table - 10 (a)

Year	*1976*	*1981*	*1986*	*1988*	*1991*
Sikkim	145.18	135.28	145.83	139	130.08
India	72.79	73.64	77.79	78.19	78.70
Kerala	225.4	175.92	220.15	266.56	263.20

Source : Annual Report, Ministry of Rural Development.

It is evident from the above table that the number of beds/lakh population has increased in both cases of Keral and India; Whereas the numbers had declined from 145.18 in 1976 to 130.08 in 1991. It reveals a poor development of indoor facilities. Sikkim occupies 130.08 beds/lakh pop. which is nearly double in Kerala in 1991, but the state of Sikkim is undoubtedly better in comparison to national average from the very beginning.

Table - 10 (b)

Sikkim 1993

Districtwise availability of beds/lakh [14]

No.of beds	*North*	*East*	*South*	*West*	*State*
lakh pop.	256.08	249.36	162.26	122.25	198.05

Source : Sikkim at a glance 1993, B.E.S.

The districtwise variation in 1993 in Sikkim shows that the north district occupies a better position in terms of per capita availability of bed/lakh population. But the real picture is completely different the nature and morphological setting of

North Sikkim, especially the existence of La-chen and La-chung valley settlement, restricts the availability of hospital and bed facilities. Traditional mixed farming, herding and variation of settlement are very frequent in their life style and after all the lack of awareness and belief on traditional treatment restricts the benefits.

Dispensaries : The number of dispensaries per one lakh population. Inaccessibility and lack of proper transportation and communication are twin causes of health hazards in Sikkim. So the dispensaries play a significant role in rearing up the health condition of local people. It provides medicine and primary health care measures.[15]

Table - 11

Year	1976	1981	1986	1988	1991
Sikkim	9.12	1.90	N.A.	32.32	33.45
India	1.09	2.45	3.38	3.67	3.25
Kerala	2.77	2.95	5.48	7.51	6.04

Source : Annual Report; Ministry of Rural Development.

It depicts that the relative position of Sikkim in terms of dispensaries is better than National average, i.e. 1.09 and even better than Kerala in 1976. But during 1981, the state of Sikkim is worse, it stands at 1.09, a sharp decline from 9.12 dis/lakh population. This decline is due to havoc population increase and inelasticity in dispensary expansion.

It can be seen from the table that medical facilities in terms of dispensaries available in Sikkim is even highest. It accounts for 33.45 dispensaries/lakh which is nearly 11 times more than national average and about 5 times more than Kerala. This is possible due to havoc investment during the last decade. Yet it is interesting to note that the health condition of Sikkim is far below than Kerala. It implies that the dispensaries are not functioning properly and the mass participation is also lack. Due to the shortage of man-power, requisite medical stock and the traditional

way of life hinders the functioning of these dispensaries. It is found that the dispensaries, specially in rural areas remain closed in most of the days and it opens occassionally.

Primary Health Centres (PHC) and Sub-centres (PHSC) :

The activities of the primary health centres and sub-centres are very crucial in Indian health care system. The total number of PHC's and PHSC's are given earlier. In terms of PHCS, Sikkim is always in a better of position, at least statistically. It is evident from the account that per lakh population have PHC facilities of 2.20 in Sikkim during 1975 which is nearly thrice more than Kerala and it is twice than national average. Even, during 1991, the number of PHC per lakh population is 5.97 which is also more than national average and Kerala. It is very interesting to note that although, statistically, the situation is better but practically, the facilities are limited to a certain area, due to the hilly hazards, bitter climatic condition and inaccessibility. [16]

Table - 12

Year		*1976*	*1981*	*1986*	*1988*	*1991*
Sikkim	PHC	2.20	5.65	6.31	5.92	5.97
	PHSC	9.66	11.31	29.35	37.33	37.18
India	PHC	1.11	1.06	2.45	2.81	3.55
	PHSC	7.87	9.74	17.18	18.77	20.90
Kerala	PHC	0.85	0.70	2.08	2.77	4.27
	PHSC	9.27	8.75	15.72	18.31	23.45

Source : Annual Report 1991-92, Ministry of Rural Devp.

Primary health sub-centres work as a supplementary to PHCS in Sikkim. The growth of PHSC's is impressive. During 1976 it was 9.66 which raised at 37.1 in 1991. The number PHSCs per lakh population is 23.45 in Kerala and it is 20.09 in Indian average. At the very beginning, the plight of Sikkim was also better than national average and Kerala, the respective rates were 9.66, 7.87 and 9.27 in 1976. The functioning pattern is mentioned earlier. With all this effort, the achievement of Sikkim is far behind than Kerala; this is due to the fact that Kerala is progressing gradually from earlier independence whereas Sikkim merged India in 1975 and due to political and other reasons, a huge amount of investment was made towards social sector and social welfare to boost up the condition of human and humane.

Table - 13 Doctors & Nurse[17]

		1971	*1981*	*1991*
Sikkim	Doctors			29.67
	Nurses			
India	Doctors	27.57	39.22	47.19
	Nurses	14.71	21.95	36.88
Kerala	Doctors	27.09	45.95	56.72
	Nurses	19.43	37.48	78.41

Source : Annual Report 1991-92

Doctors and Nurses : Besides hospitals and patients, the doctors and nurses are regarded as the another two wheels of a mobile vehicle. There is also scarcity of doctor in Sikkim. Traditional treatment is more popular and affordable. The highly qualified doctors and even M.B.B.S do not want to practice in Sikkim. They always prefer Gangtok and the outside of Sikkim. Consequently the number

of doctors and nurses are very poor per lakh population. It ranks far below the national level. The plight of Kerala is better in this respect. Hence districtwise classification reveals that West is the Worst of all. The number of doctor per lakh population is only 15.28, but only the East district is in better position, it accounts for 42.58 doctors per lakh population. The transport communication and urban population are more in East district and the population is also maximum here. Consequently most of the doctors are concentrated at urban areas. Specially Gangtok and other centres. In villages the condition is very bleak. Inaccessibility and lack proper aminities generally do the doctors settle at urban areas. North, West and South district provides non-proportionate doctors and nurse. It is very hard to find in need.

Table - 14 Districtwise distribution

	North	*East*	*South*	*West*
Sikkim	22.40	42.58	23.33	15.28

Revenue Expenditure :

The revenue expenditure pattern of Sikkim shows a faster increasing trend. During merger, the amount accounted for Rs. 4.55 million which jumped to Rs. 12.79 million i.e. 3 times more than 1975-76. After an interval of five years, the amount of the expenditure stood at Rs. 37.47 million which was simply three times more than previous 1980-81 expenditure amount.

Table - 15 Revenne Expenditure (in million Rs.)[18]

	1975-76	*80-81*	*85-86*	*91-92*	*92-93*	*93-94*	*94-95*
Sikkim	4.56	12.79	37.47	95.72	122.31	122.02	145.80

It is seen that during 1991-92, the amount reached at Rs. 95.72 million. This is two and half times more than previous. During 1992-93, 93-94 and 1994-95, the amounts were Rs. 122.31 million, Rs. 122.02 and 145.8 million respectively. It is observed that the growth rate during this period was not very high as it was in the last decade, although the expenditure amount is very impressive in respect of total population of Sikkim, nearly four lakhs.

Percentage of total government expenditure on health :

In India, 3.49 per cent of total government expenditure is appropriated to health sector in 1975-76. In Kerala, 9.51 per cent of the total state government expenditure is utilised in the health sector, where as in Sikkim, only 4.98 per cent of the total state government expenditure is used as health expenditure. The geographical location and morphological situation need more amount of money to tackle the health problem in Sikkim in comparison to other parts of plain lands in India. If we observe closely, then it is very clean, that the state's contribution to the health sector is increasing gradually cover time and it stood at 6.78 per cent in 1994-95. The overall growth rate is 36.14 per cent in percentage distribution. From 1975-76 to 1991-92 , the percentage growth rate on expenditure was 20.68 per cent which less than overall 1994-95.

Table - 16[19]

Year	*1975-76*	*80-81*	*85-86*	*91-92*	*92-93*	*93-94*	*94-95*
Sikkim	4.98	4.17	4.83	6.01	6.81	6.10	6.78
India	3.49	3.29	3.29	3.11	2.71	2.71	2.63
kerala	9.51	8.55	7.85	6.92	6.29	7.13	7.44

Source : Annual Report 1991-92, Ministry of Rural Development, Govt. of India.

The trend is declining over time and the percentage of reduction is 24-64 which is very insignificant for a welfare state. The rate of reduction of percentage of total state government expenditure on health is 21.76 per cent in Kerala over the period and this rate is lower than national average. Although the percentage is more than Sikkim i.e., 6.78 during 1994-95. Percentage of government expenditure towards health is a good indicator of human development effort also. It is evident from the table that the reduction process or curtailment in health expenditure was started from 1980-81 and this process is continuous upto 1994-95 at National level and for Kerala, but the percentage of Sikkim reduced for 1980-81 only; thereafter the growth rate of percentage was increased year after year. This is an exception. This implies that after merger (1975) a special care and consideration was taken to uplift and boost up the overall health condition of Sikkim. There may be some political and strategic reasons too.

Per capita health expenditure :

The cost and expenditure on health is general more in hill areas. It needs more amount of money in relation to plain areas. In sikkim,population is sparsely populated and the location of the health centres are on the slope of hills. So the per capita expenditure on health in Sikkim is naturally more than other areas. But one point is to be mentioned here that during 1975-76, the per capita expenditure was Rs. 17.54 which was more than national average and even Kerala and the amount was doubled during every five years onwards upto 1991-92. It is to be noted that after 1991-92. The growth rate was recorded 14.08 per cent up to 1994-95 which was slower than last decade.

Table - 17[20]

	1975-76	*80-81*	*85-86*	*91-92*	*92-93*	*93-94*	*94-95*
Sikkim	17.54	39.97	104.08	227.90	284.4	277.32	324.00
India	9.91	17.35	35.52	60.13	70.15	79.44	85.10
Kerala	14.43	22.43	41.64	75.43	76.86	103.77	122.07

Source : Annual Report 1991-92, Govt. of India.

The per capita health expenditure of Kerala is lower than Sikkim in 1994-95. The expenditure of Sikkim is almost three times more than Kerala and four times more than national average. This implies that a higher priority was given on Sikkim. Although the performance of the State is not upto mark; yet the government sanction is impressive. The per capita expenditure is significant in sikkim, but its appropriation and implementation is questionable. The mass involvement and mass mobilisation are very essential to raise the health programme more success. It is also to be estimated on the basis of cost benefit that how far this health expenditure translates human beings in raising human capabilities and enlarging their choices.

(V) Morbidity Pattern :

Human development largely depends on the quality of life as means and ends of development process. On the other hand; the quality of population can be evaluated from life expectancy, access to decent living income sources, the literacy and the technical training attained by the people of a state. The first and most important component of life indicator is life expectancy. Life expectancy depends on the incidence of mortality rates e.g. infant and child mortality, and overall mortality rates, which in turn depends on a large number of factors, e.g. the occurance of epidemics, the prevalence of diseases, the level of nutrition, the conditions of living, care of woman, infant mortality and the alcholism and tobacco addition. The overall impact is reflected through infant mortality, child mortality

and overall incidence of mortality pattern on life which highly affects the life table structure and the expectation of life.

Morbidity (i.e. Sickness) pattern affects the mortality rate largely. In most of the small and backward states, there is no proper system of collecting and maintaining regular records of illness. But the illness pattern is very crucial in studying the health condition and severity of death pattern of a state. Morbidity pattern was studied mainly from primary and secondary sources.

Primary sources : Survey is the primary source. During survey, information was collected regarding the occurance of some common diseases by questionnaire method. Information was collected in the following manner e.g. episodes of diarrhowa in last 30 days, cough of more than 15 days duration, having passed round worm and tape worm, measles, whooping cough and polio and identified tuberculosis. Data was analysed on the basis of age specific incidence and prevalence of these diseases have been estimated for various districts. During the survey, it is also noted about the treatment pattern and replacement to hospitals etc.

Secondary data : Secondary data was collected from the morbidity records of the different government publications and records of major hospitals. Most of the records are incomplete in many ways. Most of the government publications are overstated about the performance of health and hygiene. There is a huge difference from hard reality.

Major diseases : The major diseases which are prevalent in Sikkim are mainly acute respiratory infection, acute diarrhoeal diseases, pneumonia, Tuberculosis, worm infections and lastly viral hepatitis. In accordance with CMIE, the maximum no. of cases of diseases was recorded by Acute Respiratory infection. The total number of cases was 42218 and the number of death only one in 1992. Another major diseases is pneumonia. The total number of cases was 2295 and the total number of death was 3. Colder climate and excessive rainfall are two major causes. The highest number of death was recorded by Tuberculosis. Out of 991 patients, 25 patients died during 1992. Viral infections recorded a death of 6 persons

out of 592 infections during 1992. The severity of diseases can be observed from these records. Another major diseases which are prevalent in Sikkim, are measles, whooping cough, malaria, meningitis and gastrointestinal etc. Besides these, iodene deficiency and goitre are very common in Sikkim. Alongwith these malnutrition, low birth weight, anaemia and vomiting are very frequent occurance among the Sikkimese.

Table - 18 Acute Respiratory Infections Diagnosis [21]

Year	OPD	Change OPD	IPD	Change IPD	Total
1990	47880	-	620	-	48500
1991	40751	14.88	703	+13.38	41454
1992	37371	8.29	973	+38.40	39344

Source : Health Department, Govt. of Sikkim.

Human Settlement Pattern and Housing in Sikkim are not congineal to health. The respiratory problems arises due to the lack of proper ventilation and hygienic consciousness, and the high altitude location of the settlement pattern of the population. Acute Respiratory infections are very frequent in Sikkim. It may be regarded as the major problem. The total number outdoor patients was 47880 and indoor patients was only 620 in 1990. The impact of this disease is prominent in Sikkim that during 1991 and 1992, the number of outdoor patient diagnosis has declined by 14.88 and 8.29 per cent respectively. This is possible mainly due to the expansion and good performance of the health department.

Although, the number of IPD has increased by 13.38 and 38.40 per cent respectively during 1991 & 1992. But the official estimation is far from the reality. The functions of the health department is only limited to urban centres and market places. So it requires a good net work as more developed transportation system to tackle the major health problem in Sikkim. In higher altitudes, the problem is more acute.

Table - 19 : Acute Diarrhoeal Diseases Diagnosis [22]

Year	*Outdoor patients*	*% change*	*Indoor patients*	*% change*	*Total*	*% change*
1990	41271	-	906	-	42177	-
1991	41708	+ 1.06	923	+ 1.87	42631	+ 1.07
1992	51925	+24.49	2131	+130.87	54056	+26.8

Source : Health Department, Govt. of sikkim, Gangtok.

The incidence of diarrhoea and dysentry are very high is Sikkim. The incidence are rising rapidly during the year 1990 to 1992. The severity of this diseases is more than other diseases of common nature. It needs immediate treatment and hospitalisation. These are largely water brone infections. Human settlement and water use pattern are twin causes behind this. In Sikkim, the common sources of water are rivers and small water falls. The water comes from upper layer of mountains but when it comes down from higher to lower altitude, it looses its quality. The water gets polluted by the insanitary human practice. The major causes are human waste, night soil, garbage and animal wastes etc. Consequently this water carries a large number of diseases, parasites and bacteria. This polluted water infects the digestive system of the people. On the other hand, the access of safe water is limited to urban areas only. As a result, the incidence of acute diarrhoeal diseases are very high in Sikkim. The total number of OPD was 41271 in 1990. It rose to 51925 in 1992. The increase per cent are 1.06 and 24.49 respectively in 1991 & 1992. In case of IPD, the increments are 1.87 and 130.87 respectively during 1991 & 1992 and overall showed the same trend.

Table - 20 Pneumonia Diagnosis [23]

Year	*Outdoor patients*	*% change*	*Indoor patients*	*% change*	*Total*	*% change*
1990	1983	-	449	-	2432	-
1991	1904	-3.98	396	-11.80	2273	-6.53
1992	1897	-0.37	242	-38.88	2193	-3.52

Source : Health Department. Govt. of Sikkim.

Cooler climate and rugged conditions of Sikkim influences the health condition. This cold climate and winter affects the people with infection of Pneumonia, bronchitis and bronchial asthama. Obviously Pneumonia is a cold prone disease. The incidence of Pneumonia is very frequent in Sikkim. It causes to several deaths in the state. During 1990 to 1992, the severity of disease is declining. The above figures implies that IPD declination is faster than OPD. The total no. of patient was 1983 in 1990 but it reduces to 1897 in 1992 and the respective decling rates are 3.98 and 0.37 per cent whereas the IPD reduction rates are 11.80 and 38.88 respectively in 1991 and 1992. And the overall declination is 6.53 and 3.52 respectively. Basic causes behind this decline is due to the increase in medical facilities in Sikkim during last decade. This implies that more people are brought under the medical net work. It also reflects the degree of control achieved on the incidence of disease through preventive and curative measures. The CMIE shows that out of 2295 pneumonia cases, only three deaths were recorded in 1992 but the above data shows that out of 2193 patients, the total number of death is seven in 1992. So it is below ten.

Table - 21 Tuberculosis Diagnosis [24]

Year	*Outdoor patients*	*% change*	*Indoor patients*	*% change*	*Total*	*% change*
1990	1502	-	517	-	2019	-
1991	685	-54.39	282	-45.45	967	-52.10
1992	416	-39.27	415	+47.16	831	-14.06

Source : Health Department, Govt. of Sikkim, Gangtok.

The incidence of tuberculosis is common in Sikkim. Besides this, other chest diseases e.g. bronchitis and asthama are also fairly common. The incidence of T.B was very high in past in Sikkim. But with the rapid expansion of medical facilities has brought down the number of patients. The climate of Sikkim is cooler. It needs more calorie to maintain the physical need of the people. But malnutrition is very common in Sikkim. Besides this, tobacco & alchohol consumption prevail largely in social life of Sikkimese. So pulmonary tuberculosis are caused due to chronic malnutrition, hard labour, absence of proper ventilation, the smoking & tobacco chewing habit and lastly alcoholic addiction of the people. It accentuates the probability of dying and reduces the expectation of life. The total OPD record is 1502 in 1990 and it reduces to only 0.416 in 1992. The corresponding decline rates are 54.39 and 39.27 respectively during 1991 and 1992. The IPD record is 517 in 1990 but it also reduces to 413 in 1992. The reduction rates are 45.45 and 47.16 respectively. The above figures depicts that out of 831 patients, 14 deaths was recorded. But the CMIE shows that out of 991 patients, the total number of death is 25 in 1992. Although there is a little difference in data but the incidence of T.B is proved to be very severe.

Table - 22 Viral hepatitis Diagnosis [25]

Year	*Outdoor*	*% change patients*	*Indoor*	*% change patients*	*Total*	*% change*
1990	497	-	79	-	576	-
1991	551	+10.86	122	+54.40	673	+16.94
1992	394	-28.49	174	+42.62	568	-15.60

Source : Health Department. Govt. of Sikkim.

The prevalence and incidence of viral infections are also very acute in Sikkim. The lack of proper hygienic condition and personal health causes viral infections. It is well-known that scabies, warts and other skin diseases are very common in Sikkimese. Due to cold climate & scarcity of water, the people are insanitary about their personal hygiene. They take bath rarely. The total number of patients was 576 in 1990 but it increases to 673, with an overall growth rate of 16.84 but during 1991-92, the total no. of patients declines from 673 to 568 i.e. at 15.60 per cent. It is also to be mentioned that out of 568 patients, the total number of death during 1992 was 4; but the CMIE indicates that out of 592 cases, the total number of death was 6 which is more than above figure. So the intensity of the disease can be realised easily from this two figures.

Table - 23 Measles Diagnosis [26]

Year	*OPD*	*% change*	*IPD*	*% change*	*Total*	*% change*
1990	311	-	80	-	391	-
1991	390	+25.40	74	-7.5	464	+18.67
1992	284	-27.18	60	+18.9	344	-25.86

Source : Health Department, Govt. of Sikkim.

Measles are infectious fever marked by red pustules. It is a disease of swine and cattle. Pigs and cattles are common domestic animal in Sikkim. The animals are kept inside the room except the pigs; but the cattle sheds are very near to the houses. The bathing and cleaning of the cattles are very common among them. The above records no death; but the CMIE records one death, out of 296 cases. Inhygienic condition is responsible for this. Pigs who live on extracts and garbage are major factor in the wide prevalence of this diseases. The trend show a declination in 1990-91 but it increases in 1991-92.

All other diseases diagnosis (excluding whooping cough and mentioned before) [27]

Table - 24

Year	*OPD*	*change*	*IPD*	*change*	*Total*	*Change*
1990	160902	-	5112	-	166014	-
1991	141873	-11.82	5374	+5.13	140367	-15.45
1992	174996	+23.34	7321	+36.23	182317	+29.88

Source : Health Department, Govt. of Sikkim.

Malaria, Kalazar are also very common among them. The incidence of goitre, hookworm and tapeworm are prominent in Sikkim. The prevalence of goitre appears to be very common in the Himalayan range. It occurs due to the deficiency of iodine in water. Iodized salt is the only preventive measre feasible. Hookworm is a parasite disease. The parasitic diseases are caused by the intake of raw or semi-boiled meat. The foods prepared from semi-decomposed carnions, not fully boiled, cause enteric disorders and worm infections. Of the blood diseases, anaemia deserves mention. The high incidence of hill diarrhoea and hill dysentry and chronic aliment from these disease lead to anaemia. It also causes due to malnutrition and worm infections. Cardiac diseases are also fairly common. Rheumatism is also present among people. Cold and rainy weather cause this diease. The high incidence

of helminthiasis (hook worm, tape worm and round worm) is normally attributed to poor hygienic conditions. The deficiency of vitamins are also very prominent among them. The other minor diseases are diptheria, whooping cough, jaundice, peptic ulcer, rabies, otitis media, epilespsy, congenital deformities etc.

All other category records 160902 OPD in 1990 whic rises to 174996 in 1992. It reveals a growth rate of 23.34 per cent in 1992 but it declines in 1991 by 11.82 per cent. The IPD shows a positive growth rate of 5.13 and 36.23 per cent in 1991 and 1992 respectively. And out of 182317 patients, the total number of death is recorded at 128 persons in 1992.

Table - 25 Age and Sex specific prevalence of chronic cough more that 15 days duration [28]

Age	*Male*		*Female*	
group	*No.surveyed*	*No.with cough*	*Surveyed*	*No.with cough*
0-1	74	10 (135.1)	80	9 (112.5)
2-4	125	25 (192)	117	26(222.2)
5-14	481	31 (64.45)	473	28 (59.19)
15-49	1029	37 (35.9)	483	35 (41.51)
50-59	103	5 (48.54)	77	4 (51.94)
60+	70	7 (100.00)	56	6 (107.14)
Total	1882	115 (61.3)	1646	108 (65.7)

Source : Enumerated from Personal Survey data.

A total population of 3528 was surveyed in 1992-93. The age-sex specific occurance of chronic cough are given here. It is evident that out of 1882 male population, the prevalence of chronic cough is 61.3 per cent. It also records that

the highest prevalence is observed among infants and children. Secondary data from all the hospitals and PHCs show that respiratory infections are the cause of highest morbidity in all over Sikkim. From the survey results, the prevalence of cough more than 15 days duration has been estimated age sex wise. An overall prevalence of 65.7 per 1000 population was recorded among females. The prevalence is prominent among 0-1 age group and above 50 years. The prevalence is 100/1000 population in male above 60 years and more 100 among females of this age group. The maximum prevalence is observed in 2-4 age groups i.e. 192 & 222.2 per 1000 children. The lowest prevalence was recorded in 15-49 age groups. It is evident from the figures that the female child prevalence is more than male child prevalence in the age group 2-4 years. But, prevalence is more among male infants than female. It implies that gender bais in family health care. Cold and damp weather and Tobacco & alcohol consumption are twin major causes of repiratory infections in Sikkim. It is evident from the account given by the health personnel that the people seek medical care only after the treatment of quacks (jhankri). The values and traditional values, regarding the diseases and their cure, bear a social pattern of treatment. Local medicines are also used. Only in cases of serious, prolongation of cough patients move towards dispensaries or nearest primary health centres. The means of communication and transportation are also obstacles towards expansion of medical facilities. Specially, coughs are not considered as serious disease at the prevalence period. Local medicines are used to cure them firstly.

Table - 26 Age and sex specific incidence of Diarrhoea during one month preceding survey [29]

Age group	*Male*		*Female*	
	No. surveyed	*No. with Diarrhoea*	*No. suveyed*	*No. with Dirrhoea*
0-1	74	12 (162.16)	80	13 (162.5)
2-4	125	28 (224)	117	30 (256.4)
5-14	481	44 (91.4)	473	34 (71.88)
15-49	1029	56 (54.42)	843	42 (49.82)
50-59	103	12 (116.5)	77	7 (90.9)
60 and above	70	13 (185.7)	56	11 (196.4)
Total	1882	165 (87.8)	1646	137 (83.2)

Source : Calculated from Personal Survey data.

Gastro intestinal infections form the second most common cause of morbidity in Sikkim. They include causes of dirrhoeal diseaes, worm infestation and enteric infections. An overall prevalence of diarrhoeal cases in one month reference period is 85.60 per 1000 population. Male incidence of diarrhoea, i.e. 87.8 is more than female incidence, i.e. 83.2 in the surveyed population. Age-sex specific cases indicates that the highest prevalence is in 2-4 year age group i.e., 224 for male child and 256.4 for female child respectively. It follows 0-1 age group. The prevalence is less in the 15-49 age groups in both the sexes. The incidence of diarrhoea is more acute among female child. It is 256.4 which more than male, i.e. 224 per 1000 child of 2-4 years.

The overall incidence of diarrhoea among male and females estimate 87.8 and 83.2 per 1000 population during 1992-93. An overall record shows that male

prevalence is slighter more than female. Diarrhoea is mainly a water brone diseases. It arises due to lack of proper consciousness regarding personal health and environment. The access of safe water and raising of social consciousness through literacy are the major caauses of acute condition of diarrhoea disease.

The food habit of the people largely affects the health condition. Particularly the consumption pattern of the people and cooking procedure. They take all types of meat e.g. pig, cow, beff, buffalo, yak and etc. Specially, pork is a favourite dish in Sikkim. These meets specially pork, beef and buffalo, carry the germ of hookworm, round worm and tape worm. In hill areas, normally water boils at a lower temperature i.e. below the boiling point 100 degree centrigrade and the use of pressure cooker is very limited in Sikkim. The intake of raw meat (dried in the sun light) and semi-boiled meet are very common in Sikkim. Besides this, the carrions of pork & beef are preserved for future consumption. So the parasitic attack of round worm, hook worm and tape worm are very common in Sikkim. The survey results shows that worm infestation is very common in all districts of Sikkim. The prevalence of those who passed worm infestation is one month preceeding the survey was recorded. It is an oral estimation. It shows that the prevalence of worm varies 57.76 to 88.67 per 1000 population. The overall prevalence is 83.90 per cent. The North district shows the highest prevalence i.e. 88.67 per 1000 population. The geographical location of the North districts, i.e. high altitude and severe weather, is quite different. The main population composition, Bhutia & Lepcha are habituated in the traditional food consumption. The carrions of pork and beef are very favourite to them and pigs who live in the exereta and garbage are also major factor in the wide prevalence of the disease.

Table - 27 Districtwise prevalence of Round worm and Tape worm[30]

Age Group	*East*		*West*		*South*		*North*		*Overall*	
	No. Sur-veyed	*No. Posi-tive*	*No. Sur-veyed*	*No. Posi-tive*	*No. Sur-veyed*	*No. Posi-tive*	*No. Sur-veyed*	*No. Posi-tive*	*No. Sur-veyed*	*No. Posi-tive*
0-1	60	5	43	1	38	2	13	3	154	11
2-4	88	18	68	12	64	15	22	15	242	60
5-14	360	32	260	24	254	22	80	10	954	88
15-49	695	34	548	15	475	28	172	27	1872	104
50-59	64	7	52	4	45	4	19	3	180	18
60 & above	50	6	33	2	31	5	12	2	126	15
Total	1317	102 (77.44)	1004	58 (57.76)	889	76 (88.48)	318	60 (88.67)	3528	296 (83.90)

Source : Enumerated from Personal Survey data.

The incidence of worm is 85.48 per 1000 population which is second highest. The lowest incidence of worm is in the West district, i.e. 57.76 per cent. This variation largely depends on the human food habit and cooking and consumption pattern of the people. the spread of literacy and expansion of modern process of cooking and adoption of modern scientific cooking and food preserving systems are developing in few parts of Sikkim. Specially, in urban areas, although, the urban population is only 9 per cent in Sikkim. The urban centres and markets are limited. Consequently, people largely depends on old-aged religious and social culture of food preparation. The proportion of urban population are in more these districts. They are more conscious regarding this. The nature is less harsh.

An age specific picture of infection is given also. The incidence is highest

in the 5-14 and 15-49 age groups. The spread of literacy and social consciousness curtail the prevalence of worm in hill areas. Alteration of traditional food habits and the use of pressure cooker is another suggestive measures.

Skin diseases : The prevalence of skin diseases or infections are common in Sikkim. Scabies, worts and other skin diseases are dominant in Sikkim. Skin infections are regarded as the third common cause of illness or morbidity. They also include abcess, boils and dermatitis. The major causes are the cold climate and the scarcity of water. Besides these, the insanitary condition of the people about their personal hygiene is also responsible for it. Neglect of personal hygiene and cleanliness causes various infections and skin diseases.

Eye infection : Diseases of the eye e.g. conjunctivities, trachoma and senile cataract are also common. Night blindness is also available. It occurs due to the deficiency of vitamin A. Eye infection is the fourth common morbidity in Sikkim as recorded in Hospitals. Ear infection is also common. Hepatitis are also recorded in the hospitals.

Iodine deficiency diseases : The prevalence of iodine deficient diseases are very common in Sikkim. The high prevalence of goitre is observed among those over 51 years. The state suffers in hyper indemic goitre and other oidine deficiency disorders. So iodised salt is being supplied for the state since 1985 and the state government has launched a Thyroid centre at Namchi to prevent and cure, the iodine deficiency patients.

Alcoholism : Alcoholism is very common in Sikkim. Alcohol is freely available in all the districts of Sikkim. Sikkim brewaries are famous for their products. Besides this, country made liquors are also very popular in Sikkim. It is a common believe that the use of alcohol increases the body activity permanently. In accordance with K.B. Roy (1979), "In fact, alcohol is not a stimulant. It depresses all vital organs. It does not stimulate intellect. It does not remove physical tiredness. It causes heat loss. Alcohol is not necessary for any normal human activity". In Sikkim, alcoholism is popular in both the sexes. In hill areas, people need more calories to survive but the traditional food habit pattern lacks proper nutritional

and caloric value in Sikkim. General diets and meals are below. The requirement level of the common people. They use to do hard work to survive. As a consequence the excessive use of alcoholism is injurious to health and responsible for the prevalence of disease. Not only percentages are given in the parenthesis this, the prevalence of other diseases e.g. Tuberculosis, peptic ulcer, gastric ulcer, liver damage etc. increase with the addiction of alcohol. Alcoholism with proper food and diet is very dangerous for life sustainability. It is evident from the population pyramid that above 60 years population is very low nearly 4 per cent in Sikkim. This percentage is lowest among all the states in India. It implies a high mortality rate before 60 years. So alcoholism indirectly reduces the expectation of life of the state also. A total population of 3528 was surveyed. The overall incidence of alcoholism is 34.04 per 1000 population in Sikkim. At age 15-24 years 42.49 per cent takes alcohol. At age 25-34 years 56.91 per cent population takes alcohol and in the subsequent age groups, the percentages are 62.23, 65.66 and 61.3 per cent respectively. It depicts that there is steep rise in alcohol consumption at the upper ages. At age 45-54 years highest, i.e. 65.66 per cent of the population addicted to alcohol.

Table - 28 Prevalence of Alcoholism among Survey Population[31]

Age group	*Total males*	*alcohol Addict-ion*	*Total Femal-es*	*Alcohol Addict-ion*	*Total surv-eyed*	*Total Addict-ion*
14 and below	680	15 (2.20)	670	12 (1.79)	1350	27 (2.00)
15-24	431	216 (50.12)	379	128 (33.77)	810	344 (42.49)
25-34	316	207 (65.50)	248	114 (45.96)	564	321 (56.91)
35-44	212	168 (79.24)	160	65 (40.62)	372	233 (62.23)
45-54	130	102 (78.46)	103	51 (49.51)	233	153 (65.66)
55 and above	113	68 (60.17)	86	54 (62.79)	199	122 (61.30)
Total	1882	776 (41.23)	1646	424 (25.76)	3528	1200 (34.04)

Source : Calculated from Personal Survey data.

Sex specific data reveals that the overall incidence of alcohol among male, i.e. 41.23 per cent which is more female per cent, i.e. 25.76. It starts at the early ages. At the age group 15-24 years, 50.12 per cent of males and 35.77 per cent females take alcohol. The highest prevalence of alcohol among female is 62.79

per cent in the 55 and above age group. Among the young females, the rate is 45.96. It increases the incidence of different kind of diseases among them and enhances the female mortality rate.

Among the male, at age 25-34 years 65.50 per cent of the total male population take alcohol and the rate increases in the subsequent ages. It touches, a maximum number 79.24 per cent in the 35-44 years age group. The prevalence of male mortality increases with the greater incidence of alcoholism.

Table - 29 Age and Sex Specific Prevalence of Smokers [32]

Age group	*Total male*	*No. of smokers*	*Total female*	*No. of smokers*	*Total popula-tion*	*No.of smok-ers*
14 and below	680	10	670	4	1350	14 (1.03)
15-24	431	121	379	26	810	147 (18.15)
25-34	316	103	248	68	564	171 (30.32)
35-44	212	111	160	63	372	174 (46.77)
45-54	130	56	103	35	233	91 (39.05)
55 and above	113	54	86	32	199	91 (45.72)
Total	1882	460 (24.42)	1646	228 (13.85)	3528	688 (19.50)

Source : Enumerated from Personal Survey data.

The addiction to tobacco is very common among the people of Sikkim. It is very popular in both the sexes and even among children, tobacco taking is very common. Cigerette & Bidi smoking are very popular smoking form of tobacco. Scientist have proved that smoking has a causal relationship to lung cancer and other cancers, cardia vascular disesases, respiratory diseases and gastro-duodenal ulcers etc. In Sikkim acute respiratory infevtions are the prime cause of morbidity. The prevalence of respiratory diseases are very common and harmful. So the intensity increases with the increase of more addiction to tobacco.

A study of Dhillon has shown that children born to parents, who are heavy smokers are more liable to chest diseases than the children of parent who do not smoke. The risk increases with the number of cigarettes smoked daily by pregnant women. Not only this the smokers pollute the near by environment and non-smokers badly. It leads to wide spread respiratory problem and the incidence of different diseases. Consequently, it would increase the mortality rate and lower down the human development process.

The survey results shows an overall incidence of 19.50 per cent. The incidence shows an increasing trend with age. The male incidence is more than female rates. The respective rates are 24.42 and 13.95 per cent per 1000 population. At age 35-44 years, 46.77 per cent of population smoke cigarettes and other things. In accordance with age and sex specific, there is a variation in smoking pattern. But the prevalence of tobacco is very prominent in their social life. Practically, there is taboo in taking and offering tobacco among juniours. The intensity of tuberculosis and respiratory infections are major causes of abnormal death in Sikkim. It accounts the smoking habit both among male & female.

Table - 30 Prevalence of Tobacco Chewing [33]

Age groups	Total male	No.of tobacco taker	Total femal-es	No.of Tobacco taker	Total surve-yed	Tobacco takers
14 and below	680	12	670	5	1350	17 (1.26)
15-24	431	132	379	38	810	170 (20.98)
25-34	316	167	248	73	564	240 (42.55)
35-44	212	132	160	47	372	179 (48.12)
45-54	130	56	103	26	233	82 (35.19)
55 and above	113	45	86	18	199	63 (31.65)
Total	1882	544 (28.90)	1646	207 (12.57)	3528	751 (21.28)

Source : Cimpiled from Personal Survey.

Tobacco chewing is also common habit in Sikkim. Tobacco chewing causes different kind of oral cancer and excessive taking causes respiratory problem also. It is almost twice a common among adult men as women.

It also causes a decade of gum and premates teeth infections. The survery results indicates that 21.28 per 1000 population are addicted to tobacco chewing.

The prevalence of the habit is highest in the 35-44 age group. At age 15-24 years, 20.98 per cent population take tobacco. In the age group 25-34 years, the percentage is 42.55 and it is 48.12 per 1000 population in the 35-44 years age group. The subsequent percentage are 35.19 and 31.65 respectively. Sex specific division reveals that the percentage of male chewers i.e. 28.90 is more than double than the female chewers per cent is 12.57. Tobacco chewing also raises the morbidity of the Sikkimese people and lowers down the probability of survival.

Table - 31 Districtwise Prevalence of Smokers by age-sex (per cent) [34]

Age group	*East*		*West*		*South*		*North*	
	Male	*Female*	*Male*	*Female*	*Male*	*Female*	*Male*	*Female*
Below 15 years	0.2	0.07	0.07	0.12	3.4	0.07	0.2	0.3
15-24	3.9	1.8	3.7	1.8	7.2	5.3	3.8	1.8
25-34	17.7	9.5	18.5	8.7	47.2	31.7	18.1	8.2
35-44	22.9	21.5	37.2	23.1	63.8	53.2	32.7	20.6
45-54	32.7	33.6	30.2	32.7	57.8	37.2	28.4	27.2
55+	48.1	35.8	47.4	34.0	59.1	43.2	42.6	29.3
Total	15.7	10.1	15.8	9.7	30.2	19.6	13.8	8.8

Source : Enumerated from Personal Survey data.

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(B) Sikkim : An analysis of Mortality, Immunisation and Nutritional pattern

Mortality rate of Sikkim : Births and deaths registration system of the under developed states are very poor. There is scarcity of reliable data on the age sex specific mortality rate. The registration of births and deaths Act 1969 was implemented to the state of Sikkim w.e.f. 1979. "Annual Report on the Registration of Birth and Deaths" is the first publication of Vital events in Sikkim. This publication is for the year 1991. The information on events of death is not satisfactory. There is no single infant death record during 1991.

In the rural areas, there are only 12 deaths. All the deaths are recorded from West district. But in urban area, out of 105 deaths, 69 per cent is males and 31per cent is females. In Sikkim, 50 per cent of the total deaths were occurred institutionally. The maximum number of deaths were recorded in the age group of 25-34 years followed by 35-44 years during 1991. The male registration of vital events in more than female. The respective rates are 77 per cent and 33 per cent.(1)

Mortality pattern can be measured in a number of ways. Two methods are very popular. The calculation of crude death rates and age old sex specific death rates are regarded as first one. On the other hand, life table concept form the basis of measurement life table death is purely a function of age specific death rates and is independent of the age-sex composition of the population. So it is more appropriate to measure mortality more suitably.

Age pyramid of life table shows the mortality pattern and the proportion of young age structure and old age survivals. Sikkim is compared with

Table - I

Age (years)	*India 1971*		*India 1981*		
	Male	*Female*	*Male*	*Fenale*	
0-14	41.88	42.2	39.47	39.63	2(a)
60 and above	5.92	5.98	6.46	6.63	
Sikkim					
0-14	33.73	43.23	36.54	43.07	2(b)
60 and above	3.55	3.09	4.64	4.17	
Kerala	41.05	39.5	35.93	34.05	2(c)
	5.97	6.47	7.23	7.85	
Sikkim 1992-93 Total					
0-14	36.13	40.68	38.28		2(d)
60 and above	3.71	4.38	3.57		

India and Kerala. It depicts that the percentage of population in 60 and above age group is always below than the Kerala and evennational average. The young age structure is very high in Sikkim and the proportion of female, at the 0-14 years age group always dominants the male porportion. But the spread of age distribution; i.e. survival at age 60 years ad above, is very low. In Kerala, the proportion of populations 60 and above years age groups are 5.97 for male and 6.47 for female, but in Sikkim, the rates are 3.55 and 3.09. It is also below the national average. During 1981 & 1992-93, the respective reates of Sikkim are 4.64 and 4.38 for male and 4.17 and 3.57 for females respectively. During last

decade, huge development was made in the health sector of state. It implies that the increase in health infrastructure fails to raise old age survival and the prevalence of mortality is very high. It affects the expectation of life at birth. In developed countries the proportion of 65 years and above are 11 per cent, 13 per cent, 9 per cent and 16 per cent respectively for Canada, USA, Japan and U.K. in comparison to that the proportion of Sikkim is very low. Only Kerala achieves 7.23 and 7.85 per cent above 60 category in 1981. Whereas the proportion of sikkim has declined in 1992-93. The results of 1992-93 is based on survey. It indicated that a high mortality is observed among below 60 years age group. Age is regared as the main demographic factor affecting the mortality rate. There is a natural and biological pattern of mortality behaviour with age. There is also a biological variation of crude death rate with the age structure. The incidence of morbodity is very high at low ages and the intensity of mortality decline biological limit, the mortality rate sharply rises. The mortality or crude death rate pattern is influenced by the age structure of the population. The major causes which influence mortality rate largely are education, occupation pattern, nutritional level, housing conditions, prevalence of diseases, sanitantion, public health services, medical services, ecological condition, food habit and after all general living standards of the people.

In sikkim, the mortality rate as given by the vital registration, Govt. of India is given here. These rates are calculated on the basis of three yearly moving average.

It is observed that the crude death rate of Sikkim is 9.8 per 1000 population during 1981-83 and the rural CDR is more than urban counterpart. The all India figure shows that the mortality rate of India is 12.1 per 1000 population during the same period which is more than sikkim. Sikkim marched with India in 1975 and it was landlocked backward buffer state. The literacy rate was only 34.05 per cent during 1981 and medical infrastructure was very poor.

Table 2

Mortality rates for Sikkim & India (Three Yearly moving average)

Sikkim

Year	81-83	82-84	83-85	84-86	85-87	86-88	87-88	88-90
Total	9.8	10.2	10.6	10.9	10.9	10.7	9.8	8.9
Rural	10.6	11.1	11.6	1.0	12.0	11.8	10.9	9.6
Urban	6.1	6.0	5.4	5.8	5.9	5.7	5.0	5.0
				India				
Total	12.1	12.1	12.1	11.8	11.3	11.0	10.7	10.3
Rural	13.3	13.3	13.3	13.0	12.4	12.0	11.7	11.2
Urban	7.7	8.0	8.1	8.0	7.6	7.6	7.4	7.2

Source : Sikkim A Statistical Profile 1979-92, Govt. of Sikkim.

The prevalence of diseases were very high. The economic condition of the people were worse in comparison to India. Yet the mortality rates were recorded much lower than the national average. But the age distribution shows that less 4 per cent of the total population survives at 60 and above ages. This proportion is always less than other states of India. As a consequence it may be concluded that the mortality rate must have a downward basis. Not only this, the infant mortality rate was also high in Sikkim during the last decade. Another important point is to be noted that but registration of state is very poor.

The census report also records that during 1988-90, overall mortality rate of sikkim is 8.8 per Cent of which 9.6 per cent rural and 5.5 per cent urban. The proportion of urban population is below 10 per cent in Sikkim. Indian crude death rate is 10.3 in 1988-89. The rate of Sikkim is less than India. The figures depict

that there is a rising trend in the mortality pattern in Sikkim since 1986-88. Later on the rates starts to decline. The major causes of decline is the huge investment in social welfare and health sector. The resource base of the state is inelastic. The economy runs mostly by the grants-in-aid of the central government. Sikkim is a special type of state due to political and strategic reasons. So a large amount of money is spent to develop the state as soon as possible. There is a clear declining tendency in mortality rate of India and it touched at 10.3 at 1981-90 and the same trend is followed in the rural as well as urban areas. In Sikkim, the improvement of health condition is marked from the low mortality rate as recorded in the cases.

The centre formonitoring Indian Economy has estimated the mortality rate of Sikkim and India in their publication in 1996. It estimates a mortality rate of 10.7 per 1000 population in 1985. The rural rate is 10.7 per cent whereas the urban mortality rate is 6.2. And the mortality rate of India is 11.8 per 1000 population in 1985. There is a closer similarities between two rates. The mortality rate of Sikkim is also less than national average. But in 1986, the picture is completely different. Overall CDR of Sikkim is 11.7 per cent which is more than national estimates i.e. 11.1 per 1000 population. The rural death rate of Sikkim also suppress the national rural rate but the urban rate is lower than national average. In 1986, the mortality rate of Sikkim rises, but in national level it falls from 11.8 to 11.1 per cent. The rural growth rate of mortality is more than one per cent in Sikkim during the period. From 1987, the death rate of Sikkim declines and it stands at 7.3 per cent in 1990 and the lowest mortality rate is recorded in 1992. The rate is 6.9 per 1000 population. In the national level also reflects a constant declining trend during the period.

The overall decline of mortality rate is 35.51 per cent during 1985 to 1992 in Sikkim. The reduction percentage is 39.31 in rural Sikkim during the same period. The reduction in urban mortality rate is 67.74 per cent. It is more than all Sikkim and rural declination, although the proportion of urban population is very low; nearly 9% of the total population in Sikkim.

Table 3

Estimated mortality rates for Sikkim and India [5a]

Sikkim

Year	1985	1986	1987	1988	1989	1990	1991	1992
Total	10.7	11.7	10.3	10.1	9.1	7.3	7.5	6.9
Rural	11.7	12.9	11.4	11.1	10.1	N.A.	8.5	7.1
Urban	6.2	6.1	5.4	5.5	4.3	N.A.	3.0	2.0
India								
Total	11.8	11.1	10.9	11.0	10.3	9.7	9.8	9.3
Rural	13.0	12.2	12.0	12.0	11.1	10.5	10.6	10.6
Urban	7.8	7.6	7.4	7.7	7.2	6.8	7.1	5.8

Source : CMIE, Basic Statistics Mclating to Indian Economy.

During the 1985-92, 21.18 per cent mortality declination is observed in the national level and the reduction rates of rural and urban areas are 18.46 and 25.64 per cent respectively. It is evident that urban achievement is always more than others.

If we compare the performance of state level and national level, then we can conclude the performance of the Sikkim state is an advantages position in every sphere of mortality rates. The achievement of the state is more significant. This is possible due huge investment in health sector during the last decade and spread of medical facilities and educational facilities all over Sikkim. During the gestation period, the rates were high. But the impacts are realised after the gestation period. It indicates that urban mortality rate declines more than rural areas. The major factors which are significant for this, are education, social consciousness, better sanitation, occupation structure and better social amenities. Traditional way

of life (cultivation and herding) limits the aspiration of the rural people. It breeds furstation among them. Beside other factors, it also reduces the expectation of life.

Table 4

Districtwise Mortality rate (survey based) [6]

Districts	*Total population*	*No. of Death*	*Mortality rate*
East	1317	10	7.59
West	1004	8	7.96
South	889	5	8.99
North	318	5	15.7

Source : Personal Survey

During the survey, number of deaths were recorded from four districts of Sikkim. The number of total household was 645, comprising 3528 total population. The sample size is small. So it may not represent the real picture. Yet the results are given here. The prevalence of death varies from year to year. Death rates for East, West, South and North districts are recorded as 7.59, 7.96, 8.99 and 15.7 per 1000 population respectively. The overall death rate is recorded as 8.78 per 1000 population. Death rate of Sikkim is much lower than the national average. In accordance with CMIE, the Indian death rate is 9.3 per 1000 population in 1992. Out of 3528, the incidence of death during the period is recorded at 31. Above table reveals that the incidence of death is highest in the North district, i.e. 15.7 per 1000 population and lowest in the East district . The literacy rate and the proportion of urban population are maximum in east district and minimum in the North district. Besides these, North district is more isolated than East. The mode communication and transmission e.g. Television etc. are limited in North and the

circulation newspaper and social interaction is also limited within the same group or ethnic composition. Specially, the valleys are isolated and traditional mode to medical treatment is more popular than modern medical facilities. Alcoholism is also very common. The prevalence of diseases e.g. respiratory infections, hill diarrhoea etc. are more acute among them. All these factors increase the death rates.

It is also observed that death rate among women in the age group 15-50 years is more than male counter part. The leading causes of death are premononia, pulmonary tuberculosis, gastrointestinal infections and acute respiratory infections. The major causes of death is excessive alcoholism, malnutrition and deficiency of proper diets (including vitamins) also.

There is no exact reliable mortality rate of Sikkim. The records are misleading. There is a wide variation of mortality rate records from different sources. The centre for monitoring Indian Economy estimates the mortality rate as 6.9 per 1000 population for 1992 in Sikkim and for 1991 it is 7.5 per cent. The household survey results estimates the death rate is 8.78 per 1000 population in 1992-93.

Table 5

Death rate from different sources [7]

	Mortality rate	Year
(i) CMIE	6.9	1992
(ii) CMIE	7.5	1991
(iii)Survey	8.78	1992-93
(iv) Sikkim Herald	17.3	1993
(v) Veena Bhasin	10.9	1989
(vi) Register General of India	8.8	1988-89
(vii) Life table death rate	10.38	1992-93

Sikkim Herald, a government newspaper, estimates the mortality rate 17.3 per 1000 population in 1993.

Probable Life table probable death rate for Sikkim (1981) = 20.68

Probable Life table death rate for Sikkim (1992-93) = 10.38

Beena Bhasin's estimation is 10.9 for 1989. The Registar General of India provides an estimation of 8.8 per 1000 population. Besides these CMIE estimated the national rate at 9.8 for 1992 and 10.6 for rural area in 1992. Considering wide variation and realising the lack of proper registration the life table death rate is taken as 10.38 per 1000 population. People are scatteredly settled in Sikkim and the mode of communication is very poor. Most of the rural people suppress the incidence of death due to different social and legal factors. Specially, the infant deaths are kept secret i.e. the annual registration shows not a single infant death during 1991 which is absurd. The utility of registration is negligible to them. On the other hand, the prevalence of traditional treatment by local doctors and Jhankris causes a significant number of death. But this deaths are kept silent due to social

factors and the abnormal deaths are also misreported. Qualified doctors are very rare except urban area. Due to the above factors, the death rate are reported at a lower scale. But if we observe the percentage of population above 60 years, we can easily conclude that the mortality rate is more than the official estimation. Only three to four per cent of the total population survives above this age group and this proportion is always lowest in comparison to other states in India during 1971 to 1981. The female proportion is always below than male percentage. It implies that the prevalence of death among female is more than male. As a consequence the probable death rate is taken as 10.38 per 1000 population in Sikkim.

Reference

1) Annual Report on the Registration of Birth and Deaths. 1991 B.E.S. Gangtok.

2) a) Centre for monitoring Indian Economy

b) Basic Statisties relating to Indian Economy P-116

3) Personal Survey

4) A Statistical Profile of Sikkim - 1971. B.E.S. Gangtok

5) a) CMIE, Basic statisties relating to Indian Economy. p-116

6) Personal Survey

7) CMIE, Survey, Sikkim Herald, RGI, Life table. Veena Bhasin.

Table - I

Immunisation Pattern in Sikkim

T.T. for Expected Mother[1]

Year	Annual target	Achievement	% achievement of annual target
1990	13428	5624	42.1
1991	12270	5599	45.6
1992	11460	6955	60.7

Source : Health & Family Welfare, Govt. of Sikkim.

Immunisation measures reduce the incidence of death among pregnant women. The T.T for expected mothers are given here. During 1990, annual target of the state government was 13428 expected mothers but at the official level. The achievement was shown as 42.1 per cent. The achievement percentage has increased to 45.6 in 1991, but the interesting point is that annual target and achievement number was less the previous year. Although, the number of achievement is recorded a maximum figure i.e. 6955 and the percentage was 60.7 in 1992. But the household survey results are far below and the record of vaccination during pregnancy rarely occurs. Not only this, the mortality trends show that 15-49 years age group female mortality is higher than male death rates during the same 1990-93 but also the life expectancy of female is less than male. People are not aware of the modern pre-cautionary measures. They also fear to accept it. Beside social taboos, lack of mass involvement and motivation restricts the immunisation pattern among pregnant women in Sikkim.

Table - 2

D.P.T.Vaccination[2]

Year	*Annual target*	*Achievement*	*% achievement of annual target*
1990-91	12169	10371	85.2
1991-92	11120	9642	86.7
1992-93	10410	9726	93.5

Source : Health and Family Welfare, Govt. of Sikkim

Vaccination is important in protecting the prevalence of infant mortality. The infant mortality rate was very high in 1971-81 but due to rapid expansion different government sponsored vaccination and health care measures has able to reduce the impact. During 1990-91, total annual target was 12169 of which 85.2 per cent of the target is achieved. Total target was 10410 D.P.T vaccination in 1992-93. It achieved 9726 children vaccination. It obtained highest percentage i.e. 93.5. The annual target rate had declined but the number of achievement increased marginally than previous year. So this is technical achievement but not social as it was seen in the record.

Table - 3

Polio Vaccination[3]

Yeat	Annual target	Achievement	% achievement of annual target
1990-91	12169	8869	72.9
1991-92	11120	9662	86.9
1992-93	10401	9737	93.6

Source : Health and Family Welfare, Govt. of Sikkim

Polio is mostly concentrated among children. It disables the children. Government has taken a massive programme of pulse polio all over the country during this year. Annual target was 12169 in 1990-91, out of them 8869 were vaccinated. The achievement proportion is 72.9 per cent. From the above figures it is clear that annual achievement target has increased to 86.9 per cent in 1991-92 and it rose to 93.6 per cent in 1992-93. Although the achievement percentage is significant in Sikkim. But the annual target of the government is very low i.e. near 10 to 12 thousand child and the amount of the target declined year after year. The state level achievement is impressive. The survey results shows that only 55.01 per cent of the total children come under the purview of DPT and polio vaccination in Sikkim. So there is large gap in reaching the goal of polio vaccination as depicted in the government publications.

Table - 4

B.C.G. Vaccination [4]

Year	*Annual target*	*Achievement*	*% achievement of Annual target*
1990-91	12169	10779	88.6
1991-92	11120	10360	93.2
1992-93	10401	9978	95.0

Source : Health and Family Welfare Department, Govt. of Sikkim

The performance of BCG vaccination programme is satisfactory at the official level. Immunisation status of children was targeted at 12169 in 1990-91. B.C.G vaccination was received by 10779 children and the achievement percentage was 88.6. Immunisation proportion improved in 1991-92. The achievement percentage is 93.2 which was 4.5 per cent in 1992-93. UNICEF study (1989) shows that there is a difference in immunisation pattern in rural and urban areas of Sikkim.

Urban performance is always better than rural areas. The respective percentages are nearly 60 and 77 per 1000 live births.

Table - 5

Measles vaccination [5]

Year	*Annual target*	*Achievement*	*% achievement of Annual target*
1990-91	12169	7591	62.4
1991-92	11120	7942	71.4
1992-93	10401	8399	80.7

Source : Health and Family Welfarre dept. Govt. of Sikkim

Sikkim is a cold prone state. The incidence of measles are very common in Sikkim. The performance of the health department is significant. But the coverage is limited. Yet the achievement rates are 62.4, 71.4 and 80.7 per cent of the annual target. So child deprivation of measles vaccination is reduced from nearly 38 per cent to 20 per cent during 1990-93. But an UNICEF sponsored study reveals that only thirty eight per cent of total infants had received measles vaccination. So there is obvious gap and deprivation is more as projected by the Government. Measles vaccination lowers-down the infant and child mortality. In Sikkim, measles vaccination has lowered down the infant mortality rate directly and indirectly.

Table - 6

D.T. Vaccination[6]

Year	*Annual target*	*Achievement*	*% achievement of Annual target*
1990-91	9011	7603	84.4
1991-92	8234	5828	70.8
1992-93	8460	6172	72.9

Source : Health and Family Welfare Department, Govt. of Sikkim

Out of 9011 population, the achievement is 7603. The achievement rate was 84.4 per cent. But it is evident from the above figure that annual target was reduced to 8234 and the number of achievement also declined to 5828. It proposed 70.8 per cent achievement and D.T. VACCINATION DEPRIVATION rate stoods at nearly 33 of the total target. Although the vaccination of D.T. is very essential in Sikkim, but the annual target declined from 9011 to 8460 during 1990-91 to 192-93. It covers only a little fraction of the total population. Irrespective of achievement percentage, the total target should be enlarged to raise the capability of the people.

Table - 7

T.T for 10 years[7]

Year	*Annual target*	*Achievement*	*% Achievement of Annual target*
1990-91	8260	5947	72.0
1991-92	7548	4787	63.4
1992-93	7740	6571	84.9

Source : Health and Family Welfare Department

Above figures revealed a small target, arounding eight to seven thousand only. Although the achievement per cents were 72.0, 63.4 and 84.9 respectively during 1990-91, 1991-92 and 1992-93. The annual target declined from 8260 to 7740 during the period. In comparison to total population Tetanus toxic for 10 years was very low. It needs more target to improve the quality of life and to prevalent the incidence of Tetanus among them.

Table -8

T.T. for 16 years [8]

Year	*Annual target*	*Achievement*	*% Achieved of annual target*
1990-91	8260	2555	30.9
1991-92	7584	1881	24.9
1992-93	7740	2430	31.4

Source : Health and Family Welfare Department

Tetanus toxic for 16 years boys and girls are very limited. Annual target was 8260, but the achievement was also very low i.e. 2555. It achieved 30.9 per cent of annual target in 1990-91. In the next year the achievement rate was 24.9 per cent which was below the performance of previous year. During 1992-93, annual target was 7740, of which 31.4 per cent was achieved. Overall picture showed that the performance of T.T for 16 years was not satisfactory in Sikkim.

Table - 9

Prophylaxis against Nutritional Anaemia among women[9]

Year	*Annual target*	*Achievement*	*% Achievement of Annual target*
1990-91	10700	17770	161.6
1991-92	16000	12727	79.5
1992-93	11460	19430	169.5

Source : Health and Family Welfare Department, Govt. of Sikkim.

Measures were taken to guard women against nutritional Anaemia. Pregnant and lacting women of Sikkim do not take balanced diet. The food provided to them is low for their nutritional status. They do not get the necessary amount of calories, proteins and vitamins in food. Traditional food habits and poverty are the main causes for their deficiency in nutritional requirements. It is evident that female mortality is more than men mortality in Sikkim. It causes several kinds of diseases among women and the prevalence of diseases also increases with nutritional anaemia.

The achievement of annual target was 161.6 per cent in 1990-91 which was more than target. The performance was very satisfactory in 1990-91. But there was a sharp fall of percentage during 1991-92. It stood at 79.5 per cent i.e. loss of

almost 80 per cent. This was due to increase in target and curtailment of government expenditure during 1991-92.Yet during 1992-93, the achievement per cent was 169.5 which was maximum during the whole period. This was possible due to sharp reduction in target and increase in performance.

Table - 10

Prophylaxis against Nutritional Anaemia among children[10]

Year	*Annual target*	*Achievement*	*% Achievement of Annual target*
1990-91	17700	14921	84.3
1991-92	21000	10572	50.3
1992-93	10400	6277	66.3

Source : Health and Family Welfare Department, Govt. of Sikkim.

Most of the mothers in Sikkim usually select and consume special foods during child birth and pregnancy. There food items are mostly home made from localy available materials. Besides, theses, they believe in various superstitions and social taboos regarding food consumption. Pregnant women generally do not take nutritious food and faty items in the fear that this will abnormally increase the size of baby to be born. These beliefs are prominent among illiterate and ignorant women. Lower rate of female literacy in comparison to male hinders the scientific basis of these. Due to this social beliefs, high infant mortality still birth, malnutrition of children at their early ages occurs. The state government initiated some measures to guard against nutrition anaemia among children.

It is evident from the table that annual target was 17700 children in 1990-91. It achieved 84.3 per cent of the annual target during the period. The target was revised in the next year. It increased to 21000 children and achieved 50.3 per cent

of total annual target in 1991-92. It is seen that the achievement declined in terms of number and percentage too. Annual target was reduced to half than previous year in 1992-93. It achieved 66.3 per cent of the annual target which is more than previous year. But interesting point is that the number of achievement declined sharply from previous 10572 to 6277 children in 1992-93, although the percentage performance was better than 1991-92.

Nutritional deficiency

Nutrition anaemia among children is due to biological factors and socio-economic condition also. The prevalence of different kinds of diseases also affect the situation. Female education, nutritional diet and spread of scientific knowledge only can uplift in this field.

Table - 11

Prophylaxis against Blindness due to Vitamin 'A' deficiency among children"

Year	*Annual target*	*Achievement*	*% Achievement of Annual target*
1990-91	15500	13228	85.3
1991-92	21000	11195	53.3
1992-93	10400	11290	108.5

Source : Health and Family Welfare Department

Deficiency of Vitamin A causes night blindness and other diseases. The major source of Vitamin A is milk, eggs, green leafy vegetables, carrot and fruits. The food provided to children is poor for their nutrition requirement. They do not get required amount of vitamins in food. Traditional food habits and scarcity of

varieties food items are the main causes for their nutritional requirements. Market structure and urban centres are limited. Transportation is a major problem. Most of the vegetables are kept for a long time and the food value also declines with time. Guarding against blindness due to Vitamin 'A' deficiency among children is very essential in Sikkim.

The annual target was 15500 in 1990-91 but 85.3% of the target was achieved during the period. The official estimation also revealed that there was a wide gulf between target and achievement in 1991-92. Vitamin' A' deficiency deprivation rose to nearly 47 per cent. So the government measures in guarding the deficiency was very poor. But the annual target declined to 10400 children in 1992-93, the achievement rate rose to 108.5 per cent. Annual target reduction is also children deprivation.

Table - 12

Immunisation status of children surveyed vaccination [12]

Age group	*Three doses of DPT*	*Measles*	*BCG*	*Partially*	*Not immunised*	*immunised*
0-1	n=154	75 (48.9)	65 (42.35)	70 (45.25)	16 (10.2)	67 (44.56)
2-4	n=247	145 (60.23)	102 (42.13)	137 (56.67)	17 (7.02)	72 (29.97)
5-9	n=502	274 (54.56)	138 (27.54)	214 (42.56)	29 (5.77)	205 (40.8)
Total	n=898	494 (55.01)	305 (33.96)	421 (46.88)	62 (6.9)	344 (38.03)

Source : Personal Survey (Enumerated)

Immunisation status of children was recorded during the survey. The data shows that all three primary doses of DPT and polio vaccination was received by 48.9 per cent of infants. Out of 154 infants, 75 infants are completely immunized. It also depicts that 65 out of 154 infants was vaccinated by measles. It achieved 42.35 per cent measles immunization among infants. The prevalence of measles among children is very high in Sikkim. BCG vaccination was received by 45.25 per cent of infants. It is also observed that partially immunization was received by only 16.2 per cent of infants. Out of 154 infants, 67 infants were not immunized at all. It implies that 44.56 per cent infants were not received any kind of immunization.

Three dozes of DPT and polio vaccination was received by 60.23 per cent of infants of those between 2-4 years of age group. It also recorded 54.56 per cent immunization among 5-9 age groups. The age group is extended up to 9 years to overview and evaluate the overall performance of past.

Measles vaccine was received by 42.13 per cent of those between 2 to 4 years of age and only 27.54 of those between 5 and 9 years. It indicates that recent performance is better than previous years.

Fifty six per cent of those between 2 and 4 years were vaccinated with BCG and 42.56 per cent of those between 5 and 9 were vaccinated too. Overall 46.88 per cent was vaccinated with BCG.

Upto 9 years 6.9 per cent of the total children including was partially immunized and 38.03 per cent of children upto 9 years remained unimmunized. The overall, three dozes of DPT and polio vaccination were received by 55.01 per cent of children upto 9 years. Measles vaccination was received by 33.96 per cent of children upto 9 years age.

An UNICEF sponsored (1990) study shows districtwise immunization status of under fives. East had the best coverage and West district had poor immunization status with 46% unimmunized and 9% partially immunized. Coverage with measles vaccination was very low in South and West districts. DPT and polio vaccine coverage was 58.6 for South, 43.5% for West and 54% for North districts. The

best coverage was found in East where 69% of infants. 70% of those 2-3 years & 59% of those between 3-5 years were found fully immunized with all the primary doses.

Integrated child development scheme has been launched in all the districts of Sikkim for last few years. The national status of women was survey by UNICEF and Government of Sikkim in 1990. It states, "... the nutritional assessment was very essential, it was decided that all children attending ICDS projects in sampled revenue blocks and their mothers should be examined and their sex, age, height and weight should be recorded. This method gave a reliable information for working out nutritional indices for mothers and children for the year 1990".

Table - 13

Nutritional Status of Mothers of under fives (BMI) in Sikkim[13]

Age	*Under nourished*	*Average nutrition*	*over nutri-tion*	*Stunted 150 (m) %*	*Total %*
15-24	115 (28.39)	222 (54.81)	22 (5.43)	46	405
25-29	142 (31.14)	240 (52.63)	27 (5.92)	47	456
30-34	90 (30.92)	148 (50.85)	21 (7.21)	32	291
35-44	98 (29.08)	168 (49.85)	26 (7.71)	45	337
45 and above	15 (25.42)	32 (54.23)	15 (25.42)	7	59
Total	460 (29.7)	810 (52.3)	101 (6.5)	177 (11.4)	1548 (100)

Source : Health Status of Women and Children in Sikkim UNICEF & Govt. of sikkim.

Their physical weight and height were recorded with age to compute nutritional index. Even all the children in ICDS project were weighed and their nutritional status was assessed, as the formulation of Indian Academy of paediatries. From all these informations Body Mass Index was prepared for each mother and children.

The above table showing the nutritional status of women in Sikkim was compiled from the publication of UNICEF in 1993. Total number of women was 1548. Nutritional status was .PA

classified as under nourished, average nutrition, over nourished & stanted. The total female population excluding below 15 years were classified into broad four age categories. It showed that out of 1548 women surveyed 460 were found to be under nourished. Mal nutrition incidence was recorded for 26.7 per cent of the total women. Maximum per cent of malnourished women i.e. 31.14 were found in the 25-29 years age group. And the trend of malnourished per cent remained in and around thirty upto 35-44 years of age group. 25.42 per cent malnourishment was recorded in the 45 and above age group. Poverty and traditional food habits were two major causes of malnutrition.

52.3 per cent women were received average nutritional status out of 1548 women. Average nutrition was recorded more than fifty per cent. Of them 54.81 per cent of the women were received average nutrition in the 15.24 years age group. It was recorded as maximum and 52.63% of those between 25 to 29 years and 50.85% of those women between 30 to 34 years and 49.85% of those between 35 to 44 years and 54.23% of those 45 years and above.

101 (6.5%) women were found to be over nourished 15 (25.42 per cent) women were estimated to be over nourished in the age group 45 and above. It recorded the maximum per cent of women.

One hundred and seventy seven (11.4 per cent) women were recorded with heights less than 140 cms and these women were termed as stunted. The undernourishment was to the extent of 27% in East, 28.4% in South, 30% in North and 33% in West districts. Women nutritional pattern have a greater impact on the

female death rates and infant mortality also. So a careful evaluation is to be made to uplift the status of women in raising their capability.

Table -14

Age specific Nutritional Status of boys below 5 years of age[14]

Age	*Degree of malnutrition*					
group	*I*	*II*	*III*	*Normal*	*Ab-Fat*	*Total*
0-6 months	11 (14.1)	7 (8.9)	5 (6.4)	39 (50.0)	16 (20.5)	78
6-12 months	16 (13.6)	20 (17.1)	10 (8.5)	46 (39.3)	25	117
1-2 Yrs.	35 (17.0)	26 (12.6)	15 (7.3)	106 (51.4)	24	206
2-3 Yrs.	39 (18.5)	17 (8.0)	13 (6.1)	117 (55.4)	25	211
3-5 Yrs.	157 (25.5)	93 (17.5)	17 (3.2)	219 (41.2)	46	532
Total	258 (22.6)	163 (14.2)	60 (5.2)	527 (46.0)	136 (11.9)	1144 (100)

Source : Health status of women and children in Sikkim by UNICEF & Govt. of Sikkim.

There were six age group. The classification of nutritional status of boys below 5 years of age was made on the basis of degree of malnutrition, normal and abnormal fatty. Out of 1144 boys 22.6 per cent were under 1st degree malnutrition, 163 boys (14.2 per cent) were under 2nd degree malnutrition and 60 boys (5.2 per

cent) were under third degree malnutrition. It is also observed that first degree malnutrition increased as age advanced in boys. Maximum number of 1st degree nourished boys (29.5 per cent) were concentred in the 3-5 years age group and lowest percentage (14.1) was concentred in the 0-6 age groups. Second degree malnutrition showed a heterogenous trend. It varied from to 17 indifferent age groups. Most of 2nd degree malnourished were recorded in the 3-5 years age group. Third degree malnourishment was estimated 5.2 per cent of the total boys. It varied from 3.2 per cent to 8.5 per cent in different age composition. Maximum per cent of 3rd degree malnourishment was observed in the 6-12 months age group.

527 (46 per cent) boys out of 1144 were found to be normal category. Of them 39 (50%) boys of 0-6 months age group were also found to be normal and the highest percentage of normal boys were recorded in 2-3 years age group and lowest percentage was observed in the 6-12 months age group. Beside this. 136 boys (11.9%) were found to be abnormally. It was also noted that 70 per cent of the boys weighed normal or above normal when they were below 5 months of age.

Age and nutritional classification were same among girls as compared to boys out of 1100 girls 28.4 per cent were under first degree malnutrition. It was also observed that first degree malnutrition increased as age advanced in girls. It followed the same trend among both boys and girls. It was also noticed that maximum number of 1st degree malnourished girls were concentrated in 3-5 years age group. The percentage was 34.9. In conparison to boys, first degree malnutrition was more among girls. The lowest 1st degree malnutrition was observed in the 0-6 months age group.

173 girls (15.7 per cent) were under second degree malnutrition. Second degree malnutrition was recorded maximum percentage, i.e. (25.9%) in the 0-6 months age group and in comparison to boys, second degree malnutrition among girl infant was 3 times more. It revealed the neglect of girl child and gender bais in child care.

Table - 15

Age specific Nutritional Status of Girls below 5 years of age [15]

Age group	*Degree of malnutrition*			*Normal*	*Abnor-mal Fat*	*Total*
	I	*II*	*III*			
0-6 months	15 (19.5)	20 (25.9)	4 (5.2)	25 (32.5)	13 (16.9)	77
6-12 months	27 (22.5)	22 (18.3)	16 (13.3)	37 (30.8)	18	120
1-2 Yrs.	37 (21.9)	24 (14.2)	15 (8.9)	81 (47.9)	12	169
2-3 Yrs.	46 (23.5)	19 (9.7)	7 (3.6)	104 (53.0)	20	196
3-5 Yrs.	188 (34.9)	88 (16.3)	31 (5.7)	212 (39.4)	19	538
Total	313 (28.4)	173 (15.7)	73 (6.6)	459 (41.7)	82 (7.4)	1100 (100.00)

Source : UNICEF & Govt of Sikkim.

73 girls (6.6%) were under 3rd degree mal-nourishment,of those belonged to 6-12 months girls suffered most. Among 2-3 year of age group, the 3rd degree malnutrition was very low, i.e. 3.6 per cent.

459 girls (out of 1100) were found to be normal. 41.7% of the girls were observed to normal which was lower than boys normalcy rate. It also indicated a gender bais in social system. Maximum percentage of normal nutrition was found in the 2-3 years of age group. Boys and girls showed the same pattern with respect to normal nutrition in thee 2-3 years of age group.

82 girls (7.4%) were found to be abnormal fat and this abnormality was highly concentrated in the 0-6 months age group. It was also to be mentioned that abnormal fat percentage was more among boys than girl child. Lastly, 50 per cent of the girls weighed normal or above normal when they were below 6 months of age. It implied that socio-economic factors were more responsible in increasing the malnutrition status among girls and boys aged below 5 years: because the biological factors influenced the infants during and before live births.

Age Specific and Infant Mortality Rate in Sikkim.

Infant mortality is composed of two components. These are neonatal and post neonatal mortality. Neonatal mortality refers to death under four weeks and post-neonatal mortality refers to death between four week to one year. Hence the sample, is very small, so separation is not done. Yet the common causes of neonatal deaths are low birth weight, pneumonia, gastrointestinal infections, fever, tectal asphyxia and etc.

Table - 16

Age Specific Mortality Rate[16]

Age group	*Total Population*	*No. of death*	*Mortality Rate*
0-1	154	16	38.96
2-14	1196	5	4.18
15-49	1666	14	8.40
50+	306	6	19.60
Total	3528	31	8.28

7

Post-neonatal causes of deaths are pneumonia, acute diarrhoeal diseases, malnutrition, fever and anaemia. These two death rates combinedly shows the

infant mortality rate. From the survey data an overall infant mortality of 38.96/ 1000 live births is recorded.

At the 2-14 age groups, the number of death is only 5 and the rate is 4.18 per 1000 live births. The major causes of deaths are pneumonia, T.B, Measles, Meningitis, Fever and Gastrointestinal infection etc. The prevalence of death is more acute in the 50 and above age group. But the 15-49 age group is more vital, the female death rate is more than male due to pregnancy. A study by UNICEF shows that the women mortality rate is twice as compared to male mortality. Besides pregnancy prevalence, tuberculosis, fever with chronic cough, acute gastrointestinal infections, and malnutrition are dominant.

The record of infant mortality is practically absent in the registration. There is no proper registration system in Sikkim. Different estimates show different figures.

Table - 17

Infant mortality from different sources [17]

Source	Infant mortality	Year
(i) Sikkim Herald	49	1993
(ii) Sunshine in Sikkim		
Ananda Bazar Patrika	45	1996
(iii) Veena Bhasin	117	1989
(iv) Survey	38.96	1992-92
(v) Probable infant mortality		
rate	63.00	1992-93
India	79	1992

Probable infant mortality rate for Sikkim (1992-93) = 63

Probable infant mortality rate for Sikkim (1981) = 100

The estimation of Sikkim Herald shows the infant mortality as 49 per 1000 new born infant in 1993. The govt. of Sikkim shown as 45 per 1000 babies in Ananda Bazar Patrika 12 Dec. 1996.

Veena Bhasin shows the rate as 117 per 1000 infant in 1989. The national average is 79 in 1992. Considering all these the probable infant mortality rate is taken as 63 per 1000 infants in 1992-93.

Biological and socio-economic factors are responsible for this. Infant mortality rate highly depends on the nature of immunisation measures. People are not aware of the immunisation system which is taken by the government. Besides this, the socio-economic condition of the people also affects mortality. It is evident that the high mortality is associated with poverty, ignorance, malnutrition, improper housing pattern, lack of personal and environmental hygiene and low level of immunity. In Sikkim most of factors are prominent, as a result the infant mortality is also high. The official estimation is underestimates the real situation. Most of the infant mortality are suppressed by the people.

The infant mortality rates are a significant demographic and biological variable. It influences the fertility behaviour socially and psychologically. The fertility rate is very high in Sikkim Infant mortality is regarded to be a most sensitive index of health conditions of a country. The endogenous causes e.g. congenital abnormalities is difficult to control; but the endogenous factors like nutrition, prenatal care, sanitary conditions, incidence of diseases to which infants are highly prone, can be controlled by the government and NGO's. Besides genetic and endogeneous factors, biological factors like the age of mother, order of birth, prematurity and birth gap also have a vital impact on the survival of the infant. Infant mortality shows a J-shaped curve with the age of mother; the lowest rate is at ages 24-29 but it increased sharply with age increase and less sharply with age decrease (Srivastave & Saxena 1981). There is also universal correlation of infant mortality with low birth weight.

The main causes of infant and child mortality are infections parasite, nutritional, respiratory and other perinatal diseases. But in Sikkim and over all

India the infant mortality rate has declined sharply. This decline has been an outcome of many developmental and health measures taken by the government for example immunisation of children from infectious, parasitic and respiratory diseases, general improvement in sanitary conditions, access to safe water eradication of many diseases like small pox etc. Besides this, development measures like availability of medical facilities, motorable roads, electricity, education and improvement in living conditions have resulted in a decline in infant mortality (Reg. General of India 1979).

There are social and economic factors which intensify the problem of infant mortality. It is wellknown that education reduces fertility directly and indirectly it reduces mortality too. Maternal education also influences the infant mortality and general mortality also.

At the international level, the level of infant mortality rate and fertility show a lower level in comparison to underdeveloped countries. The IMRs of USA and Canada are 9.0 and 7.1 and the fertility rates are 1.8 and 2.0 respectively in 1992. In India, the picture is different. These rates very from state to state. Kerala is leading with lowest infant mortality rate i.e. 17 per 1000 live births and fertility rate at 2.0 per cent per woman. On the other hand Orissa records the highest infant mortality rate i.e. 126 per 1000 live births and U.P. records maximum fertility rate in 1991. The infant mortality of Sikkim, 63 per 1000 live birth is better than national average of 79 per 1000.(18)

The literacy rate of Kerala is highest among the states; it reduces IMR and fertility rate directly. Occupation pattern is also significant in reducing both the vital events.

The variation in mortality condition among regions exists everywhere. The regional variation occurs due to the availability of preventive and treatment facilities. Climatic factors may also play an significant role. The climatic condition of Sikkim is very worse. The prevalence of diseases are generally more in Sikkim.

Hinduism and Buddhism are two important religious in Sikkim. Religious differences in demographic behaviour is an established fact. Besides economic

activity, there are some social norms and spiritual values which varies from religion to religion. This differential also influences. Their life style and thereby differences in mortality level.

The area of dwellings has an inverse relationship with mortality level ingeneral. Economic classification of social strata also influences the mortality pattern. Rural-urban differential in mortality is also prominent in India and even in Sikkim also. Rural rate is always more than urban mortality rate. Sanitary condition also affects mortality level. However, infant mortality is proportional to total mortality. The decline in mortality can be judged to better health and nutrition for infants, improved delivery practices, the use of hospitals for child birth, use on nurse, control of epidemics etc. The infant mortality is very sensitive. The life table construction is largely influenced by the mortality rate, especially infant mortality rate. Higher IMR reduces the expectation of life. So a proper care should be taken to lower down the overall mortality rate including infant mortality rate.

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Chapter VII

Economy of Sikkim : An analysis of State Income Occupational Pattern and per Capita Income

Sikkim embarked on its first 7th years development planning in 1954 with the cordilal assistance of India. Since the inception of the second plan, it is implementing on a five yearly basis and the development activities were further intensified after merger with India in 1975. During this period, the state has witnessed, a multi-dimensional transformation touching every aspect of development, in the social and economic fields which have initiated a potential of development activities. It has achieved a record improvement in every sector of the economy. This had a positive effect on the standard of living in terms of per capita income, production of primary as well as secondary goods; spread of health, education, eradicating social taboos, raising consciousness and essential services, widening the net work of communication, generation of power, infrastructure creation etc. All indicators point towards a significant increase in the standard of living during this period. Human development incorporates all these things, raising the overall development of the people and the distributional aspect of development eradicating poverty, improving literacy, raising health condition, minimising social unjustice and crime, and protecting environmental degradation. That is why, a critical review of the planned expenditure and process will help us, in understanding the real progress and performance of state, in raising economic development process and distribution as well as the trend of Human development.

While impressive progress has been made, yet the state is lagging behind in comparison to other states. This can be attributed to the delayed entry of the state into the national mainstream of economic development, geographical disadvantages

of being land locked, high transportation cost, restricted working day during monsoon and winter period, high natural calamity incidents etc. Poor resource base of the economy and poorer returns on investment, longer gestation period act as a deterrent to the wheel of development, retarding growth and progress and severely limiting the avenues of internal resource generation.

Table - 1 : Sectoral distribution [1]

Sikkim Under Five Year Plans (1954 to 1997) sectorial distribution (Rs. in crores)

Plans	Primary (%)	Secondary (%)	Tertiary (%)	Total
1st Plan	0.53	0.48	2.23	3.24
	(16.4)	(14.8)	(68.8)	(100.00)
2nd Plan	1.03	0.66	4.72	6.41
	(16.06)	(10.29)	(73.6)	(100.00)
3rd Plan	1.37	1.50	6.85	9.72
	(14.09)	(15.4)	(70.47)	(100.00)
4th Plan	3.17	2.90	12.68	18.75
	(16.9)	(15.4)	(67.62)	(100.00)
5th Plan	11.25	18.82	53.14	82.21
	(13.68)	(22.89)	(64.6)	(100.00)
6th Plan	21.42	34.04	66.54	122.00
	(17.5)	(27.9)	(54.5)	(100.00)
7th Plan	61.66	73.91	158.24	293.81
	(20.9)	(25.15)	(53.8)	(100.00)
8th Plan	109.30	165.30	275.4	550.00
	(19.8)	(30.05)	(50.07)	(100.00)

1st Plan (1954 - 61) was of 7 years duration.

Source : Sikkim - An Economic Survey - 1991-92, B.E.S.

The enormous growth in the plan investments upto the Eight Five year Plan can be seen. The Gulf between plan expenditure and non-plan expenditure is mounted up.

In Sikkim, Primary sector consists of agriculture and Animal husbandary (including Irrigation and Plantation), Forestery and logging, Fishing and lastly Mining and Quarrying, During the First plan period, 16.4 per cent of the total plan investment was appropriated for the improvement of primary sector. Subsequently the percentage remained more or less around 16 per cent during the next plans and it reached at all time low during 5th plan 13.68 per cent and mounted to 20.9 per cent during the 7th plan period. It is observed from the Sikkim economy that, more or less 50 per cent of the Net State Domestic Product comes from the Primary Sector and the dependence on Agriculture is predominant in rural areas and the proportion of main workers engaged in agriculture is nearly about more than 70 per cent but the relative share of the plan investment on agriculture sector has increased 3.4 per cent during the First to Eight plan period, although the physical volume increased more than 200 per cent. Being an agriculture based subsistance economy, its agricultural as well as primary sector was neglected during the plan periods.

Secondary sector comprises of Manufacturing, construction, electricity, gas and water supply. During the period 8th plan (1992-97) the share of total investment in secondary sector rose to 30.05 per cent in comparison to the First Plan period (1954-61) which was 14.8 per cent. It reached at all time low 10.29 per cent in 2nd plan period and there was almost 20 per cent increase during the 8th plan period. So it reveals that a greater importance was given to boost up the secondary sector of economy.

Tertiarty sector composed of transport & communication, traade, hotels and restaurant, banking and insuraance, real estates, ownership of dwelling, public administration and other services. From the above table, it depicts that the share of the investment in the tertiary sector was declined to 50 per cent from 73.6 per cent. It is also seen that there is a havoc decline in the tertiary sector investment.

Sectorial Contribution : Net State Domestic Product

The relative share of primary, secondary & tertiary sectpr reveal the true picture of the NSDP composition and qualitative aspects. An analysis of the sectorial contribution to the NSDP shows that the relative share of the primary sector, which was of the order of 51.60 per cent during 1980-81 declined to 48.90 per cent in 1988-89. So the share has reduced by 2.7 per cent at current prices during the period. Although we have seen that the relative share of the total investment in the primary sector rose from 16.4 to 19.8 per cent during the plan periods, yet this traditional sector contributes near about 50 per cent of the NSDP. It is obligatory to take care of the primary sector, in raising the plan outlay which is not sufficient in terms of its contribution in the NSDP. However in real terms (at constant prices) the decrease was upto 49.17 per cent and the gulf is 2.43 per cent.

It also highlights that there has been substantial re-alignment in the sectoral composition of NSDP over the year. The relative share of primary sector in real terms in the NSDP has gradually increased from 51.60 per cent 1980-81 to its maximum at 54.99 in 1982-83. However the increase has been observed upto 53.18 per cent in 1984-85 after which ultimately showed a decline upto 49.17 per cent in 1988-89.

The relative share of the secondary sector has been observed to be similar at 18.16 per cent and 118.06 per cent respectively. However, this has been marked by a significant increase upto 24.69 per cent in 1986-87 after which it showed a dicline.

The relative contribution of the tertiary sector has increased from 30.30 per cent in 1980-81 to 32.77 per cent in 1988-89.

Table - 2

Net State Domestic Product (Sector wise) [2]

	(Current Prices)			*(Constant Prices)*		
Year	*Primary*	*Secondary*	*Tertiary*	*Primary*	*Secondary*	*Tertiary*
1980-81	51.60	18.10	30.30	51.60	18.10	30.30
1981-82	52.18	17.17	30.65	53.78	17.05	29.17
1982-83	53.44	15.87	30.69	54.99	16.65	28.36
1983-84	51.34	16.12	32.54	52.38	17.54	30.08
1984-85	56.34	18.11	31.55	53.18	16.38	30.44
1985-86	50.96	16.45	32.59	47.94	18.72	33.34
1986-87	49.36	17.77	32.87	41.76	24.69	33.55
1987-88	49.80	17.49	32.17	50.43	19.62	29.95
1988-89	48.90	15.60	35.50	49.17	18.06	32.77

Source : Estimates of State Domestic Product. B.E.S. Gangtok.

The share of the secondary sector are manufacturing industries and construction. It may also be noted that manufacturing industries are grouped under registered and unregistered. At current prices the share of the relative of the secondary sector has declined to 15.60 per cent from 18.10 per cent whereas in at constant prices practically there is no significant change during this period.

The share of the tertiary sector which includes trades, transport, storage, communications, banking & insurance, real estate and community and personal services improved from 30.3 per cent in 1980-81 to 35.50 per cent in 1988-89 at current prices and 30.30 per cent to 32.77 per cent during the same period at constant prices. The structural change and its composition plays a greater role in the process of economic growth. The theory of economic growth also supports the structural

change in the composition of national product. The distribution of gross domestic product in developed countries indicates a much higher share for industry and service and a relatively lower share of agriculture. A transition from Agriculture to an industrials economy. In this process, a sturctural change in the composition of national or NSDP is inevitable. But the structural change is very slow in Sikkim. In developed countries like USA, Canada, Japan, France, etc. The agriculture contributes nearly 3 to 10 per cent of the GDP but in sikkim the share almost remains the same during the plan periods. That is why the backward and land locked state failed progress rapidly, changing its structural composition.

The theory of economic development states that as an indicator of development, there should be a decline in the share of the primary sector and an increase in the shares of the secondary and tertiary sectors.

Nor the period of little less than a decade i.e. for the year 1980-81 to 1988-89 the NSDP as well as the per capita NSDP have increased consistantly at a fairly high rate. The gross state domestic product at current prices increased from 5207 lakhs in 1980-81 to Rs. 18465 in 1988-89 registering an average annual increase of about 28.9 per cent. The GSDP in real terms at 1980-81 prices, increased to Rs. 125.43 crore in 1988-89 from the level of Rs. 52.07 crore in 1980-81. In this connection it is observed that the economy experienced an average growth rate of 15.67 per cent per annum. The following table reveals the level NSDP per capita income in their growth rate both prices during the period 1980-81 - 1990-91[3].

Table - 3[3]

Year	*Current Price*		*Constant Price (1980-81)*	
	Per capita	*% change NSDP*	*Per capita*	*% change NSDP*
1980-81	1571	-	1571	-
1981-82	1701	3.27	1611	2.54
1982-83	1926	13.23	1750	8.62
1983-84	2136	10.90	1758	0.45
1984-85	2635	23.36	1919	9.15
1985-86	3023	14.72	2017	5.11
1986-87	3472	14.85	2297	13.88
1987-88	3886	11.92	2678	16.58
1988-89	4241	9.1	2924	9.18
1989-90	4934	14.04	3118	6.22
1990-91	5583	11.62	3369	7.45

Source : Estimates of State Domestic Product, B.E.S.

The per capita NSDP at current prices rose from the level of Rs. 1571 in year 1980-81 to 5583 in the year 1990-91 showing an average annual growth of 22.6 per cent. The per capita increase in real terms (at condtant prices) rose to Rs. 3369 in 1990-91 registering an average annual growht rate of 10.34 per cent.

One of the most reliable and meaningful indicators of the growth of the state's economy is the estimates of state Domestic Product at factor, commonly known as State Income. Generally the SDP reflects in money terms, the total volume of material goods and non-material service produced within the boundaries of the state in a given period of time. In Sikkim the computation of SDP was taken up for the first time in the year 1986-87 with base year 1980-81.

A break up of the net state domestic product by industrial origin, is given here. The following board trends in the changing composition of the state domestic product are revealed.

(1) The share of the primary sector which includes agriculture, animal husbandary, forestry, mining and fishery has gone down from 51.60 per cent in NSDP in 1980-81 to 49.17 per cent in 1988-89 and to a still lower figure at 41.76 per cent in 1986-87. The share of primary sector rose to 54.99 per cent during 1982-83.

Table - 4

Net State Domestic Product at Factor Cost (%)[4]

(Rs. in '000)

Primary Sector	*1980-81*	*1984-85*	*1988-89*
1. Agri - Animal husbandry (irrigation & Plantation)	248831(50.81)	363391(52.32)	560143 (48.75)
2. Forestry & logging	2786(0.57)	4883(0.70)	1799 (0.16)
3. Fishing	160(0.03)	466(0.07)	390(0.03)
4. Minning & Querrying	922(0.19)	658 (0.09)	2658(0.23)
Sub - Total (%)	51.60	53.18	49.17

Source : Bureau of Economics & Statitics. Govt. of Sikkim, Gangtok.

Correlation with different component

Sikkim is an agricultural state. As agriculture contributes the bulk share (i.e. over 98 per cent) to the primary sector, it would be of interest to estimate the trend of the contribution of agriculture to net state domestic product. Agriculture

contributed 50.81 per cent of NSDP in 1980-81; its share, however, fell down to 48.75 in 1988-89 and at although its share rose highest 53.9 per cent during 1982-83. In Sikkim agriculture also contains animal husbandry. Animal husbandry is also significant source of income to the Sikkimese.

The share of forestry was very negligible i.e. 0.57 per cent in 1980-81. Its share raised at highest level i.e. 1.28 per cent during 1983-84 and after onwards the share gradually declined to very minimul amount, i.e.,0.16 per cent in 1988-89. The contribution of forestry is very negligible and insignificant in the state econmy. Interestingly the share of fishery is not only very negligible but also remains stagnant over the period. Its contribution was 0.03 per cent in 1980-81 and it remained at the same figure during 1988-89. Nextly the share of mining was 0.19 per cent 1980-81, but its contribution to NSDP has improved to 0.23 per cent in 1988-89. Basically Sikkim is an industrially backward state. The reserve nature of the natural resources are limited in nature and due to hilly terrain, mining activities is also restricted. This only underlines the fact that in the primary sector, agriculture & animal husbandry are the most important and the trend of change in agricultrue sector determined the share of the primary sector in NSDP.

Table - 5

NSDP at factor cost (At constant prices)[5]

(Rs. '000)

Secondary Sector	*1980-81*	*1984-85*	*1988-89*
1. Manufacturing	27949(5.7)	45473(6.55)	73344(6.38)
2. Construction	73069 (14.92)	79219(11.40)	168476(14.35)
3. Electricity, Gas & Water Supply	-12355 (-2.52)	-10932(-1.57)	-30687(-2.67)
Sub-Total	88663 (18.10)	113760(16.38)	207533(18.06)

Source : B.E.S. Planning and Development Department Gangtok

The secondary sector consists of manufacturing, construction, electricity, gas and water supply. The share of the secondary sector at constant factor cost is nearly 18 per cent of the net state domestic product in 1988-89. The contribution of secondary sector remains more or less stagnant over the period 1980-81 to 1988-89. Sikkim is a industrially backward state. Two major components of the secondary sector are manufacturing industries and construction. The share of the manufacturing in NSDP increased from 5.7 per cent in 1980-81 to 6.38 per centin 1988-89. It reveals that the share of the manufacturing industries rose to 6.89 per cent in 1981-82 and there after it remained above 6 per cent. Manufacturing industries are classified into two groups e.g. registered and unregistered. Similarly, the share of the construction marginally declined from 14.92 per cent in 1980-81 to 14.35 per cent in 1988-89. The highest contribution of the construction was 20.49 per cent in 1986-87 and lowest at 11.40 per cent in 1984-85. It depicts that construction contributes the major share (i.e. nearly 80 per cent) in the secondary sector.

Another component of the secondary sector is electricity, gas and water supply. Its contribution is negative in net state domestic production. The share of this group is minus 2.52 in 1980-81 and it declined to minus 2.67 in 1988-89. Water supply is incorporated into social welfare activities of the state and it is costly also. So it runs with huge losses. Consequently the overall contribution became negative.

Table - 6

NSDP at factor cost (At constant prices)[6]

(Rs. in '000)

Tertiary Sector	*1980-81*	*1986-87*	*1988-89*
1. Transport & communication	5679(1.16)	15183(1.70)	27408(2.38)
2. Trade, Hotels & Restaurant	30084(6.14)	63394(7.11)	76297(6.64)
3. Banking & Insurance	9909(2.02)	17500(1.96)	33167(2.89)
4. Real Estate,owner-ship dwelling & bus-iness services	28099(5.74)	54877(6.16)	69273(6.03)
5. Public Administra-tion	48320(9.87)	80508(9.03)	92239(8.03)
6. Other Services	26322(5.37)	67666(7.59)	78103(6.80)
Sub-Total	148413(30.30)	299128(35.55)	376487(32.77)

Source : B.E.S. Planning and Development Department, Gangtok

Tertiary sector includes transport & communication, trade, hotels & restaurant, Banking & Insurance, real estate & Business service, Public administration and other services. The share of the tertiary sector improved from 30.30 per cent in 1980-81 to 32.77 per cent in 1988-89. It stood maximum 33.34 per cent in 1985-86.

Firstly the share of the transport and communication was 1.16 per cent in 1980-81, improved to 2.38 per cent (nearly double) in 1988-89. Undoubtedly the

increment is significant. Secondly, the share of the trade, hotles and restaurant marginally improved from 6.14 per cent in 1980-81 to 6.64 per cent in 1988-89. Its contribution was maximum at 7.11 per cent in 1986-87. Thirdly, the share of banking and insurance improved from 2.02 per cent in 1980-81 to 2.89 per cent in 1988-89. Then, the share of real estate, ownership dwelling and business services improved from 5.74 per cent in 1980-81 to 6.03 per cent in 1988-89.

The share of the public administration declined from 9.87 per cent in 1980-81 to 8.03 per cent in 1988-89, and the contribution of other services improved from 5.37 per cent in 1980-81 to 6.80 per cent in 1988-89. The process of economic growth and development involve a rapid expansion of public administration, especially rapid expansion of economic and welfare services such as education, health and family welfare. The share remins over 9 per cent upto 1986-87 but then it started to decline.

The structural change in the composition of state income by industrial origin is the consequence of the process of economic growth initiated during the plans. However, agricultrue did not indicate a fast rate of growth. The theory of economic growth also supports the structural change in the composition of state product. The distribution of gross domestic product in developed countries indicates a much higher share for industry and services and relatively lower for agriculture. The disparity in per capita incomes between developed and under developed countries is largely a reflection of the disparity in the sturcture of their economics. While the developed countries are predominantly industrial in their structure, developing economics are predominantly agriculture.

In the process of economic development,structural change in the composition of state income is inevitable. This structural change is taking place, though at a slow pace. The main reason for the slow rate of structural change in domestic output is the slow rate of growth of the manufacturing output by nearly 6 per cent per annum during 1980-86 to 1988-89. The share, has improved to 6.38 per cent in 1988-89 but not as fast as was expected.

As our expection, Sikkim also experienced an improvements in the share of

tertiary sector. This was largely due to an expansion in transport and communication, banking and insurance. The changing structure of state income needs to be further strengthened by stopping up the programme of industrialisation. This never implies a neglect of agriculture, but for accelerating the growth process in agriculture, industrialisation of the economy with emphasis on agro-baded industries.

In fact, the steady rising tendency of the non-commodity producing sector has an unpalatable implication, viz, that the structural changes in the state's economy have not taken the desired direction. It implies that income grows in the service sector but there is no proportionate increase in the absorption of working force in this direction. There is, therefore, a seeming disproportionality in the recent shift in the composition of NSDP.

Occupational Structure

Occupational Structure & Economic Development

The occupational structure of an economy shows the distribution or division of its active population according to different occupations. There are mainly three broad heading namely primary, secondary and tertiary sector. Colin clark in his work 'Conditions of Economic Progress', establishes that there is a close relationship between development of an economy on the one hand, and occupation structure on the other and economic progress is generally associated with certain distinct, necessary and preditable changed in occupational structure..A.G.B. Fisher also reaches the same conclusion, "we may say that in every progressive economy there has been a steady shift of employment and investment from the essential 'primary activities' ... to secondary activities of all kinds and to a still greater extent into tertiary production". There is a great debate over it.

Table - 7

Per capita GNP (1990) US $ and the proportion of Active Population engaged in Agriculture [7]

Country	*Per capita GNP US dollar*	*Proportion of active pop. in agriculture*
U.S.A	21,700	4
U.K.	16,070	3
Australia	17,080	8
Canada	20,450	8
France	19,480	14
Japan	25,430	21
India	350	68
Sikkim		68.19

The following table depicts that high per capita income is inversely correlated with the proportion of active population engaged in agriculture. The advanced countries like the USA, U.K, Australia, Canada, France & Japan with a low proportion of active population dependent on agriculture in 1990 show a higher per capita income (GNP). As against it, under-developed countries like India with a higher proportion of active population engaged in agriculture have very low per capita income. For Sikkim the proportion is 68.19 per cent with a low per capita GNP.

Table - 8

Occupational Structure of Sikkim 1991[8]

Percentage to main workers	*Total*	*Male*	*Female*
Primary Sector	68.19	61.99	80.69
Secondary Sector	11.34	14.07	5.80
Tertiary Sector	20.47	23.94	13.51
Total	100.00	100.00	100.00

Source : Census of India - 1991, Figures at a glance, R.G.I

It is seen from the above table that out of 100 persons main workers 68.19 persons are engaged primary sector, 11.34 persons in secondary sector and 20.47 persons in teritary sector. Primary sector is the Vital sector in the Sikkim economy. If we made a closer look on the basis of male and female component. It is observed that out of 100 male main workers, 61.99 male worker in primary sector, 14.07 male worker in secondary sector, 23.94 male worker in Tertiary sector and out of 100 female the proportion is 80.61 5.80 and 13.51 respectively. Sikkim is a subsistance agriculture economy that is why primary sector plays the crucial and as it is industrially backward. So the secondary sector plays a minor role in employment and production process. Due to its scenic beauty and other religious factors, the tertiary sector shows a better result.

Being a traditional society, subsistance economy and less male domination the female participation is 20 per cent higher than male worker from the main workers in the primary sector. But if we study the secondary and tertiary sector, it is observed that male participation is always higher than the female participation as main workers.

Table - 9

Changes in the occupational distribution main, marginal and non-workers[9]

	Percentage to Total population			*1991*	
Total /Year	*1971*	*1981*	*1991*	*Male*	*Female*
Main workers	53.18	46.60	40.45	50.82	28.63
Marginal workers	1.82	1.70	1.06	0.43	1.78
Non-workers	45.00	51.70	58.49	48.75	69.59
Total	100	100	100	100	100

Source : Census Report. 1971,81,91, R.G.I.

The census of 1971 has radically changed the definition of the term 'worker'. So an to make it more meaningful and significant. It defines " a worker" is a person, whose main activity is participation in any economically productive work by his physical and mental activity. Work involves not only actual work but effective supervision and duration of work. This implies that a man or woman who is engaged primarily in household duties e.g. cooking for own household or a boy or a girl who is primarily a student etc. should not be treated as a worker for the main activity.

The population of Sikkim are classified into three broad groups, e.g. main workers, marginal workers and non-workers. It is evident from the above table that the share of main workers was 53.18 per cent of the total population in 1971 and non-workers share was 45 per cent and the share of marginal workers was 1.82 per cent. It reveals that as against the participation rate of 53.18 per cent of total population recorded in 1971 census, the proportion of main working population returned 1981 census has come down to 46.50 per cent. This is mainly due to fact that the merger of Sikkim with India in 1975 has expanded the potentiality of

social sector, e.g.scope of education, government subsidy, and modification of agriculture sector etc. The proportion of school going children sharply increases during this decade. As a consequence the percentage of main workers declined rapidly and the development of health infrustructure also worked in expanding the non-workers share.

During 1991, the share of the main workers further declined to 40.45 per cent which is accounted for nearly 6 per cent less from the previous decade and the share of non-workers is increased by 7 per cent. Havoc development of educational infrastructure and the growing trend of the social security measuress has enlarged the share. Not only this, the changing pattern of age structure, due to the development of health infrastructure, has quickened the process. The dependency ratio has improved sharply due to the following reasons : firstly, the developoment of health care measures has reduced the infant mortality rate very quickly, as a result the difference between child birth rate and infant mortality rate increased; Secondly due to the development of basic infrastructure, death rate has declined but the crude birth rate remained at high level; thirdly the old age death rate has declined also. All these factors improved the most dependency ratio, as well as the non-workers share in the state.

Sex-wise classification in 1991 reveals that 50.82 per cent are male main worker whereas the non-workers, proportion is 48.75 of the total male population. The female share is 28.63 per cent as main workers and 69.59 per cent consists in the non-workers group. The population of Sikkim is of young age structure. Nearly 44 to 45 per cent population remains under the age bracket 14 and below, and 60 and above. Due to social taboos and high drops restrict a large number of female population out of worker category. Females are mostly engaged in household works e.g. cooking, fuel collection, rearing up siblings and look after of the older persons of the family, that is they are kept out of the main workers category and consequently the proportion of female non-workers are very large in comparison to male.

The proportion of marginal workers declined steadily from 1981 to 1991. Although the share is very low nearly one per cent. Sexwise classification depicts

that the share of female marginal workers, out of the female, is 1.78 per cent whereas the share of male is only 0.43 per cent out of the male.

Table - 10

District & sex-wise distribution 1991 as percentage to total population[10]

District	Sex	Main worker	Marginal worker	Non-workers
North	Male	53.63	0.23	46.14/100
	Female	29.94	2.44	67.62/100
East	Male	49.51	0.72	49.77/100
	Female	22.73	2.13	75.14/100
South	Male	51.55	0.27	48.18/100
	Female	30.88	1.78	67.34/100
West	Male	51.60	0.14	48.26/100
	Female	36.36	0.98	62.66/100

Source : Census India - 1991, Figures at a glance, G.G.I.

District and sex-wise breakup of the working and non-working population reveals that the highest no. of male as main worker is found in North district i.e. 53.63 out of 100 population and it is lowest in the east district i.e. 49.51 out of 100.

If we consider in terms of marginal workers i.e. highest in East district which is 0.72 out of 100 and lowest in West district which is 0.14 per cent. The percentage of non-workers is highest in the East district i.e. 49.77 and lowest in North district this is due to North district is more traditional.

With respect to female the highest no. of main workers is found in West district i.e. 36.36 and lowest in East district i.e. 22.73 per cent. In case of marginal workers it is highest in North and lowest in West district. In the regard of non-workers the no. of females is highest in the East district and lowest in the West district in rates are 75.14 and 62.66 respectively.

Occupationwise Distribution of Surveyed Female Population [11]

Occupation	*14 years & below*	*15-19*	*20-44*	*45-59*	*60 and above*	*Total*
Farmer	26 (3.8)	37 (19.3)	214 (35.6)	43 (32.4)	13 (24.5)	321 (19.50)
Government Servant	0 (0)	0 (0)	20 (3.1)	8 (6.6)	0 (0)	28 (1.70)
Business	0 (0)	1(0.34)	2(0.3)	2(1.8)	0 (0)	5 (0.3)
Non-student	160(23.9)	0 (0)	0 (0)	0 (0)	0 (0)	160(9.72)
Student	484(72.3)	104(56.8)	15(2.5)	0(0)	0(0)	603(36.63)
Labour	0 (0)	0 (0)	3 (0.6)	2 (1.4)	1 (0.4)	6 (0.36)
Teacher	0 (0)	0 (0)	21 (3.6)	5 (4.1)	0 (0)	26 (1.58)
Housewives	0 (0)	30(16.21)	258(42.8)	52(39.2)	34(60.3)	374(22.72)
Professional	0 (0)	0 (0)	1 (0.08)	1 (0.2)	0 (0)	2
Retired/ Unemployed	0 (0)	13 (7.31)	68(11.42)	20(15.1)	8 (14.8)	109 (6.62)
Total	670 (40.7)	185	602 (55.89)	133	56 (3.40)	1646

Source : Enumerated from Personal Survey data

The share of marginal workers in North, among male and female are 0.23 and 2.44 respectively. The amount of non-workers is 46.14 per cent in North district but the female non-workers are 67.62 per cent of the total female population. In East district the female non-workers is 75.14 per cent among the female. This due to the high enrolment ratio and engagement in household activities. Due to the

lack of overall social-consciousness and the spread of education at their early ages has increased the share of female non-workers proportion. The factors which may have influenced this trend could be (i) shift of workers to some other sector, (ii) age specific, (iii) spread of education.

The classification is made on the basis of five age group, firstly 14 years and below which is regarded as the non-working population and children. Nearly 40 per cent population belongs to this age group, of which student comprises 72.3 per cent, the lions share and non-student contains 23.9 per cent. Only 3.8 per cent of the population is under farmer category. The high amount of non-student is the outcome drop-outs at the early stages of schools.

On the other hand, 55.89 per cent of the total population belongs to 15-59 years of age group. This is most vital age compitition of the working population. There are total 185 female population in this age group 15-19. The respective proportion of student and housewives are 56.8 per cent and 16.21 per cent and the share of farmer is 19.3 per cent. It is evident that in comparison to male student the percentage of females than the female participation percentage is less than male in the farmer category.

Next 20-44 age group consists of 602 female population, of them 42.8 per cent belongs to housewives category and 35.6 per cent accounts for farmer. In the occupational distribution pattern, farmer is followed by government servant and teacher whereas retired/unemployed category contains 11.42 per cent. This indicates a high social burden and the dependency ratio is obviously high in the most crucial age-groups. Then in the 45-49 years age group, the proportion of housewives and farmer are 39.2 per cent & 32.4 per cent respectively and the others group consists of 15.1 per cent of the female population of this age group. Lastly 60 and above age group consists of 3.40 per cent of the total female population, of them 60.3 per cent are engaged as housewives and 24.5 per cent works as farmer.

From the overall population survey, out of 1646 female the proportion of student is maximum i.e. 36.63 per cent. Excluding students, most of females are engaged in household works and farm activities. The respective percentages are

22.72 and 19.50 per cent. The structural formation of occupation of the female population shows a traditional and backward pattern.

Table - 12

Occupationwise distribution of surveyed Male Population (Age in Years)[12]

Occupation	*14 & below*	*15-19*	*20-44*	*45-59*	*60 and above*	*Total*
Farmer	36 (5.3)	84 (42.5)	415(54.6)	106 (61.4)	32 (45.7)	673 (35.76)
Govt.Servant	0(0)	0 (0)	98 (12.8)	26 (14.3)	3 (4.5)	127 (6.74)
Business	0 (0)	3 (1.5)	82 (10.7)	13 (7.7)	2 (3.5)	100 (5.31)
Non-Student	106 (15.5)	0 (0)	0 (0)	0 (0)	0 (0)	106 (5.63)
Student	534 (78.6)	106(54.2)	21 (2.8)	0 (0)	0 (0)	661 (35.12)
Labour	4 (0.6)	2 (1.4)	31 (4.1)	12 (6.8)	1 (2.1)	50 (2.65)
Teacher	0 (0)	0 (0)	43 (5.7)	9 (5.5)	0 (0)	52 (2.76)
Professionals	0 (0)	0 (0)	29 (3.8)	2 (1.3)	0 (0)	31 (1.64)
Retired/ Unemployed	0 (0)	3 (1.8)	42 (5.5)	5 (3.0)	32 (44.2)	82 (4.35)
Total	680(100)	198(100)	761(100)	173(100)	70	1882(100)

Note : Percentages are given in the parenthesis.

Source : Enumerated from Personal sunvey data

Female perticipation in farm activities is 19.50 per cent where as the percentage of male is more i.e. 35.76 per cent. The proportion of government servant is 1.70 per cent among female which is less than male proportion is 66.74 per cent. Interestingly, the share of male student i.e.. 35.12 per cent which is less

than female proportion i.e. 36.63 per cent. Overall proportion of teacher is more in the male category. Housewives exclusively is associated with female and girl child. The female proportion of retired/unemployed i.e. 6.67 per cent is more than male counter part. It implies that the dependency ratio is more among female than male.

The major occupations are classified in the following categories e.g. Farmer, Govt. Servent, Business, non-student, student, labour, teacher, professionals and others. Out of 1882 male population, farmer accounts for 35.76 per cent. In accordance to age group, only 5.3 per cent population belongs to farmer category and the age groups 15-19, 20-24,45-59 and 60 and above years account for 42.5, 54.6,61.4 and 45.7 per cent population of the respective age groups respectively. It reveals that in terms of number, the maximum farmer population, i.e. 415 out of 761, belongs to the age group 20-44 years but the highest per cent, i.e. 61.4 occupies 45-59 age groups.

Government servant accounts for 6.74 per cent of the total population. In this class most of people are concentrated at 20-44 years of age group and its share decline sharply afterwards. This is due to the development of service sector which is a recent phenomenon in Sikkim. 5.31 per cent population engaged in business activities. Most of business are controlled by plainsman and Marwaris in Sikkim. Most of urban centre and market places are under the control of these traders. Not only the traders are outsider but the market is also very small and limited in nature. The new generation shares the major part of business in Sikkim.

Non-student categories occupy 5.63 per cent; they are of below 15 years of age but they are not both student and regular earner of the family. Although student is not an occupation, yet it occupies a major share of the total population, i.e.35.12 and highest concentration is observed in the 14 and below age group. High drop-outs is observed from the sharp decline of student proportion at the upper age group. The share of labour is only 2.65 per cent and teacher consists of 2.76 per cent of the total population. Most of the teachers are concentrated in the 20-44 years of age group. The spread of education is a new phenomenon in Sikkim. It is observed that a large portion of the teachers come from outside Sikkim, specially

most of post graduate teacher and a bulk of graduate teacher, mainly of mathematics, science and english. Due to the lack of proper educational personnel, the proportion of Sikkimese teacher is not satisfactory and occupies a lower percentage of total population. The proportion of professionals is only 1.64 per cent whereas the proportion of retired/unemployed is 4.35 per cent.

Income wise classfication

Data regarding income was collected during the survey. Income groups are classified in the following manner upto Rs. 5000, Rs. 5000-10,000, Rs. 10.000-20,000, Rs. 20,000-Rs. 40,000-Rs.60,000, Rs. 60,000-Rs.80,000 and above Rs. 80,000 per annum subsequently it depicts that 27.30 per cent of the total surveyed househod belongs to upto Rs. 5,000 per annum income category i.e. at the bottom of the income pryamid. And the subsequent income group percentages are 42.52, 14.25, 5.33,4.83,3.57 and 2.2 respectively.

Income is a very sensitive variable. Generally,it is understated due different social and legal causes. Although adequate precaution was taken during survey, a detail note was recorded regarding occupational pattern, land holdings, cropping pattern, Animal husbandry and other probable sources of income. Yet the pseudo-income, government subsidy and different economic measured provided by the government which indirectly promotes income and human capabilities remain out of the purview. Yet an attempt was made to assess the direct government subsidy to uplift the quality of life in Sikkim. Another factor which is prominent in Sikkim, is the traditional brater system. Monetary transaction is supplemented by brater system. In so many cases, wages are paid in terms of kind, cash and even exchange of labour. Due to natural isolation and lack of proper transport and communication system, monetary system works weekly. In most of the cases, land rents are paid in terms of agricultural products rather than cash. Consequently the surveyed income indicator is a relative measure to identify the socio-economic stratification in Sikkim.

Table - 13

Income distribution of surveyed households[13]

Sl. No. Category	*Number*	*Per cent (per annum at current prices)*
1. Upto Rs. 5,000	176	27.30
2. Rs. 5000-10,000	274	42.52
3. Rs. 10,000-20,000	92	14.25
4. Rs. 20,000-40,000	35	5.33
5. Rs. 40,000-60,000	31	4.83
6. Rs. 60,000-80,000	23	3.57
7. Rs. 80,000 and above	14	2.2
Total	645	100.00

Average per capita monthly income (at current prices) =Rs. 431.06

Average per capita per annum income % (at current prices 1990-91)

Rs. 431.06 X 12 = Rs. 5172.72

Source : Calculated from Personal Survey

The major sources of state income are namely (i) Tax revenue, (ii) Non-tax revenue and (iii) Grant and aids from Central government. The main sources of tax revenue in Sikkim are sales tax, state income tax, state excise duties and motor vehicle tax. And the principal source of non-tax revenue are state lotteries, Sikkim Nationalised Transport, Power, Forest and Tea Garden etc. Among these, only state lotteries play a significant contributory role in the state. Sikkim is a special category state from inception. It occupies a special provision of Article 371/F of Indian Constitution.

Table - 14

Per Capita Income of Sikkim (in Rs.)[14]

Year	*At 1980-81 prices*	*Growth Rate*	*At current prices*	*Growth Rate*	*Population*
1980-81	1571	-	1571		316,385
1981-82	1611	2.55	1701	8.27	
1982-83	1750	8.63	1926	13.23	
1983-84	1758	0.46	2136	10.90	
1984-85	1919	9.16	2635	23.36	
1985-86	2.17	5.10	3023	14.73	
1986-87	2297	13.88	3472	14.85	
1987-88	2678	16.59	3886	11.92	
1988-89	2924	9.18	4241	9.14	
1989-90	3118	6.63	4686	10.49	
1990-91	3369	8.05	5063	8.04	406,457
1991-92	-	-	5429	7.23	
1992-93	-	-	5690	4.80	
Overall growth	114.45		222.28	262.19	

Population absolute change = 90,072

Population absolute percentage = 28.47 during 1981 to 1991

Source : Sikkim - An Economic Survey 1991-92 B.E.S. Govt. of Sikkim.

Income at 1980-81 prices grows 114.45 per cent during the period 1980-81 to 1990-91.

Income at current prices grows more than two hundred prices i.e. 222.28 per cent during the same period.

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The Extent of Poverty and its measurement

In a backward state poverty is abysmal. It is not only an economic abstraction but also it represents human condition. The vivid picture of illiterate, hungry, malnourished poverty stricken and survival oriented people is equally applicable in Sikkim.

The extent of poverty in India is being worked out in terms of the poverty line. Poverty measures vary from country to country and on the basis of the variable demand, important commodities and characteristics of commodities, needs and requirements, income and expenditure. Originally a poverty measures begins from the notion of basic needs, such as nourishment, and translates those needs into commodity bundles (food stuffs) directly or indirectly through calories and proteins. It is then multiplies the quantities by appropriate prices to arrive at an expenditure income level. Basically there are two concept in measuring the poverty i.e. relative and absolute measures.

The usefulness of measuring poverty is one forward step in measuring the well-being of the people. This information would be relevent and informative. Poverty means different thing in different countries, if the welfare government provide a social safety to the poor by subsidy or any other means, it is easier to implement. If there is no such policy for the poor, it would be harder for the poor. Measurement of poverty has a great significance in rearing the healthy development process. If we want to know the root cause of poverty then we have to expand the measure of poverty. One may ask, what makes people poor ? This may be due to the lack of access to assets and to employment or learning opportunities, live in households with a high dependency ratio, belong to ill-served minorities and so on. It tries to focus on the key variables, of peoples deprivation. So action oriented poverty measures would focus on the access, or lack of access, that people have various options of human development. So this measure allows how poor peopole are and why they are poor - where corrective policy interventions should break the process of poverty.

The first director General of FAO was the first person to propound the notion of the starvation line in 1945 which referred to consumption less than 2,300

calories per person per day. This idea has been transformed into poverty line. The Indian Planning Commission has defined a poverty line on the basis of recommended nutritional requirements of 2400 calories per person per day for rural areas and 2100 calories per person per day for urban areas. In India, a study group consisting of D.R.Gadgil, P.S.Lokanathan, B.N.Ganguli and Ashok Mehta worked out the national poverty line and came to the conclusion that private consumption expenditure of Rs. 20 per capita per month (1960-61 prices) was the bare minimum. The fourth plan also deemed a minimum desirable consumption standard of Rs. 20 per capita per month (1960-61). According to Fifth plan, of 1972-73 prices the corresponding amount would be about Rs. 40.6. The Sixth Five-Year Plan (1980-85) estimated it at Rs. 51.3 and Rs. 59.7 for rural and urban areas at (1979-80) prices. Further, in 1979-80, about 50 per cent of the Indian population was living below the poverty line. During 1993-94 the poverty line is estimated by the planning commission. It derived the poverty line of Rs. 264 per capita per month consumption expenditure and Rs. 228 per capita per month for urban and rural areas respectively.

Sikkim is a land locked subsistance economy. Sikkim is an underdeveloped state among the Indian states. Due to underdevelopment, a large portion of the population has go without even the most essential needs of daily life.

The second cause of poverty is the extreme inequality of income and wealth in Sikkim. In fact, as pointed out by the planning commission, underdevelopment and inequality are the twin causes of poverty. Consequently a proper care should be taken to nourish the anti-poverty measures.

Poverty is also reflected by low per capita income. The per capita income of Sikkim was Rs. 5429 and Rs. 5690 during 1991-92 and 1992-93 which was more than neighbouring West Bengal and few other major states. But the distributional aspect of income was poor. There was high inequality in income distribution pattern too.

The growth rate of population has been very high in Sikkim as against the growth of the state economy. This has failed to bring about the required

imporovements in the living standards. A high growth rate of population accompanied by the low growth rate of the economy brings down the per capita income and the per capita consumption expenditure and thus perpetuates poverty.

Table - 1

Decennial growth rate of population [1]

	1971-81	1981-91
Sikkim	50.77	28.47
India	24.66	23.50

Source : Census India, 1971,81,91, R.G.I. Govt. of India.

The census reports showd that the decennial population growth rate of Sikkim was 50.77 which was more than double in respect to national growth rate i.e. 24.66 per cent during 1971-81. Even during 1981-91, the growth rate of Sikkim was higher than national average. Poverty is also on the increase with the rise in the number of the unemployed. Unemployment rate by status was estimated during 1987-88. The unemployment is classified into three broad categories e.g. (i) usual status, (ii) current weekly status & (iii) current daily status. The unemployment status of the two neighbouring state Sikkim and West Bengal are given below with Kerala.

Table - 2

Unemployment rate 1987-88[2]

State	*Usual Status*	*Current weekly*	*Current daily*
Sikkim	3.83	2.77	2.88
West Bengal	6.06	2.69	8.13
Kerala	17.07	17.62	21.19

Source : CMIE, Basics statistics relating to India Economy

According to NSSO, rural unemployment rate is extremely low in comparison to urban by usual principal status. The actual pattern is that a significant part of the labour force is working on daily wages - current weekly status covers both the chronic and intermittent unemployment caused be seasonal fluctuation. In Sikkim the usual status is 3.83 which is more in comparison to weekly and daily status. But in adjacent West Bengal the current daily status is 8.13 which is nearly three times more than Sikkim. It implies that Sikkim is in a better condition in contrast to West Bengal in every status of unemployment.

A more comprehensive measure of unemployment is the unemployment on current daily status. It implies that a person is classified in category of unemployed if the person sought but did not find any employment on the day of survey. It is seen that Keral had the highest rate of unemployment in the country. In comparison to these three states, Sikkim undoubtedly occupies a butter position in respect of economic deprivation.

Poverty in Sikkim is also reflected in the low consumption expenditure of the majority of the people. A detail discussion on consumption expenditure is made later on.

It is not that poverty is equally distributed in the country. There extreme regional disparities accounting for the poverty of the people of certain regions against the prosperity of the others. States like Punjab and Haryana are the richest in terms of per capita income on the basis their rapid agricultural development; while Gujarat, Maharashtra, Karnatak and West Bengal continue to be the developed states on the basis of tendency for new enterprises and investments to gravitable towards them. But Bihar, Orissa, Rajasthan, Madhya Pradesh, Uttar Pradesh and Sikkim continue to be backward with the consequent concentration of the majority of poor population and inequality in income distribution.

Another cause of poverty is the low standard of living which is primarily reflected in the low availability of essential commodities. Despite more than two decades of development efforts, the per capita availability of essentials consumer goods has either increased marginally or fallen. The per capita net availability of

cereals was 360.5 gms per day in 1956 which rose to 414.8 gms in 1984; and the pulses fell from 70.4gms to 39 gms over the same period in India. The per capita annual availability of edible oils increased from 2.5 kg in 1956 to 48 kgs in 1982 and of cotton cloth it fall from 14.4 metres to 11 metres, of sugar it increased from 5 to 7.2 kgs. man made fibre fabrics from 1 to 3.7 metres, and of tea from 257 to 520 gms, over the same period.[3] Since there is wide disparity in the consumption levels of the top rich and the bottom poor, these national averages do not reflect the true living standards of the poor people. In fact they may be much lower than their per capita availability.

Continous rising prices are another cause of poverty. When prices rise the purchasing power of money falls and they lead to impoverishment of the lower middle and poorer sections of the society.

It reveals that consumer price index e.g. general and food of Sikkim was always significantly more than national index in both contents.

Table - 3

Consumer price Index [4]

	Sikkim		*India*	
	General	*Food*	*General*	*Food*
1989-90	207.3	207.4	173	177
1990-91	238	239.8	193	199
1991-92	266.6	270.4	225	230

Source : Sikkim - An Economic Survey - 1991-92, B.E.S.

Low level of technology is also responsible for the poverty in Sikkim as well as in India. Not only industrial process but agricultural production techniques are far below the standards of developed economies, but even marketing skills,

the capacity to organise production units and financial markets are at low level. As a result of the low technology as boardly defined above, per capita productivity remains income fail to rise to the desired extent for a higher rate of capital formation thereby keying the economy in a state of poverty.

In Sikkim, people are caught in the vicious circle of the poverty due to the prevalent socio-cultural institutions. In order to fulfill social obligations and observe religious ceremonies from cradel to grave, people spend extravagantly.

With already low income levels, they either dissave or borrow. Since savings are negligible, the chances of borrowing are much greater. The high level of indebtedness is both the cause and effect of poverty. Besides illiteracy, ignorance, conservation born out of sectarian and religious ideas, casteism and joint family system have prevented people from adopting modern ideas and techniques whereby they could increase their incomes and keep the wolf of poverty off their doors.

Table - 4

Sample Households classified According to Annual per Capita family Income[5]

Sl. No.	*Income Group (in Rs.)*	*Number of households*	*Percentage*
1.	Upto 5,000	176	27.29
2.	5,000 -10,000	274	42.50
3.	10,000-20,000	92	14.25
4.	20,000-40,000	35	5.34
5.	40,000-60,000	31	4.83
6.	60,000-80,000	23	3.57
7.	80,000 and above	14	2.2
	Total	645	100.00

Source : Estimated from Personal Survey data.

The total number household is 645 and their family wise income is classified here to study the nature of income and its distribution.

It shows that 27.29 per cent of the households have an annual income below Rs. 5000 and interesingly the maximum number of households belong to the next income group i.e. Rs. 5,000-10,000. It depicts that 42.50 per cent of the total population lies in the lower annual income range of Rs. 5000-10,000. As the average family size in Sikkim is 5.5 to 6.5 so the per capita annual income would be also low. Lower per capita annual income is one of the major cause of poverty in Sikkim. And it is estimated that this two lower strata of income ranges contain 69.79 per cent, nearly 70 per cent of the total population surveyed. And the rest 30 per cent population belongs to upper layer of income. It is seen that 14.25 per cent population belongs to Rs. 10,000-20,000 category and 5.34 per cent in the Rs. 20,000-Rs. 40 and the consequentive percentages are 4.83, 3.57 and 2.2. It implies that the inequality in income distribution is very high in Sikkim i.e.70 per cent people are concentrated in the lower two groups of income range whereas 30 per cent are more or less heterogenously distributed in the upper strata upto 80,000 and above. The life in Sikkim is very hard, the general expenditure is more than plain and the sources of income is also very limited. Consequently it would be worthy to evaluate that 70 per cent of population are living below the poverty line with this small per capita family income.

Sikkim is an agriculture based state where a comprehensive system of land record is not available. The agricultural census 1991-92 in the state was planned on complete enumeration basis and the data were collected by adopting enquiry method. It reveals that there are 52,697 operational holdings in Sikkim agriculture operating over a total area of 111,302 ha in 1991-92. The size distribution of holdings has been classified into marginal (less than 1 hectare), small (1.0-2.0 hectares), semi-medium (2.0-4.0 hect.), medium (4.0-10 hect.) and large (10.0-above).

Table - 5

Distribution of Number and area of operational holding by size class in Sikkim for all social groups in 1991-92 and 1985-86[6]

Size (Ha.)	No. of holdings		Area operated (Ha.)	
	1985-86	1991-92	1985-86	1991-92
1. Below 0.02	300(0.80)	4462(8.47)	4(0.001)	75(0.07)
2. 0.02-0.5	5895(15.72)	10526(19.97)	1675(1.64)	3164(2.84)
3. 0.5-1.0	6672(17.79)	11131(21.12)	4851(4.76)	8222(7.39)
Marginal	12867(34.31)	26119(49.56)	6530(5.401)	11461(10.30)
4. 1.0-2.0	9574(25.53)	11162(21.18)	13099(12.84)	19019(17.09)
Small				
5. 2.0-3.0	5431(14.48)	5817(11.04)	13324(13.06)	15296(13.74)
6. 3.0-4.0	3118(8.31)	3248(6.16)	10883(10.67)	11753(10.56)
Semi-medium	8549(22.79)	9065(17.20)	24207(23.73)	27049(24.30)
7. 4.0-5.0	2026(5.40)	2059(3.91)	9167(8.93)	9444(8.49)
8. 5.0-7.5	2196(5.86)	2085(3.96)	13740(13.47)	13371(12.01)
9. 7.5-10.0	1186(3.16)	958(1.82)	9704(9.51)	8471(7.61)
Medium	5408(14.42)	5102(9.68)	32551(31.91)	31286(28.11)
10. 10.0-20.0	858(2.29)	866(1.64)	11896(11.66)	10937(9.83)
11. 20 ha.and	248(0.66)	383(0.73)	13726(13.46)	11550(10.38)
Large	1106(2.95)	1249(2.37)	25622(25.12)	22487(20.20)
All	37504(100)	52697(100)	102009(100)	111302(100)

Source : Agricultural Situation in India, July 1995

Marginal and sub-marginal holdings in Sikkimese agriculture (belong to the size category less than 1 hectare. These marginal holdings account for 11461 hect. (i.e. 10.30 per cent of the operational area). There is an enormous increase in comparison to 1985-86 whereas the per cent were 34.31 in terms of operational holdings covering an area of 6.40 per cent. The average size of an operational holdingin this category is 0.4 hect. in comparison to 0.5 hect. in 1985-86. Another notable feature is that there were 300 operational holdings below 0.02 hect. category

in 1985-86 but it rose to 4462 during 1991-92. Hence the growth of this lowest strata of land holdings is 1387.00 per cent and the overall growth of the marginal holdings is 102.97 per cent during the period. Naturally this growth rate of the number of operational holdings is highest and abnormal from all other category. The variations of the operational holdings of the small, semi-medium, medium and large are 16.59, 6.04, -5.66 and 12.93 respectively during the period 1985-86 to 1991-92. In other words, nearly 51 per cent of the agriculturalists are marginal and sub-marginal farmers who live below the poverty line because they have too little land to support. Alongwith this the fastest growth of the bottom and a moderate growth of the top aggravates the inequality in terms of operational holdings with time.

Small : This group consists of holdings in the range 1.0 hect. to 2.0. There are 11162 holdings (21.18 per cent of the total holdings) and they account for 19019 hect. i.e. 17.09 per cent of the total operational holdiongs in this category. The average size of the holdings is 1.7 hect. The percentage distribution reveals that 21.18 per cent of total operational holdings occupies 17.09 per cent of areas in 1991-92.

Semi-medium : This group accounts for holdings in the range 2.0 to 4.0 hect. There are 9065 holdings i.e. 17.2 per cent of the total holdings and they occupy 27049 hectares i.e.24.30 per cent of the total operational holdings. The average size of an operational holdings is 3.0 hect. The percentage variation of holdings and area are 6.04 and 11.73 respectively during the period 1985-86 to 1991.92.

Medium-sized holdings : This group consists of holdings in the range 4.0 to 10.0 hectares. There are nearly 5102 holdings accounting for 9.68 per cent of the total operational holdings and these holdings cover 31286 hectares, i.e. 28.11 per cent of the total operational area. The average size of a holdings is 6.1 hect. In case of medium holdings, both the number of holdings and area operated has declined by 5.66 and 3.89 during the period of 1985-86 to 1991-92 due to the low of inheritance and fast population growth.

Large holdings : This group is composed of holdings in the range 10.0 hect. and above. They are 1249 holdings numbering 2.37 per cent of the total number of operational holdings. They account for a total area of 22487 hectares i.e. nearly 20.20 per cent of the total area operated in Sikkim. The average size of the holdings under this category is 18.0 hectares in 1991-92. The number of holdings has increased by 12.93 per cent whereas the area operated has decreased by 12.24 per cent during 1985-86 to 1991-92. The size distribution of operation holdings indicate not only a very high degree of concentration in the hands of medium and large farmers but it also increases over time, widening the gap between rich and poor during the period 1985-86 to 1991-92. 12.05 per cent of the agriculturists in these two categories account for 48.31 per cent of the total area operated in 1991-92 in comparison to 17.37 per cent agriculturists occupied 57.03 per cent of the total area operated in 1985-86. About 2.37 per cent of large holdings account for nearly 20 per cent of the total area operated in cultivation. On the other hand, nearly 50 per cent of the sub-marginal and marginal farmers account for only 10 per cent of the total area operated in Sikkimese agriculture.

As we know the size of an economic holding depends on the fertility of soil, method of cultivation, nature of crops and irrigation facilities, etc. The idea of economic holding is quantified in terms of 'Standard Acres' which help an agricultural family to procure an income sufficient for minimum level of civilized consumption and it is prescribed the Central Panel on Land Reforms on the basis of net income criterion, 6.25 acres i.e. 2.6 hectares of average land or 3.5 acres i.e. 1.5 hectare of best land constitute an economic holdings. In Sikkim the effects of all the factors on which the size of economic holdings depends are bleak. The soil is loamy sand to silty clay loam and the depth is very low and in few places practically nil. The nature of crops are traditional and topography is terrain. The irrigation facility is seasonal and unscientific and the method of cultivation traditional and mixed farming. The cultivable land availability is heterogenous and very much limited by nature. The land reforms are not very clear. In this context, 70.74 per cent of marginal and small farmers occupying 27.39 per cent of total operated area live below the poverty line because they are unable to maintain

their minimum living standard. The average size of holdings is 0.81 hectare which is far behind the prescribed requirement 2.6 hectares, to maintain a minimum standard of living. So these people are not only below the poverty line but also far behind the minimum requirement or subsistance level. On the other hand the three subsequent groups comprising semi-medium,medium and large occupies only 29.25 per cent of the number of operated holdings and account for 72.61 per cent of the total area operated in Sikkim. The average size of holdings starts from 2.6 hectares to 30.2 hectare which is equal and above the concept of economic holding. So the poverty and inequality is very prominent in the agriculture sector of Sikkim. As agriculture is the mainstay of Sikkim economy. The distributional aspects of operated land holdings itself has created the problem of Human deprivation. It is also augumenting the process inequality and poverty in the society ratarding human development and raising the quality of the people.

Hence the inequalities are shown in the following heads to make closer look in the major sector of the economy :

(a) among all social groups

(b) among scheduled caste population

(c) among scheduled tribe population

(d) districtwise variation.

Table - 6

Comparative Figures 1980-81 to 1991-92 [8]

	1980-81				*1991-92*			
	No. of holdings	*%*	*Area*	*%*	*No. of holdings*	*%*	*Area*	*%*
1. Marginal	25535	45.44	11960	10.98	26119	49.56	11461	10.30
2. Small	13076	23.28	18797	17.23	11162	21.18	19019	17.09
3. Semi-medium	10926	19.45	30502	27.96	9065	17.20	27049	24.30
4.Medium	5788	10.29	33562	30.77	5102	9.62	31286	28.11
5. Large	873	1.54	14247	13.06	1249	2.37	22487	20.20
All Categ-ories	56198	100.00	109068	100.00	52697	100.00	111302	100.00

Source : Sikkim - An Economic Survey - 1991-92, B.E.S. Govt. of Sikkim.

The number of percentage of marginal holdings has increased to 49.56 in 1991-92 from 45.44 in 1980-81 and at the same time the percentage large holdings also increased from 1.54 to 2.37 per cent. But on the basis of area, the proportion of area under marginal holdings remains at nearly 10 per cent of the operated land and the proportion of area under operation under large holdings group has increased from 13.06 per cent in 1980-81 to a remarkable figure 20.20 per cent of the total operated land. So it is very clear that during these period inequality has increased in land distribution and holdings pattern. This would obviously affect the Human Development process in the state.

Table - 7

Size distributional of operational holdings for scheduled castes[9]

	1985-86				1991-92			
	No. of holdings	%	Area	%	No. of holdings	%	Area	%
1. Marginal	688	49.71	324	18.62	1366	70.05	547	27.20
2. Small	443	32.01	501	28.79	370	18.97	558	27.75
3. Semi-medium	190	13.73	512	29.43	164	8.41	468	23.27
4. Medium	57	4.12	333	19.14	43	2.21	247	12.28
5. Large	6	0.43	70	4.02	7	0.36	191	9.50
All	1384	100	1740	100	1950	100	2011	100

Source : Agricultural Situation in India, July 1995

The size distribution of operational holdings among scheduled castes in Sikkim indicates a very high degree of concentration in the hands of medium as large farmers. 10 per cent of the agriculturists in these category account for 45 per cent of the total area operated in 1991-92. On the other hand nearly 50 per cent of the marginal farmers account for only 18 per cent during 1985-86 but the picture changed during 1991-92, the number of marginal holdings became 70 per cent account for only 27 per cent of the operated area. This implies that the inequality and poverty are increasing sharply among the schedule caste agriculturist and they are tending towards marginal and landless labourer. It also depicts that the rest 30 per cent account for more than 65 per cent of the operated area and it provides the information that all the scheduled castes in Sikkim are not poor. There is a wide

gulf between the rich and poor scheduled castes. 70 per cent lies in lower strata and 30 per cent higher strata. This was 50 per cent and small holdings was 32.01 in 1985-86 but it changes 70 and 18 respectively during 1991-92. It clearly shows that the decline in small holdings was increased the per cent of number of marginal holdings during 1991-92. So this is a continuous process of decaying and it also gradually declines the standard of living of scheduled caste people, as well as Human Development Process among the backward castes.

Table - 8 [10]

Size distribution of operation holdings for scheduled Tribes

	1985-86				*1991-92*			
	No.of holdings	*%*	*Area*	*%*	*No.of holdings*	*%*	*Area*	*%*
Marginal	3652	30.87	1780	4.82	7073	42.33	3425	7.19
Small	2588	21.87	3367	9.11	2901	17.36	4384	9.20
Semi-medium	2701	22.83	7928	21.45	3421	20.47	10497	22.04
Medium	2286	19.32	13883	37.56	2487	14.88	15962	33.51
Large	605	5.11	10002	27.06	827	4.95	13362	28.05
All	11832	100.00	36960	100.00	16709	100.00	47630	100

Source : Agricultural Situation in India, July, 1995

There is a striking difference between the scheduled caste and tribes in Sikkim. The caste composition and tribes are also factor behind this. 5 per cent of large farmers account for nearly 28 per cent of operated holdings and the including medium i.e. 20 per cent of these category account for 61 per cent of the operational

holdings. This implies that 20 per cent agriculturists tribes are very rich. The number of marginal holdings which was 30 per cent account for only 5 per cent of the operated land in 1985-86 and these percentages were raised to 42 and 7.19 respectively in 1991-92, showing an increase in the no. of marginal holdings. If we consider marginal and small the respective number of holdings nearly 60 per cent and percentage of operated area would be 16 per cent. 1991-92 i.e. 60 per cent agriculturists account for only 16 per cent land. It is seen that including marginal, small and medium 80 per cent occupies only 38 per cent of the operated area and the rest 20 per cent holdings account for 62 per cent of the operated area. Hence the inequality is very steep among tribes and there is clear demarcation of income status and land holdings and lastly the growth variation of marginal farmers during the period is nearly 1400 and implies social deprivation and degradation of the agricultural tribes with time, needs better attention and measures.

Table - 9[11]

Poverty estimation Percentage of population below poverty line

	1973-74	*1977-78*	*1983*	*1987-88*
Sikkim				
Rural	52.67	59.82	42.6	39.25
Urban	37.16	37.58	26.38	17.34
total	50.91	56.69	39.62	34.57
West Bengal				
Rural	73.16	68.34	63.05	48.30
Urban	34.5	38.71	32.21	32.84
Total	63.39	60.65	52.72	43.99
India Overall	54.93	51.81	44.76	39.34

Source : CMIE, Basic statistics relating to India Economy.

Poverty line is formulated by the planning commission and an expert group prescribed on the basis of Dr. Lakdawala formulation. Before merger the percentage of population below poverty line was 50.91. The rural percentage was 52.67 which was higher than urban average i.e. 37.16. It is evident that there is a wide disparity between the rural-urban poverty percentage. Rural proportion is always higher than urban component. During 1973-74, 1.09 lakh population of Sikkim was below the poverty line. Whereas in West Bengal the percentage was 69.39 which was higher than Sikkim and interestly the rural poverty was 73.16 per cent, more than rural Sikkim. In comparison to all India average, Sikkim was in better condition.

During 1977-78, 1.41 lakh people lived below the poverty line in Sikkim. It accounted nearby 57 per cent of the total population. It implies a severe condition of Sikkim economy during this period and this rate is higher than 1973-74. Not only this, the rate is also more than Indian average but below than West Bengal average. The urban poverty remianed stagnant at 30 per cent but the rural poverty has increased to 59.82 per cent. In West Bengal the percentage of rural poverty declined by 5 per cent but in Sikkim the respective per cent increased by 7 per cent.

With the introduction of Indian Planning technique in Sikkim economy, the percentage of poverty declined to 39.62 per cent accounting for 1.23 lakh people of the state. The gulf between rural-urban was nearly 18 per cent. Although, the state of the neighbouring West Bengal was not good; more than 52.72 per cent population was below the poverty line. It was more than the Indian average, i.e. 44.76 per cent. During 1987-88 the Indian poverty percentage was 39.34 whereas the Sikkim's poverty percentage was lower than it. In West Bengal, the poverty percentage was nearly 44 with a rural-urban difference of 22 per cent. The official estimation of poverty in Sikkim is far from the real picture. Although the percentage of population below poverty line was 34.67 per cent but without land reforms or implementation of proper distribution system how this per cent declined.

Rural poverty is severe than urban poverty. Government has launched different poverty alleviation programmes.

Integrated Rural Development Programme : IRDP was launched on 2nd October 1980 to alleviate the rural poor. It is a major programme of self-employment. Its main objective is to identify rural poor families and to augment their income above the poverty line. IRDP basically covers two types of programmes : (a) Training of Rural Youth for Self-employment : TRYSEM provides technical and basic entrepreneurial skills to rural youth living below the poverty line to tackel up self-employment and wage employment. (b) Development of women and children in Rural areas : DWCRA provides special attention on women of poor families and their children to help them with opportunities of self-employment. The allocation and utilisation of fund under IRDP to eradicate poverty:

Table - 10[12]

(in lakh)

	1992	*1993*	*1994*	*1995*
Sikkim				
Allocation	39.1	34.0	56.0	56.0
Utilisation	47.4	39.7	40.9	20.1

Source: CMIE, P. 268

The allocation of fund towards IRDP is less than the utilisation during the year 1992 and 1993 but the allocations are more during 1994 and 1995 than utilisation. Consequently a proper attention should be given in utilisation of fund to alleviate or eradicate rural poverty.

Jawahar Rozgar Yojana : JRY was launched during 1989 to eradicate the poverty from Indian Economy. It is basically a wage employment programme. There are three phases of JRY. These are (a) 75 per cent of the fund annually utilised of the programme through out the country; (b) 20 per cent funds for 120

backward districts. Then districts are identified on the basis of high concentration of unemployment and underemployment; (c) 5 per cent funds for prevention of migration of labour force and enhancing women employment. The first phase of JRY (i) Indira Awas Yojana; (ii) Million wells scheme :

Table - 11

The extend and nature of fund allocation and utilisation under JRY[13]

(Rs. in lakh)

	1992	*1993*	*1994*	*1995*
Sikkim				
Fund released	193.6	232.0	188.8	188.8
Fund utilised	328.6	303.6	273.1	140.7

Source : CMIE

Fund utilisation in Sikkim under JRY is more than released during 1992, 1993 and 1994. Only in 1995 utilistion of fund is less than released. It depicts that over utilisation is a very common phenomenon in Sikkim.

Employment target and achievement under JRY is given below :

Table - 12[14]

Sikkim	*Target*	*Achievement*	(lakh mandays)
1992-93	8.6	13.4	
1993-94	8.2	10.1	
1994-95	6.2	7.0	
1995-96	2.3	0.3	

Source : CMIE

During 1992-93 target was 8.6 lakh mandays but it achieved 13.4 lakh mandays which is more than target. Not only this in every consecutive year

achievement is more than targetted mandays creation. It is undoubtedly a better performance to eradicate rural poverty with the creation of more mandays as targetted.

Employment Assurance scheme is another measure to alleviate rural poverty in India. EAS is introduced on 2nd October 1983. The EAS provides assured employment for 100 days of unskilled manual work to the rural poor mena and women over 18 years and below 60 years of age.

Table - 13[15]

Progress under EAS in Sikkim

(Rs. in lakh)

Year	*Fund released*	*Fund utilised*	*No. of persons registered*
1993-94	145.0	20.3	
1994-95	200.0	40.1	41643

Source : Centre for Monitoring Indian Economy

The utilisation of fund is very poor under the head EAS. The high degree of under utilisation of funds is very clear from the above table. It requires more mass involvement and political motivation of people. Proper measures are also very essential to appropriation of funds and to alleviate poverty from the rural area.

Urban poverty alleviation programme under this head, there are three specific programme to alleviate urban poor. The programmes are (i) Nehru Rozgar Yojana, (ii) Prime Minister's Integrated Urban Poverty Programme; and (iii) Scheme for slum dwellers. In Sikkim the proportion of urban population is nearly 7 per cent and it is lowest among the North eastern smaller states.

Table - 14[16]

Sikkim	Funds released	Funds utilised	(Rs. in lakh)
1991-92	27.9	30.4	
1992-93	34.2	5.2	
1993-94	29.7	42.0	

Source : CMIE

From the above table it is clear that except 1992-93, the fund utilisation is more than funds released, i.e. the performance of the programme is good.

The planning commission estimates account of variation in the incidence of poverty among states and between rural and urban areas. It uses the quinquennial survey data of household consumption expenditure data of National Sample Survey Organisation (NSSO). The latest estimates of poverty is obtained from 43rd round from the NSSO. For 1993-94, the planning commission has prescribed poverty on the basis of sub-sample-1 of the data on household consumption expenditure collected in the 50th round NSS (1993-94). The poverty line is estimated at Rs. 264.1 per capita per month for urban areas and Rs. 228.9 per capita per month for rural areas (1992-93 prices), corresponding to poverty line Rs. 49 and Rs. 56.6 respectively for 1973-74[17].

NSSO and CSO (Central Statistical Organisation) estimates separately Indian poverty. The NSS estimates are lower that CSO estimates derived form the National Statistics. It is argued that the individuals understate their consumption expenditure. So the NSSO data is adjusted in upward direction to overcome this understatements and the official estimation is based on this upward adjusted data. But an expert group, headed by Dr. Lakdawala, refuted above logic and argued that it was rich, not the poor, who understated their consumption expenditure. So the NSSO procedure is wrong. This expert committee was appointed by Planning Commission in September 1989.

Table 15[18]

Monthly per capita consumption expenditure (1992-93 prices)

Sl. No.	*Expenditure class*	*No. of households*	*Percentage*
1.	Upto Rs. 165	22	3.40
2.	Rs. 165 - Rs. 200	154	23.86
3.	Rs. 200 - Rs. 235	125	19.32
4.	Rs. 235 - Rs. 270	87	13.45
5.	Rs. 270 - Rs. 305	44	6.82
6.	Rs. 305 - Rs. 340	88	13.64
7.	Rs. 340 and above	125	19.32
	Total	645	100.00

Source : Enumenated from Personal Survey

The Poverty line is fixed at Rs. 264.1 per capita per month for urban areas and Rs. 228.9 per capita per month for rural areas at 1992-93 prices. In Sikkim, 9.1 per cent of the total population lives in urban area and 90.9 per cent of the total population resides in rural and remote areas. Consequently, the rural poverty impact is more than urban counterpart and the sample were choosen from both rural and urban areas. So it is worthful to calculate a combined (overall) poverty line of Sikkim, giving due weightage to rural and urban areas. The composite poverty line multiplied by rural percentage of population i.e. Rs. 228.9 X 90.9=20807.01. urban poverty line multiplited by urban percentage of the total population i.e.

Rs. 264.1 X 9.1 = Rs. 2403.31

Total = Rs. 23210.32

The composite poverty line

The composite poverty line

for Sikkim = Rs. 23210.32/100 = Rs. 232.10

But it is evident that the consumer price index in Sikkim is higher than National Index in both the cases gereral and food index. This calls for a higher adjustment of poverty line.

Table-16[19]

Consumer Price Index

	Sikkim		*India*	
	General	*Food*	*General*	*Food*
1989-90	207.35	207.35	173	177
1990-91	238.27	238.27	193	199
1991-92	266.68	266.68	225	230

Source : Sikkim An Economic Srvey 1991-92, B.E. S.

On the other hand the Sikkim government has initiated and launched welfare schemes. Under which people living below poverty line were given ginger and potato seeds, GCI sheets, milching cows, piglets, school uniform etc. at free of costs. This calls for a lower adjustment of poverty line. Considering all the aspects, the composite poverty line is fixed at Rs. 235.10 per capita per month consumption expenditue which is a little bit more than calculation.

From the sample survey results; the percentage distribution of per capita consumption expenditure in accordance with different classes are found. The total number sample household is 645. there are only seven classes. The classes are sub-divided in the following way; i.e. upto Rs. 165 to Rs. 200, Rs. 200 to Rs. 235,

Rs. 235 to Rs. 270 to Rs. 305, Rs. 305 to Rs. 340 and Rs. 340 and above. This is an open ended distribution, although the class interval is 35.

It reveals that 3.40 per cent population lies in the bottom and then 23.86 pe rcent of the total population belongs to Rs. 165 to Rs. 200 monthly per capita expenditure class which is also below the poverty line. Nextly 19.32 per cent population lives in the monthly per capita expanditure bracket Rs. 200 to Rs. 235. These people are also below the povertyl line.

13.45 per cent survives just above the poverty line in the expenditure bracket of Rs. 235 to Rs. 270 and 6.82 per cent lives in the expenditure bracket of Rs. 270 to Rs. 305, which may be considered as moddle class in Sikkim. The monthly per capita expenditure group of Rs. 305 to Rs. 340 may be considered as higher middle class in Sikkim. It consists of 13.64 per cent of the total population and lastly 19.32 per cent population lives in the consumption expenditure bracket of Rs. 340 and above; which is regarded as the rich class in Sikkim. From the above results, we arrived at the conclusion that the percentage of total population which lives below the poverty line in Sikkim is 46.58 whenver te overall poverty percentage is shown 34.67 per cent in 1987-88 in Centre for Monitoring Indian Economy-1996. This estimation is of 1992-93 which is nearly 12 per cent more than 1987-88. As a consequence, we can say that the poverty percentage is incrasing with time rather than decline. this is due to high inequality in land reformans and land ownership pattern, industrial backwardness, lack of natural resource, and lastly the massive population growth. measues to Remove Poverty

In accordance with the Indian Planning Commission, "our professed goal of removal of poverty requires that the growth trategy must seek not only a higher rate of growth than ovserved in the past but also rudeced inequality in the distributionof income and consumption. The composition of growth must be such as favours the rural and urban poor. this calls for efforts in several disrections. The pattern of production must by comphasis on food and other article of mass consumption, there must be massive employment gereration which will sustain and will be sustained by greatter availability of wage goods. It is alsos essential to

augment social consumption and productivity of vast numbers as well as to improve the quality of their life. The institutional reform and the fiscal policy must be oriented to reduce inequality along side increased productivity. The backward regions and classes have a high incidence of poverty & their development must receive high priority. Every effort must be undertaken to carry family planning to the strata who need it most". (Draft 5th Five Year Plan 1974-79), 6th Five Year Plan 1980-85).

Policy

The policy measures, aiming at reduction in poverty, income and wealth inequalities, should be redistributive in nature. It should work towards the gereral socialisation of means of production, the removal of economic concentration, the increase in the income levels of the mass of the people. all measures serve a dual purpose; to redistribute income and to remove poverty. There is a close inter relationship between the problems of poverty and income inequalities.

Land reforms : Most of the people live in rural areas and area dependent on agriculture, speedy implementation of land reforms legislation is essential for equitable distribution of income and wealth. To combat the challenge of poverty there should be redistribution of the available land among the landless agricultural workers and those having very little land. It requires the implementation of legislation on ceiling on land holdgs. Nextly, the tenancy conditions should also be reformed and improved and lastly land reforms should also embrace such measures as the provisions for cheap and adequate credit facilities, better seeds, and fertilisers and marketing of agricultural produce. Hence the land reform measures will raise the total produce and hence the share of the cultivator in the total produce. In this manner, income will gererate within the poors.

Employment opportunities:

The principal instrument of policy relating to income distribution is the creation of additional employment opportunities, both in the rural and urban sectors. To provide employment opportunities to the unskilled labour in rural areas suitable public works programmes should be formulated and organised. Intensification of cropping practices and estabilishment of agro-based and rural industries can also help in providing gainful employment to the agriculturists. As regards the education unemployed, while the emphasis should be on labour intensive industrialisation, the need for providing self-employment opportunities should not be overlooked. The self employment require on the job or professional training, financial help form the baks and other financial institutions, and facilities for raw material supplies ad marketing.

Wage Folicy : To ensure an effective income distribution there should be a national wage policy both for the organised and the unorganised sectors of the economy. But all increases in wages should be closely related to increase in productivity in order to avoid inflation. The Agricultural Minimum Wages Act has been on the statute book for over 20 years and everyone acquainted with its operation knows that it canot be enforced.

Price Policy :

It is an undeniable fact that continuous rise in prices has eroded large chunks of income of the masses, and increased profit margins of the producers, and distributors and thus accentuated poverty and income inequalities. So a reasonable quantity of the required commodity is obtained at prices which are below the open market prices, and the distribution costs of such commidities are kept as low as possible and secondly the list of essential commodities should be reasonably small and the commodities must be homogeneous in nature. Thus the plan recommends a system of dual pricing whereby the low income groups are supplied certain essential commodities at low prices through a net work of fair price shops so that they are not hit hard by rising prices. In brief the government should so intervene

in commodity markets as to influence both the pattern of output and relative prices through taxes and subsidies on domestic production and consumption, tariffs and subsidies on imports and exports and various terms of quantitative restriction or domestic production and foreign trade.

Social Security :

Social security measures are very poor in the developing countries. This measures such as free education, and health services, cheap housing and supply of essential commodities, etc. tend to improve income distribution. They not only increase the real income of the working classes but also their efficiency and productivity.

Population :

One important policie relating to income distribution over the long run is to control the growth rate of population. Larger and joint families mean lower per capita income. So to increase per capita income, there is the need to adopt family planning practices on a wide scale. Population can be controlled by the propagation and use of cheap and effective contraceptives and spread of education. The use of labour intensive techniques is an important instrument in improving the income distribution.

Fiscal Policy measures :

Fiscal policy plays a crucial role in reducing disparities in income and wealth personal income and wealth should be so taxed that the taxes may operate on the size distribution of income. Taxes should be progressive which should be curb conspicuous consumption and siphon off a major part of earned incomes into the state exchequer. In particular the burden of indirect taxes should not be more on the lower, middle and poorer sections. Strict measures should be adopted to unearth

back to money and tax evasion. Public expenditure should be directed towards those channels which raise the real incomes of the lower middle and poorer section of society.

Backwardness :

Agricultural and industrial development in backward areas is essential for raising the income levels of the people and reduce disparities of income and wealth. Agricultural productivity should be increased by providing new dry farming technology, irrigation facilities, and improved inputs. Fiscal and other concessions should be provided to attract private entrepreneurs for starting new venture. Roads, canals, power and other basic infrastructure should be established in order to provide gainful employment to the people of the area. Thus with the development of backward areas, agricultural and industrial productivity would increase employment opportunities would expand, incomes would rise and concentration and poverty would increase.

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Chapter VIII

Technical Notes and Construction of Life Table in Sikkim

There are broadly two methods in the construction of life tables, namely (i) Direct method and (ii) indirect method. Indirect method is used here. In this method, data on age distribution are essential. In Sikkim, the registration of births and deaths are not recorded regularly and systematically. The registration of births and deaths Act 1969 was launched in Sikkim w.e.f. 27.9.79. The publication of its kind in the state is "Annual Report on the Registration of birth and death in Sikkim - 1991" during 1994. This is because that the registration of births and deaths was not functioning effectively and the number of registration were very negligible.

The method of construction of life tables is based on the comparison of the age distribution of two census report and the surveyed age distribution of 1992-93 in Sikkim. This method imposes a cohort living at one point of time to the survivors at the other point of time. Smoothing the age distribution for two censuses we get the probabilities of survival. Computation of survival rates are classified into three categories, e.g. (i) ages below 5; (ii) for ages 5 to 60 and (iii) ages 60 and above. Survival rate of 5-60 are obtained from smooth census age distributions but the survival rate in under five and old ages are derived by other indirect methods.

Derivation of survival ratios : Assumption : There is a common mortality scale, which is applicable to all cohorts. L_x implies the number of persons living between age x and x + 1 at any time, which is built up by these rates of mortality, P_x is the observed population aged x at 1971 census and $^1P_{x+10}$ the observed population aged x + 10 at 1981 and the observed values of L_x and L_{x+10}. Thus $P'_{x+10}/P_x = L_{x+10} / L_x$

We know $L_x = L_{x+1/2}$, L_x implies the usual life table number at age x, we get

$$(P'_{x+10}) / P_x = L_{x+10+1/2} / L_{x+1/2} = {}_{10}P_{x+1/2}$$

This estimates the probability that a person aged exactly $x + 1/2$ will survive for the next 10 years.

(a) Calculation of P_x for ages 5-60.

Obtaining the value of ${}_{10}P_{x+1/2}$ where x stands for 5,10,15,20,25 etc. at quinquennial intervals, we have to compute L_x from ${}_{10}P_{x+1/2}$ for values of x at decinial interval and then to compute L_x at five year age interval by interpolation. The other method is direct computation of ${}_5P_{x+1/2}$ from ${}_{10}P_{x+1/2}$ and then obtain the values of L_x. The method provides smooth rates of mortality.

(b) Ages over 60 : It is well known and accepted that most mortality tables follow Gompertz's law fairly closely in old ages. The relation colog $P_x = BC^x$

Hence log (colog P_x) = logB+ x log C.

This is Gompertz equation. It is used in British life tables and for official tables for all India 1957.

(c) Ages below 5 : There are two types of mortality i.e. infant and childhood mortality. It observed that a second degree polynomial would be suitable. UN found the same relationship in preparing life tables. The fitted equations are for males

$${}_5q_0 = -34.08 + 1.783q_0 - 0.000590873\ q_0^2,$$

for females ${}_5q_0 = -37.386 + 1.93462\ q_0 - 0.000888462\ q_0^2$ and

$${}_4q^1 = ({}_5q_0 - q_0) / (1 - q_0)$$

Description of other components of the life table :

1. n : The age interval from one exact age (x) to another (x + n) is n.

2. ${}_nP_x$: It is the probability of survival from age x to x + n.

3. ${}_nq_x$: te probability that a person of exact age x will die before reaching age x + n.

4. L_x : The number of persons who reach exact x out of a cohort.

5. ${}_nd_x$: It shows the number of deaths in the nterval x to x + n.

It follows a relationship

${}_nq_x = {}_nd_x / {}_nL_x$

6. ${}_nL_x$: It gives the number of years lived in the aggregate, by the cohort to persons between ages x to x +n.

7. T_x : It shows the person years lived by the cohort after attaining age x or the total future life time of the L_x persons who reach age x.

So $T_x = L_x + L_x + 1 + ... + L_{x+n}$

8. e_x : It is the aerage remaining life time. It implies the average number of years lived after age x by each of the L_x persons who attain that age. It is popularly known as life expectancy of age x and obtained from the relation $e^o_x = T_x/l_x$ and e^o_o is the expectation of life at age O or the average longivity of a person in a community.

The relationship between L_x & l_x : In our study the following relationships are used for x below 5.

$L_0 = 0.2761_0 + 0.724L_1$

$4L_1 = 0.034L_0 + 1.184L_1 + 2.782L_5$

Above ages 5 year, the following relationship is used

${}_nL_x = n/2\ (L_x + L_{n+x}) + (n/24)\ ({}_nd_{x+n} - {}_nd_{x-n})$

This approximation, being less direct and theoretically less exact, but 0 practically it produces better results in real life.

The relationship of Lx for the values of the last two groups are

${}_5L_{80} = 1/2(L_{80} + L_{85})$

${}_wL_{85} = L_{85}\ (\log_{10} L_{85})$, W is the terminal age.

Technical drawbacks and insufficiency of data sources :

(i) The census age distributions are highly distorted due to errors in age reporting; under statement or over statemeant or digital preference. this requires a careful adjustment of the age data. In case survey, this reporting of age was very frequent; proper attention and cross-questioning techniques was used to minimise the error.

(ii) Migration is another factor. There is no proper record of state in and out migration. Although Jain, Zacharich and Sutharam have shown that migration contributes very little to the total population of the Indian states. Lack of transportation, and communication and inaccessbility and illeteracy are the major factors discouraging migration. It is wellknown that there are a continuous process of in-migration of Nepali from Nepal and Tibetans from Tibet, and very recently the migrants from Bhutan have created the problem critical. Although a proper care has been taken to overcome ths internal migration problem.

(iii) Lack of adequate registraton data, the registered infant mortality rate does not reflect the true pcture. The first publication of births and deaths- 1991 came out in 1994; but there is no any complete set of data. It is only partial and unreliable. So, the probable infant mortality rate was fixed by considering all the data sources, e.g. survey, project report, Sikkim Govt, India Govt. etc.

(iv) The survival rates for the age group 1-4 were derived from relationship between childhood mortality and infant mortality as shown by other countries. It also needs better data on age specific at lower age and younger age. The record of the government is very poor, it is mentioned earlier. The mortality rates are taken by considering all the reliable data sources. And lastly the old age mortality was exprapolated by Gomperts curve.

The infant mortality rate plays a crucial role in the constructon of life tables. It has an significant influence on the derived values of expectation of life at birth. The basic source of data for measuring birth, death and infant mortality rates is vital registration. It is plight is poor in Inda. The plight of the state vital registration is basically insufficient and rare. Its functioning is inadequae. The state level shows

a political motivated and baised arbitary and estimated data:

The main sources		Infant mortality rate
(i) Centre for monitoring Indian Economy	India 1992	79
(ii) Sikkim Herald, govt. of Sikkim Feb. 8, 1993	Sikkim	49
(iii) Sunshine in sikkim, Ananda Bazar Patrika 12 Dec. 1996	Sikkim	45
(iv) Veena Bhasin - Survey 1989	Sikkim	117

The rates shows a high variation and these differences are due to different types of errors. So considering all the data from the different sources, the level of probable infant mortality rate is estimated in following manner :

(i) The Publication of Sikkim government is given a moderate weightage; it is an approximation and estimation of state government.

(ii) More emphasis is imposed on Indian infant mortality rate: this is based on vital registration and sample survey by NSSO.

(iii) The estimation of Veena Bhasin is given a less weightage; this is survey based.

The probable infant mortality rate (1992-93)

$= {}^{1}/_{4}\,(45 + 49) + {}^{1}/_{3}\,(79) + {}^{1}/_{8}\,(117) = 23 + 26 + 14 = 63$

(Fractions are neglected in the calculation)

Likewise, the death rates varies widely from source to source; main sorces are given :

		Death rates	
		1991	1992
(i) Centre for monitoring	T	7.5	6.9
Indian Economy Sikkim	R	8.5	7.1
	U	3.0	2.0
(ii) - do- (CMIE) India	T		9.3
	R		10.6
	U		5.8
(iii) Veena Bhasin - Sikkim Survey 1989		10.9	
(iv) Sikkim Herald Sikkim		17.3	
(v) Sunshine in Sikkim			
Ananda Bazar patrika 1996 Sikkim		6.6	

The are high variations in all the death raes. So we consider a composite probable death rate. The average death rates of Sikkim in 1991 & 1992 is added with the one third of the India rate, 1992 to obtain the estimation. the probable death rate= 1/2(6.9 + 7.5) + 1/3(9.3) = 7.2 + 3.1=10.3.

It implies a more emphasis on state's mortality and moderate weightage to National death rates.

Human Development indicators and its Technical Framework : The notion of Modified Human Development Index (MHDI) was incorporated the Human Development Report 1993, to make the indicators comparable over time. The algebric expression is as follows : X_1 is the life expectancy as health and longivity indicator, X_2 is the Adutl literacy rate X_3 is the mean years of schooling and X_4 is

the per capira income indicator adjusting with purchasing power parity and the threshold income level- The contribution of each stock as flow variables to the HDI can be expressed as Z_i where :

$$Z_{ijt} = (X_{jit} - \min_{j.t} x_{ijt}) / (\max_{j.t} x_{ijt} - \min_{j.t} x_{ijt})$$

Hence j implies the country, t denotes the time period and i = 1,2,3, and 4 the indicators as flow variables.

To keep the denominator fixed over time and over all countries, the maximum and minimy normatively are fixed for all times and for all countries

$$MHDI_{jt} = {}^{1}/_{3}\, z_{ijt}$$

The HDI for 1994 has suggested a new basis of calculation from the previous years. Consequently, the respective limits for four basic variables have been fixed as follows : for longivity the maximum would be 85 years and minimum would be 25 years, for gender specific, female would be 87.5 years and male would be 82.5 years. Adult literacy is prescribed as 100 per cent and 0 per cent as upper and lower limit. To make it more meaningfull and affect the literacy rate is adjusted with mean years of schooling. The limit of the mean years schooling is taken as 15 and 0 years. Income limits purchasing power parity $ 40,000 and $ 200. To calculate income, the threshold value is taken to be the global average real GDP per capita of PPP $ 5120. Beyond the threshold point multiples of income are discounted using a progressively higher rate.

Technical Perspectives : National or United Human Development Index concept considers the whole county as an unit. But it is very obvious that within each country there is a wide disparity of HDI among the different regions, climatic zones, ethnic and religious groups, between urban and rural areas and sexes. As a consequence, we need a disaggregating HDI within a country which would be very useful to the planners and policy makers to reach the target group. Disaggregating HDI needs disaggregating data by which we can make internal human developmet analysis.

One of the major components of Human Development Index is life

expectancy, Life expectancy represents the overall health status of the people. It depends on the incidence of mortality rate which in turn devends on a large number factors such as the occurrence of epidemics, the prevalence of diseases, the level of nutrition, the conditions of living and housing, care of women, infant mortality, sanitation condition etc. The infant mortality is an important factor, depressing the life expectancy. Vital registration is very poor in this region. That is why reliable data are not adequate in this backward region.

Literacy plays a crucial role in developing the quality of human resource, raising the consciousness, efficiency and productivity. The spread of modern system of education is replacing the traditional system. Inaccessibility, natural hazards and the lack of basic needs hinder the growth of literacy in the backward Sikkim.

Income is the most decisive factor. Command over resources is the prime condition of decent living - but it is very difficult to measure. Sikkim is a hilly state. People living in mountainous areas need more energy from food and fuel and more expenditure on cloths and shoes because they lose more energy in the colder temperature.

Life Table : Sikkim 1981

Age Group *x - n*	q_x	l_x	${}_nd_x$	${}_nL_x$	T_x	e_x *(Years)*
0-1	0.100000	100000	10000	092760	4574573	45.745730
1-4	0.049750	090000	04478	347942	4481813	49.797920
5-5	0.018270	085522	01562	422930	4133871	48.336930
10-5	0.008990	083960	00755	417970	3710941	44.198920
15-5	0.022132	093205	01842	411786	3292971	35.330410
20-5	0.031328	081363	02514	400770	2881185	35.411490
25-5	0.037982	078849	02995	386997	2480415	31.457790
30-5	0.046234	075854	03507	370733	2093418	27.597990
35-5	0.056732	072347	04104	351769	1722685	23.811420
40-5	0.072121	068243	04921	329466	1370916	20.088740
45-5	0.106826	063322	06763	300510	1041450	16.446890
50-5	0.149408	056588	08450	263213	0740940	13.093590
55-5	0.279524	048138	13476	207694	0477727	09.924114
60-5	0.339935	034662	11782	143574	0270033	07.790462
65-5	0.529983	022880	12126	083154	0126459	05.527054
70-5	0.679933	010754	07312	033523	0043305	04.026874
75-5	0.779779	003442	02684	009111	0009782	02.841952
80-5	0.849604	000758	00644	000436	0000671	00.885224
85+	1.000000	000114	00114	000235	0000235	02.061404

Life Table : Sikkim 1992

Age Group $l - n$	q_x	l_x	${}_nd_x$	${}_nL_x$	T_x	e_x(Years)
0-1	0.063000	100000	06300	095438	5468105	54.680
1-4	0.033400	093700	03129	366380	5372667	57.340
5-5	0.009130	090571	00827	450220	5006359	55.270
10-5	0.004490	089744	00403	447749	4556139	50.770
15-5	0.011066	089342	00989	444441	4108390	45.980
20-5	0.015664	088353	01384	438443	3663949	41.470
25-5	0.018991	086969	01651	430839	3225506	37.080
30-5	0.023117	085318	01972	421808	2794667	32.750
35-5	0.028366	082246	02364	041017	2372859	28.470
40-5	0.036060	080982	02920	397983	1961842	24.230
45-5	0.053213	078062	04153	380469	1563859	20.030
50-5	0.074704	073909	05521	536870	1183390	16.010
55-5	0.139960	068388	09571	320168	0826520	12.080
60-5	0.269900	058817	15874	256782	0506352	08.600
65-5	0.048920	042943	21007	161892	0249570	05.810
70-5	0.065689	021936	14409	070463	0087678	03.996
75-5	0.075429	007527	05677	015353	0017125	02.287
80-5	0.831210	001850	01537	001081	0001862	01.006
85+	1.000000	000313	00313	000781	0000781	02.490

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Comparative Human Development condition in Nepal, Bhutan & Sikkim.

Growth and development are the two major goals of our society from a macro-economic view point. This is reflected through changes in incomes. But recently, the focus has been shifted to distribution of incomes. The 'goals of development' stresses the reduction of poverty rather than raising per capita income.[1] The role of social services like health, education, nutrition and environmental preservation are receiving greater attention. Thus, the term 'development' has undergone many changes in its implication from the Gross National Product approach to the idea of social development.

Broadly speaking, development has two aspects : the quantitative and the qualitative. The essence of the view was underpinned in the work of Prof. A.K.Sen. The concept stress on certain basic capabilities rather than lack of incomes. It is an admixture of the qualitative as well as quantitative aspects of development. The main and basic question is 'development for whom' and how : As explained in HDR-1990. "Human Development is a process of enlarging people's choices ... at all levels of development, the three ones are for people to lead a long and healthy life, to acquire knowledge and to have access to resources needed for a decent standard of living."[2] Human development explains beyond basic needs and it is related with all human beings, not only the poor, but the poor countries. A human development strategy always tries to enhance and improve the human condition. Paul streeten has described that it is development of the people, for the people, by the people. Of the people indicates adequate income generation through jobs, for the people implies social services for those who need help, and by the people means participation. It may be explained as the economic, social and political dimensions of development.

The concept of judicious development was also elucidated in the writings of G.Myrdal "when food production has been increased by expanding cultivated

areas, the blessing has often been mixed. This expansion has often caused damage to the soil, particularly in areas of shifting cultivation. Deforestation and over-grazing combined with Indian taboos ... it is harder to keep production level with population increases".[3] Hence there is a net work of relationship among the population, production or development, customs, natural setting, policy implications and people's acceptability.

Anand and Ravallion have recently postulated that economic growth works not by itself automatically on reducing poverty, promoting human development and in particular enriching health, but only if there is at the same time (i) "income poverty reduction" through the productive and remunerative use of labour and income distribution, and (ii) the provision of social services, particularly health service. with the implementation of provision (i) and (ii) we can also reduce poverty without growth (e.g. Sri Lanka and State Kerala); while growth with them does not reduce poverty (e.g. Brazil and Pakistan).[4] As a result, the concept of Human development has become so popular. Beside this the sustainability of development is endangered due to the increasing threat to the nature and environment and the question of intergenerational equity comes into focus. So the concept of sustainable development is evolved as a process of development in which economic, fiscal, trade, energy, agricultural and industrial policies are designed to bring about development that is economically, socially and ecologically sustainable. Economic growth should be designed in such a manner that could lead Human development process in proper way to uplift the quality of life and to conserve the environment and future generation.

The HDR reports of 1990, 1991, 1992, 1993, 1994 classified all countries into three broad categories i.e. more than 0.80 point is regarded as high ranging 0.50 to 0.789 is counted as medium and below 0.50 is considered as low human development.[5] But the comparison is made with without considering the stages of development, its historical, cultural trends and inherent nature. The HDR report - 1990 depicts that India as a whole ranks 37th in terms of HDI. The value is 0.439. But the study of A.K.Shivkumar disaggregates the unified HDI. It shows that out of 17 major states. Uttar Pradesh with 0.292 is placed between Ethiopia and Zaire

and is ranked between 19th and 20th respectively. The HDIs for Bihar, Rajasthan, M.P and Orissa are in the same region as Bangladesh. Nigeria, Uganda and Kerala and achieved the highest HDI value i.e. 0.651 despite low per capita income among the Indian states.[6] So the variation is very prominent within the country. It depicts that different states are passing through different stages of development at a particular period due to their historical, geographical, technical, demographic, socio-economic and other facts. There are also heterogeneous stages of development within a region, ethnic groups and religion. The state Sikkim has a subsistence agricultural economy with traditional values, customs and beliefs where the minimal requirements remain out of reach to the common people.

Most of the small, poorer and backward state like Sikkim are characterised by internal inequalities; between individuals, classes, religions and regions and in many parts, the inequalities and deprivations are still increasing. Developed countries and states are making rapid progress due to social consciousness and regulated population growth. In Sikkim the literacy programme which leads to social consciousness has got momentum after its merger with India in 1975. Although with the spread of modern medical facilities, there is a considerable improvement over health and hygiene but the birth rate and survival proportion has also increased and as a result the population growth remains unregulated and another notable cause for unregulated population growth is due to unregulated migration from neighbouring Nepal and Bhutan.

In the following section, we are elaborating the human development profile of Nepal, Bhutan and Sikkim. This region belongs to Eastern Himalayas. Topographically being similar, this regions have been extended from sub-tropical to alpine. Demographically, they are multi-racial. There is a striking similarities between their social, cultural, religious and economic life.

Nepal Profile

Rectangular shaped Nepal is bordered by China in the North and India in the east, west and south. Rugged terrain, wild rivers and snow clad mountains are

the natural features of it. The total land area is 147, 181 sq. kilometres with a length of 885 km (east-west) and a width of 193 km (non-uniform). Its geographical composition is as follows :

(i) Mountains 25% of the total land coverage

(ii) Hill 58% of the total land coverage

(iii) Terai (plain) 17% of the total land coverage

There are three major ecological and topographical zones, namely the mountains in the north, the hills in the middle and the plains in the south. The land use pattern is as follows 18 per cent as agriculture, 37.6 per cent is covered by forest, 15.3 per cent under snow, pasture comprises 13.4, water 2.7 per cent and others 13 per cent.[7]

The total population is 15,022, 839 with a growth rate of 2.57 in 1990 (estimated). Besides these, there are 75 districts 33 municipality and .4915 village development community.[8] Nepal initiated her development programmes only a few decades back with the introduction of five year plan in 1956-57.

Table : 1

HDI NEPAL

The Human development of Nepal is shown in the following[9]

Year	*Life (Yrs) expectancy*	*Adult Literacy (%)*	*Mean Years of schooling*	*Real GDP per capita (PPPP)*	*HDI*
1990	52/1987	26/1985	N.A.	722/1987	0.273
1991	52.2/1990	22.4/19	1.8	770/1988	0.158
1992	52.2/1990	25.6/1990	2.1/1990	896/1989	0.168
1993	52.2/1990	25.6/1990	2.1/1990	920/1990	0.170
1994	52.7/1992	27.0/1992	2.1/1992	1130/1991	0.289

Source : United Nations Development programme, 1990,91,92,93,94.

The above table shows that the HDI of Nepal is 0.170 and it occupies 152th position out of 173 countries. A sharp decline is observed from 1990 to 1991 due to the technical restructuring. The HDR 1994 reveals that Nepal with 0.289 point ranks 149 out of 173 countries. The reports of 1990-94 suggests that its HDI is better than Bhutan, Sudan, Burundi but it has improved its position over Uganda, Rawanda and Angola during this period.

World population data sheet has given the life expectancy as 50 years, birth rate 42 and death rate 17 per 1000. It indicates both a high fertility rate i.e. 6.1 and infant mortality rate very high. It is 112 and natural growth rate 2.5. The per capita GNP is recorded at Us $ 170[10].

Nepal suffers from a number of handicaps so far as its development programme and implementation are concerned. The most important of them are : (a) geographical location, (b) historical factors, (c) cultural taboos, (d) political factors, (e) social system and (f) natural barrier.

Bhutan Profile :

Bhutan is bordered by China, India and Nepal. It is a hilly land-locked country, comprising an area of 47,000 sq. km. with a population of 1.165 million in 1982.[11] In 1986, the total population of Bhutan was estimated at 1.2 million with a growth rate of 2 per cent per annum. Bhutan is an absolute monarchy, without a written constitution. The political set up is so closed that not many information are forthcoming.

Economically, Bhutan is one of the poorest country in the world. Agriculture contributes 45.2 per cent of gross domestic production in 1987 and more than 90 per cent of the working force were engaged in agriculture whereas industry employed only one per cent of the labour force and contributed 27 per cent of the GDP in 1987. The first five year plan was launched in 1961 with an outlay of NU 107.2 million where as the outlay rose to N.U. 3367.8 million in the fifth plan in 1981-86. At present, the seventh plan is in progress.[12]

There was no formal education system in Bhutan except the teaching of religion and classical Dzongkha in monastic schools. in monasteries and dzongs. The formal education pattern is two years of pre-school five years of primary education (Class I-V), five years for secondary education (Class VI-X) and two years as "Plus Two Programme" at the Junior College. At present, there are 150 primary schools, 21 junior high schools, 9 high schools, 7 technical and vocational institutes, 5 sanskrit pathasalas, 17 monastic schools, 2 traditional arts schools and a typing school. [13] Bhutan has no missionary or private schools and all the educational institutes are sponsored by the Royal Government of Bhutan.

Table : 2[14]

HDI - Bhutan

Year	*Life (Yrs) expectancy*	*Adult Literacy (%)*	*Mean years of school-ing*	*per cap-ita Real GDP (PPP)*	*HDI*
1990	49/1987	25/1985	N.A.	700	0.236
1991	48.9/1990	32.2/1985	0.2/1980	750/1985	0.159
1992	48.9/1990	38.4/1990	0.2/	750/1989	0.146
1993	48.9/1990	38.4/1990	0.2/1990	800/1990	0.150
1994	47.8/1992	40.9/1992	0.3/1992	620/1991	0.247

Source : UNDP 1990, 1991,1992,1993,1994

The urban-rural population ratio is 13:89 with an illiteracy rate of 77 per cent. The per capita Gross National product in 1980-81 was US $ 113 which. The above table shows that the life expectancy has gradually declined to 47.8 years in 1992 from 49 years in 1987. The life expectancy reflects that the health care, nutrition and mortality rates are unfavourable. There is a remarkable improvement over adult literacy rate i.e. 40.9 per cent in 1992 from 25 per cent in 1985, although

the mean years of schooling has improved very slightly. The per capita real GDP has mounted to PPP $ 800 in 1990 from $ 700. But it sharply declines to $ 620 in 1991 from $ 800 in 1990. It is seen that Bhutan has occupied 162th position in HDR - 1994 out of 173 countries.

A UNESCO study shows a poor condition of overall literacy rate although the achievement in education is quite impressive. They have increased 13 per cent adult literacy within five years during 1985-1990. Another report, the World Population Data sheet shows life expectancy of 46 years, GNP is US $ 190 which is more than Nepal.[15] GNP or GDP is a significant indicator influencing the quality of life or HDI of a country. In case of Bhutan, the population Data sheet and UNDP report give two different economic indicators. This makes the determination of Human development condition in Bhutan a difficult task.

Sikkim Profile :

Sikkim became a part of India in May, 1975. Economic development of Sikkim was, however, launched with seven years plan in 1954. The main population composition of Sikkim are the Nepalese, Lepchas, Bhutias and Plainsmen. The latest census report 1991 reveals population figure of 4,03,612 persons composed of 214,723 males and 188,889 females. The growth rate is 28.47 per cent with a just favourable sex ratio 878 females per 1000 males and the urban population is 9.10 per cent in 1991 as against Indian urban population 25.73 per cent. It reflects that more than 90 per cent of the total population live in rural areas where the basic amenities and modern facilities are not adequate.

Land Area and Population composition[16]

Table 3

	Sikkim	*North*	*East*	*South*	*West*
Land area(sq.km.)	7096	4226	954	750	1166
Population (1991)	406457	31240	178452	98604	98161
man Land ratio (sq.km/man)	0.0174	0.135	0.0053	0.0076	0.0118
Urban Population	9.10	2.57	17.86	2.61	1.80
Density of population	57	7	187	131	84
Sex ratio	878	828	859	892	915
Growth rate	28.47	18.09	28.60	29.78	30.55

Source : Sikkim : A Statistical profile

The land area is 7096 sq. km. It consists 0.047% of the Indian population. the density of population per sq. km. is very low i.e. 57 as compared to Indian density 274 in 1991 has the highest concentration of 187 person per sq.km. The growth rate of population (absolute) is 28.47 which is higher than Indian growth rate i.e. 23.50. If we observe district wise, it is the west district which realise highest growth 30.55 followed by South and East district. the sex disparity is observed from the sex ratio. In Sikkim the sex ratio is unfavourable: it is 878 which is far below the all India sex ratio 927, indicates that there is a clear discrimination between male and female at all stages of life. Urbanisation reflects a better health, hygiene and social consciousness, means a better quality of life. In Sikkim only 9.10 per cent population lives in urban area which is far below than all India average 23.50. It implies that the natural hazards and the slow progress of the state and the traditional beliefs keep them in the isolated world.

East has the highest concentration of 187 persons per sq. km. where the North consists of 7 persons per sq. km. which is very low. all India figure show 274 per sq. km. The man-land ratio is 0.0053 in East district which is lowest out of four districts and it is highest in North i.e. 0.135. But this variation is due the land composition and economic persists of area.

Table 4[17]

Classification of land

1980-81	*Survey*	*Area in hectares*	*Per Cent*
1.	Total operated land	1,09,968	15.37
2.	Forest	2,56,533	36.15
3.	Misclelaneous trees and groves	5,450	0.77
4.	Pastures	72,937	10.28
5.	Land put to non-agricultural	85,362	12.03
6.	Barren	1,80,250	25.40
		7,09,600	100.00

Source : Sikkim : A statistical profile

Agriculture is regarded as the backbone of the state since inception. Industrially, it is very backward. So the main economic emphasis depends on the land use system in the state. According to 1980-81. Survey the total operated land area is 15.37 per cent. It is divided into two parts namely for cereals production

and cash crops production like cardamom, ginger, orange and potato. It is also evident from the above table that the forest area is 36.15, Barren land is 25.4. land put to non-agricultural use is 12.03 per cent and pastures is 10.28 per cent of the total land. So the contribution of Agriculture is limited to the state economy due to natural barriers. It needs judicious plan to foster and develop the economy through agricultural planning and animal rearing. Besides this, there are two major rivers in sikkim. There is an ample scope of hydro-electricity in the state. But the hydro-electricity projects must be matched with environmental and social issues[18].

Life expectancy and Health profile of Sikkim:

Hence the calculated life expectancy and different health indicators age shown in a table to reflect the overall picture of the state. These results are assembled here from previous chapters. The life expectancy is calculated at 45.76 yr. in 1981 and 54.68 years in 1992. There is an improvements of ten years within 10 years of duration. This is possible due to overall improvement of health facilities which in turn lowers down infant mortality rate and age-specific mortality rate in the state. Although still the per centage of population above 60 years in the life table is very limited i.e. 3 to 4 per cent. The major vital causes of low life expectancy are high infant mortality death of pregnant mothers. Alcoholism, Tuberculosis, water brone diseases etc. The annual growth rate of population is very high i.e. 2.51 in 1991[19]. Beside natural population growth, the neighbouring state Nepal and politically disturbed Bhutan are contributing the latent population in the State. In the Age composition of population, Sikkim is found to have the highest percentage of population 38.28 in age group 0-14. the percentage of population aged 15-60 years in this state is 58.15, while the percent of population aged 60 years above is 3.57. This indicates a young Age structure of population. Dependency ratio is largely depends on the Age-structure[20].

Table 5

Life expectancy and health

	Earlier	*Latest*
Life expectancy(year) 1981/1992	45.76	54.68
Fertility rate/1000 1984/1990	164.8	154.6
Crude birth rate 1981-83/1991	32.4	26.5
Total population (million) 1981/1991	3,14,999	4,06,457
Annual growth rate 1991		2.51
Urban Population (%) (1981/1991)	16.15	9.10
Annual growth rate 1971-81/1981-91	50.77	28.47
Dependency ratio (total) 1992Young age 70.86/old age	4.66	75.62
Contraceptive prevalence rate/1991		20.6
Infant mortality rate/1000 1981/1992	100	63
Under five mortality rate 1990		9.4
One year old immunized (%) 1991	NA	87
Access to health services 1990		25.33
Access to safe water (%) 1991		73.05
Access to sanitation (%) 1991		34.97
Births attended by health serv. (%)		NA
Population per doctor 1991		3359
Population per nurse 1991	NA	2894
Sex ratio 1971/1981/1991	862	834 878

Source : Compiled from different source mentioned earlier

Life expectancy is regarded as the sole condition of the impact of demographic factors. But due to the lack of disaggregate data, the formation of life table is not possible to work out life expectancy for smaller sates like sikkim. As S.K. Shivakumar wrote. "However the absence of disaggregated data for the smaller states and union territories and for the state of North-East India prevents the computation of the HDI for these regions". As a result we have taken the estimated life expectancy in computing HDI for sikkim with its detail health informations. In accordance with Sikkim at a glance 1993. There are 5 hospitals, 23 primary health centers, 143 primary sub-centers, 805 beds, 121 doctors, 46 staff nurses and 379 ICDS centers all over sikkim. The population per doctor is 4452 it increases from East to West.

Table 6

Education and Communication	
Adult literacy (% 15+)	51.78
Mean Years of schooling (25+)	1.93
Scientists/technicians (per 1000)	NA
Primary enrolment ratio	59.94
Primary drop out (%) (1993-94)	62.27
Secondary enrolment ratio	6.07
Combined primary and secondary enrolment	66.01
Radios (per 1000)	40
Television (per 1000)	7
Teacher-pupil ratio (30.9.93)	
Pre-Primary	1:23
Primary	1:18
J.H. School	1:19
Secondary	1:11
Sr. Secondary	1:13

Source : Personal survey and Govt. Publication

Education and Communication Profile:-

Adult literacy is calculated on the basis of survey. It is found to be 51.78 percent and mean years of schooling is 1.93 years. The primary drop out ratio is 62.27 per cent during 1993-94. But the teacher pupil ratio is very favourable. It is basically due to high drop out at the primary stage.

Education is an integral part of human development. Specially, the contribution of primary education to development - in all societies is very significant. Education, specially primary, regarded as a valuable unique investment, serving as an effective instrument leading to development. It has its own intrinsic value, enhancing the human capabilities to enjoy life, including better habits and approaches to life and that leads to enhance the quality of life. It is an important instrument of economic development at personal level. It enhances the productivity of labour force in the labour market and their efficiency, thereby increases the earnings and production at a time, widens the market.

From the national economic front, primary education is found to contribute to miracles in transforming nations from poor undeveloped societies to rapidly developing countries (World Bank - 1993). Besides these primary education plays a contributory role in improving health. The impacts are more significant in case of women education. It directly contributes to reduction in fertility rates, indirectly by increasing the rates of participation of women in labourforce and increasing the minimum age at marriage and directly through better approached to family planning and development (nair-1981), thereby reducing population growth. Primary education is also found to improve significantly the rates of child survival and life expectancy.

The literacy rate is 56.53 per cent in Sikkim. The male literacy rate is 64.34 per cent which is higher than the female literacy rate of 47.23. There is a wide gap between male-female literacy. To enhance the human development of Sikkim not only depends on the accelerating the literacy mission but also gender specific gulf should be reduced very sharply. It is evident that there is a high correlationship between the female literacy and the human development. In India, highest female

literacy is observed in Kerala and it also occupies the highest position in the human development Index in the country. So it needs a special care to reduce the gap.

Besides this, the Tibetan influence in educations and moral training play a crucial role too. There are more than six important monasteries. They have their traditional and religious education. Traditional education system is imparted in different monasteries and are in existence along the modern education system. For higher studies in religion, there are two institutions at Gangtok - one for Nyingma sect at Deorali and other at Rumtek for Karma-Kargyupa sect.

Table 7

Income & Poverty[21]

	Earlier	Latest
People below poverty line 1987-88/1992	34.67	46.58
Real SDP per capita (PPP US $)/1992		1825

Income Profile : Income is the crucial economic indicator in the Human development Index. This income is converted into real state Domestic product per capita in people's purchasing power parity in US dollar. It is found to be 1825 (PPP US $) in 1992.

In Sikkim,population below poverty line was 34.67 per cent during 1987-88 but it rose to 46.58 per cent during 1992. It depicts that the poverty of Sikkim has increased more than 10 per cent within a very short period. It occurred due to two reasons e.g. the introduction and revised estimation of poverty line as proposed by Lakdawala Committee and another reason is the inelastic nature of the state economy. Agriculturally subsistence and industrially backward state failed to boost up economic development in the state.

Table : 8

Economic Classification of population - Sikkim [22]

	1971	*1981*	*1991*
(i) Population	209843	316385	406457
(ii) Main workers	111609	147436	164392
	(53.20)	(46.60)	(40.44)
a) Cultivators	N.A.	88610	95.078
		(60.10)	(57.84)
b) Agricultural labours	N.A.	4887	12851
		(3.31)	(7.81)
c) Household industry	N.A.	1586	1267
		(1.08)	(0.77)
d) Other workers	N.A.	52353	55196
(iii) Marginal worker	N.A.	5378	4329
(iv) Non-workers	98236	163571	237736
	(46.80)	(51.70)	(58.49)

(ii) + (iii) + (iv) = 100%

Source : Census of India 1971, 81,1991

Economic classification of population reffects the relative change in proportion of total population in the state. The population composition of Sikkim reflects a young age structure. The row (ii) in the table shows that the per cent of main workers declined from 53.20 to 46.60 during 1971 to 1981 and it further declined to 40.44 per cent in 1991. Whereas the proportion of non-workers raised from 46.80 per cent to 51.70 per cent during 1970 to 1981 and later on it increased to 58.49 per cent during 1991. So we observed that the proportion of the main

workers were falling sharply and the proportion of non-workers i.e. social dependency had increased rapidly with time. And it is also clear that the change is nearly 13 per cent for both the proportion of workers and non-workers in opposite direction. So the social dependency has increased from 1971 to 1991.

The classification of main workers show that the proportion of cultivators declined from 60.10 per cent in 1981 to 57.84 per cent in 1991. But the proportion of agricultural labours has increased more than 4 per cent. It aggravates the poverty line. On the other hand the proportion of household industry declined from 1.08 to 0.77 per cent. So the above data clearly shows that dependency ratio has increased significantly after merger and the economically working force has declined upto 1991.

Computation of Human Development Index : National and State Level

The present calculation of Human Development Index is based on the formulation of UNDP Report - 1994. The maximum of value of expectation of life is taken as 85.0 years and the minimum value is taken as 25 years. Maximum and minimum adult literacy rate have been taken as 100 per cent and zero percent respectively and mean years of schooling as 15 years and 0 years respectively. Upper and lower ceilings of income have been fixed at PPP $ 40,000 and $ 200 respectively. The threshold value of income is estimated to be the world average real Gross Domestic Product per capita of PPP 5120 dollar. Incomes above the threshold point are adjusted by discounting, using a progressively higher rate.

To evaluate the HDI of Sikkim, a very small and hilly state, in comparison to whole India, a developing big country, we take the following four basic variables :

Table : 9

Country/ State	*1992 Life (years) Expectancy*	*1992 Adult Literacy (per cent)*	*1992 Mean years of schooling*	*1992 Income (PPP $)*
Sikkim	54.68	51.78	1.93	1825
India	59.7	49.8	2.4	1552

Life Expectancy

Sikkim :

Life Expectancy Indicator = (54.68 - 25.0) / (85.0 - 25.0) = 29.68 / 60.0

= 0.4946

India :

Life Expectancy Indicator =(59.7 - 25.0) / (85.0-25.0) = 34.7 / 60.0

=0.5783

The above table is compiled from previous chapters e.g. Health, Education and Income. Hence the life expectancy indicator of India is more than Sikkim. This is due to low life expectancy of Sikkemes and the reason behind these are explained in the previous chapter, health.

Adult literacy indicator of Sikkim is more than national average : it is due to rapid expansion of educational facilities in the state after merger. A huge amount was invested to promot the literacy mission in the state. But the mean years of schooling is 1.93 years in the state which is undoubtedly less than national average. It happened due to basically the old generation remained out of the purview of modern education and new generation come under it. Income front, per capita real SDP of Sikkim is more than India.

Adult Literacy

Sikkim :

Table : 11

Adult Literacy Indicator = (51.78 - 0.00) / (100 - 0.00) = 51.78 / 100

=0.5178

India : Adult Literacy Indicator = (49.8-0.00) / (100-0.00) = 49.8 / 100

=0.498

Means year of schooling

Sikkim :

Schooling Indicator = (1.93 - 0.0) / (15.0-0.0) = 1.93/15 = 0.1286

India :

Schooling Indicator = (2.4 - 0.0) / (15.0-0.0) = 2.4 / 15 = 0.16

Education attainment

Sikkim :

Total Educational

Index = {(2 /3) X (0.5178)} + (0.1286 / 3) = 1.1642/3 = 0.3880

India :

Total Educational

Index = (2/3) X (0.498) + 0.16 / 3 = 1.156 / 3 = 0.3853

Income

Sikkim = (1825 - 200) / (5385 - 200) = 1625 / 5185 = 0.3134

India = (1552 - 200) / (5385-200) = 1352 / 5185 = 0.2607

Table : 10

Human Development Index - Sikkim & India

Year -1992

	Indexed Life ex-pectancy	*Indexed Educational attainment*	*Indexed Income*	*Summa-tion / 3*	*Human Develop-ment Index*
Sikkim	0.4947	0.3880	0.3134	1.1961	0.3987
India	0.5783	0.3853	0.2607	1.2243	0.4081

Human development Index of Sikkim is 0.3987 in 1992 and

Human development Index of India is 0.4081 in 1992. So Sikkim is lagging behind national average in respect to Human Development Index.

Table : 11

Sikkim Human Development Index : 1992

	Indexed Life ex-pectancy	*Indexed Educational attainment*	*Indexed Adjusted Income*	*Summa-tion / 3*	*Human Develop ment Index*
Total	0.4947	0.3880	0.3134	1.1961	0.3987
Male	0.5078	0.4304	0.3134	1.2516	0.4172
Female	0.4797	0.3582	0.3134	1.1513	0.3837

In this consequence, Government and policy makers need a special attention to march the hilly stgatigic backward State in the main stream of Human and Economic development. Not only this, the policy makers must take care of every of item of Human development, e.g. Health, Education and Income for a decent living.

The combined Human Development Index of Sikkim is 0.3987 in 1992. The male human development Index is 0.4172 in 1992 and the female human development Index is 0.3837 in 1992. The difference is 0.0335. Gender bias is prominent in Sikkim. Hence the female HDI is lagging behind male HDI. In Sikkim, females are deprived or backward in every front of human development Indix. So it is evident that Sikkim is running behind national average and the females are lagging behind male within the state. So we require a Gender sensitive human development programme in the state to nourish balanced Human development in Sikkim.

Table : 12

Stages of Human Development in Sikkim, Nepal & Bhutan :

Indicators	Year 1992		
	Sikkim	Nepal	Bhutan
Life expectancy(years)	54.68	52.2	48.9
Adult Literacy	51.78	25.6	38.4
Mean Years of schooling	1.93	2.1	0.2
Real GDP/SDP (PPP$)	1825	920	800
Crude birth rate	26.5	39	40
Crude death rate	8.8	14	17
Fertility rate	5	5.6	5.9
Infant mortality rate	63	100	131
HUMAN DEVELOPMENT INDEX	0.3987	0.168	0.146

The comparative Human Development Index of Sikkim, Nepal and Bhutan are 0.3987, 0.168 and 0.146 respectively in 1992. It is clear from the above table that Sikkim undoubtedly occupies a better position in terms of human development. And it also depicts that as compared to Nepal and Bhutan, Sikkim is in a better condition in respect of demographic factors too. Besides this, Adult literacy rate is 51.78 per cent, Mean years of schooling is 1.93 and Real GDP/SDP (PPP$) is 1825 in Sikkim in 1992. It is evident that in the field of Adult literacy, Sikkim is far ahead of Nepal and Bhutan whereas in economic front, the gross domestic production (PPP$) of Nepal is more than Bhutan by PPP $ 120 and the per capita Net state domestic production of Sikkim at 1980-81 prices is 1825 (PPP $) in 1992.

The human development of Sikkim is mostly influneed by its merger with India and a huge investment in the social sector to uplift the state. General literacy boosted up from 34.05 in 1981 to 46.84 in 1991. Not only this, all the vital indicators shows an impressive improvement. The Govt. of India initiated a planned infrastructural development in Sikkim to uplift the quality of life of the people of the state. So it has achieved a better position than neighbouring Nepal and Bhutan. Although, in terms of Human Development, the state is lagging behind National Average. In this consequence, it requires a more special judicious and rational programme to bring the state in mainstream in terms of Human development.

The primary concern of human development is to ensure that the poors and deprives have access to basic needs and obtain sustainable livelihoods. To attain this, Macro level planing is very much essential but not sufficient, naturally the focus must be on the basic needs capabilities, priorities and mass involvement. It is obligatory to propagate the civil society — democratic political bodies, Non-Governmental organisations, grassroot organisation, action groups and the public at large and the motivation, involvement participation and decision making power to be matched with Govt. policies. Hence the need of micro-level planning are very useful and essential.

The local bodies may play an important role in reaching the concept of

human development programme to the masses. this requires a proper organisation and mechanism of local bodies which would perform as the work head of the macro policy, the local bodies are best suited to perform various functions in the sphare of education, health, developmental activities and preservation of ecological balance, because, by their intimate knowledge of local area. Above all, those bodies would act as the agent of political participation raising social consciousness while maintaining a delicate balance between the motive of functioning delicate balance between the motive of functioning of the sate and the people of the respective region.

Human development not only incorporates the three basic components, it has a prolonged consideration of the political set up and freedom of the state. Historical, Political, cultural and geographical identity are the latent causes behind the performance and development of the state. Inaccessibility and immobility are two significant factors which has a crucial impact on the development process. These regions require a special human development programme which must not be in conflict with the traditional customs and beliefs. Sikkim, Nepal and Bhutan though belong to the same geographical region with same ethnic and cultural identity, yet their historical development, ethnic traits and the stages of political progress possess diversified dimension. This is amply mainfested by the variation in human development process and achievement.

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Chapter IX

Conclusion and Suggestions

Human development is a continuous process in every social system to enrich the quality of life and choices of the people. Human development stresses more on the formation of human capabilities which would extend the chance of leading a productive and creative lives in accordance with their needs and interests. Here our main focus was on Sikkim. Being a traditionally subsistence agricultural economy it also tries to develop, all its development indicators. Data deficiency is a major obstacle in such hilly small states. Yet it is a little attempt to evaluate the human development condition and its parameters. Undoubtedly there are some deficiences in the present study. The main purpose of the study was to obtain an integrated picture of the human development condition since merger with India. Although it is generally understood that human well-being is essential. There is no common criterion to evaluate it. Well-being has physical, mental, ethical, socio-economic, political and ecological dimensions. Yet the UNDP formulated evaluation method is applied to find a meaningful and comparabe development position.

Sikkim was a buffer state before merger. Its political location or strategic position has raised, its significance to India. Its border area is extended from non-tropical geographic environment ranging from the low snow-free outer hills to the high peaks with permanent snow, glaciers and pastures. It has experienced great changes in its political structure, social, structure, economic life and cultural values during last hundred years. The process was quickened by four different directions, in a multiform ethnic mix. Its religious cultural and social life has been strongly

influenced by Tibet and as a protectorate of India. it has been politically and economically influenced by India.

Sikkim is a multi-religious, multi-ethnic and multi-linguistic state. The Lepchas are regarded as the original inhabitants of Sikkim. The Tibetization of the Lepchas became during seventeenth century. British contact during 1884-85 faciliated Nepali immigration. The ethnic composition of Sikkim changed radically with the introduction of Nepali population. The population of Sikkim is heterogenously distributed over the hilly land area. This pattern of distribution is influenced by a host of environmental, historical, socio-cultural, economic, demographic and development factors.

Nepali, Bhutia and Lepcha are the three major languages. Nepali is spoken by 90 per cent of the total population. Bhutia by about 28 per cent and Lepcha by about 10 per cent. Lamaism, Hinduism and Animism are followed by different ethnic group. Christianity is also practised, there are twelve major groups in Sikkim. Of them Lepchas, Bhutia, Sherpas and Tamangs are Buddhists, while the rest groups are Hindus and Christian. Aong the Hindu groups, Brahmans and Chhetris are at the top of the social strata.

The major portion of the trans-himalayan trade was in the hands of the Marwaris, aristocracy and some of the Lamas. The agriculture sector is controlled by the Nepalese who are very labourous and practice intensive agriculture. The Lepchas practise subsistence agriculture. Animal rearing and trading are the main profession of the Bhutias.

The elite owns the estates, commands wealth, status a degree of power. Important cash crops such as cardamum and apple are grown in areas reserved for the Lepchas and Bhutias. The white collor jobs such as teaching, journalism, medicine and engineering are controlled by plainsmen and Nepali community.

The hilly topography of the state restricts the land use pattern. The traditional agriculture is limited up to 3000 meters. From the view point of land utilization, the whole Sikkim can be divided into three major zones - e.g. the crop growing zone, the forest zone and alpine zone. Maize, rice and ginger are cultivated upto

2000 metres. Wheat, barley and potato are grown at higher altitude. Coarse crop like buckwheat and barley are cultivated upto 3000 metres. The productivity of crops decline at the increase of the elevation and decrease in temperature as well as the plots become small.

The economy of Sikkim is agrictlture base. It is composed of cottage and small scale industry. Large scale industry is insignificant. The major export items is cardamum. These are exported in large quantities to Arab and Middle-Eastern countries. A large quantity of ginger is exported to Delhi and other parts of the country. In addition, apples and oranges are also traded to other parts of the country. Sikkim is famous for producing alcoholic beverage. The limited industrial enterprises are copper mines and Rangpo and Dikchu, fruit processing, jewels and distillery.

In Sikkim, the villages are locally called Busti. The villages are apparently seem to be neat and clean. This is because they are sparsely populated and situated at the slope of the hills.

Dirts and debris are washed out by rain water. The domesticated pigs and dogs often act as scavengers eating away the food debris and human excreta. Although the absence of personal cleanliness and proper sanitation, these people are generally healthy, being diarrhoea, dysentery and skin diseases are common. Pure drinking water is scare.

The communication in the Sikkim is not properly developed. Important places and district headquarters are connected through motorable roads. The state lacks railway linking due to harsh terrain land slides and road blocks are very common during rainy season. Buses and jeeps are not sufficient. So people often have to move on foot or ride for the most of the year. Post and telegraph facilities are not available in all the villages. Villages and Bustis are connected by jeepable stonned roads or bridle paths.

The socio-economic and social-cultural conditions of the people in a community have a strong impact of the quality of life. The quality of populations largely depends on health care system but health system does not operate

independently. So they should not be evaluated isolatedly. It is obvious that preventive and curative effects will be more effective, while other social and economic factors are supportive. Literacy, food production, economic opportunities, transport, trade patterns, employment opportunities etc. all such parameters are conducive to improve the quality of population. These factors effect mortality though nutrition, sanitation and pure water. These factors affect the life expectancy of the people.

The socio-economic condition of the people does create differentials in access to their basic items. During the study and the statistical sources provide limited number of information relating to the economic condition, health and human developmet condition of the state Sikkim.

In the course of our study, information was collected from 645 family units of all ethnic groups from all the four districts of Sikkim. The total population was 3528. The average family size is 5.47. This means the population growth rate is very high. In Sikkim the families are nuclear, joint supplemented by relations, non-relatives and seasonal labourer.

The sex-ratio (the number of females per 1000 males) is 875 which is unfavourable and it varies from district to district and from one ethnic group to another. Districtwise survey based sex ratios are 865,905,876 and 817 in East, West, South and North district respectively. It reveals that North is most unfavourabe and West is more than the state average where as the Census report shows the sex-ratio at 878. It is very close to the survey statistics. The sex ratio of Sikkim is less than nearest West Bengal (917), Manipur (958) and Nagaland (955) and far below kerala (1036).

Age-composition reveals that the population under survey is a developing and young. The portion of population below 15 years is 38.26 per cent in Sikkim. The proportion of population below 15 years indicates a young age sturcture, a high growth rate and developing population. It varies from district to district. It is highest in South district (40.40) followed by East (38.57), West (36.95) and North (36.16). This percentage reflects the dependency burden on the society. For Sikkim

(total) it is 38.26 per cent a little less than Bhutan's 39.22 per cent and less than Nepal's 42. It is more than India's 37.7 but less than Arunachal Pradesh's 43.2 per cent. But it is far behind from the state Kerala (30.3) and nearest West Bengal (35.7).

As opposed to the population from the less than 15 years age groups, that in the 65 and above is very low in Sikkim. It is 2.46 per cent of the total population. This reveals high mortality rate and poor medical or social care and low survival to old age. The proportion is higher in Kerala (6.0) i.e. the survival rate is high followed by India (4.8) and West Bengal (4.4). It have a closer similarity with Arunachal Pradesh (2.6) which is demographically most backward.

The mean age of the females of Sikkim is 25.54 as compared to the male age of 28.1. In case of Sikkim total it is 25.6. It is equal to India's 25.4 but less than Kerala's 26.7.

Sikkim has a subsistance agricultural economy. There is no large scale industry and its agriculture is very backward and the buds are hilly terrain. Land reform was not properly implemented and as a result the distributional aspect is heterogenous in Sikkim. Economically, more than half of the families are either poor or very poor in Sikkim. 50.2 per cent under the bracket of less than Rs. 5000. The percentage in the less than Rs. 10,000 and less than 15,000 is 32.9 and 11.2 per cent respectively. Very often households have an income beyond Rs. 15,000 per annum.

The main cereals of Sikkim is maize and rice. The poor people takes millets and buckwheats. Kalo dal and Moong Dal are also important source of protein diets. In Sikkim all expect the Brahmans take meat but Nepali Hindus avoid pork. Pork is regarded as the more favourite dish than beaf or mutton. The habit of pork eating is the main cause for the helimenthic diseases. Milk is taken only with tea.

Alcoholic drink is very popular in Sikkim. A local drink prepared from fermented millet and buckwheat is used an almost universal drink by the people of Sikkim. The aboriginal inhabitants, Lepcha call it Tumba, Chi (stronger that Tumba); the Bhutias call it Chhang and the chhang and the Nepalese call it Rakshi.

Taking of tobacco is followed by alcohol addiction. The consumption of tobacco is very common among both the sexes, even children are indulged in it.

The diet and food requirement are inadequate among a large section of the people. The deficiency of diet are both qualitative and quantitative. The basic caloric requirement are not met. The intake of protiens is very small while vitamins and minerals fall fars short of the desirable amount. Mal nutrition being a reflection of unfulfilled dietary demands, occurs durig the three vital periods of human life; (a) gowing age, (b) pregnancy and (c) the period of lactation.

The per capita consumption of food grains among the people of Sikkim 0.5169 kg. per day as against Indian average of 0.50 kg.

Initiation to breast feeding is universal in Sikkim. Breast milk contributes largely to the infants and pre-school children's diet. The majority of mothers in Sikkim usually select and consume some special food items are locally made. The food provided to them is poor for their nutritional requirements.

The health problems of Sikkim are classified into main five categories :

(i) a high rate of infections and water brone diseases;

(ii) imporper and poor environmental sanitation hygiene and ventilation;

(iii) deficiency of nutritinal set up;

(iv) ignorance and unconsciousness about health and

(v) unsatisfactory and traditional health care system.

In Sikkim, the decennial growth of population is 28.47. The Crude Birth Rate (CBR) for Sikkim 22.7 per 1000.

The health status of the Sikkim state is poor. The critically low economic and social sectors of the people and the related poor level of malnutition, sanitation, housing etc. explain the prevailing pattern of disease and death.

The leading diseases among the children of Sikkim are (i) respiratory tract

infection, (ii) skin infection, (iii) diarrhoea, (iv) bronchitis and pneumonia, (v) measles, (vi) eye infection, (vii) intestianl worms, (viii) ear infection. (ix) tuberculosis. The main causes of death infants and children under five of Sikkim are : tetanus, birth injuries, pneumonia, diarrohoea and others.

The Sikkim state face a great challenge in seeking to improve the health status of the people. The major factors behind the causation of ill-health includes nutrition, fertility, taceal contamination of the environment and ignorance. Pure and clean drinking water alongwith proper sanitation system are the important factor. In Sikkim, absence of clean drinking water supply and unhealthy sanitation are the major causes of these diseases depressing the quality of life. Another major factor is insufficiency of proper ventilation system. Respiratory diseases and eye diseases result from poor ventilation, because in most of the houses the hearth is in the corner of living room. The fire remains buring because of cold water without any out-let for smoke.

Some environmentaliset and observers argued that water and sanitation systems should receive higher priority than other investments because they fundamentally improve the human condition. During the last century in the U.S.A and U.K cholera and diarrhoea rates dropped sharply, mainly because of improvements in sanitary conditions.

Studies in California and Kentucky have shown that compared to disease rates for children with both indoor water and toilets, diarrhoea occurred twice and often in children who had outside toilets and four times and often in children who had neither. In twenty American cities, the average reduction in typhoid fever following installation of water filtration was 65 per cent A.Ehilean study revealed that "the availability of drinking water ... cut the incidence of acute diarrhoea by about 74 per cent. According to the World Bank's privy construction in Costs Rica, helped cut the death rate in half for diarrhoea and related diseases between 1942-54.

In our country high costs and cultural barriers blocked sanitation development. Most of people live in villages. Villagers want pure water, but

convenience is more important than quality. Food, housing and fuel take procedure over water purity, and toilets are seen as a luxury, not as necessity.

In Sikkim the other developmental programmes have taken precedence over water purity and toilets. The most of people are ignorant about the causation and prevention of diseases. People do not relate diseases to water supply and waste disposal. Most of Sikkim's health problems and related to insanitary conditions and lack of education. They are preventable by public health measures. In Sikkim greater importance is given to curative measures instead of preventive ones. In 1980 there were five hospitals and twelve health centres in Sikkim. There was one doctor for every 4800 persons. The ratio is 3359.

Internationally accepted norm for doctor/population ratio is 1:2000 which means that Sikkim would need to have more than as per standard.

The population is scattered over an large area which have not easy transportation. The effectiveness of a dispensary or a hospital in such a conditions is reduced in terms of both area and population covered. If medical facilities are located at fixed places, the doctor or nurse/population ratio would be considerably than the internal standard. The national norm of having a primary Health Centre for a population of 20,000 has been achieved in Sikkim. But the hilly and inaccessible terrain and heterogenious distribution of people at far off places creates difficulties for the sick.

With this ecological factors and human settlement patterns have widened they ways for the outbreak of some diseases. Socio-cultural and economic factors have stimulated their incidence and seasonal factors have increased their incubations and complications. If rain brings in the gastrointestinal disorder,summer brings the cough and the phelgm and the cold winter affects the people with infections of pneumonia, bronchitis and the respiratory diseases.

Besides doctors and nurses, there are medico religious men in Sikkim. These men are called by differnet local names - the Bon-thing, Mun, Pan and Jhankaris. These people have a thorough knowledge of the abundant flora of the state, and since time immemorial, they have known how to use this knowledge for treating

diseases. However, these treatments are usually accompanied by elaborate rituals and ceremonies. The causes of illness can be classified into two groups : (a) diseases caused by supernatural beings - deities, spirits, ghosts, and other non -material entities and (b) diseases caused by magical means ... witchcraft and soreery.

These different diseases are treated differently. Diseases caused by super natural beings are treated with worship and devotion accompanied by animal sacrifice. Diseases caused by magical means are treated by exorcism. These systems involve rituals, the medicineman, the exorcist and the patient. The attempt of health anf hygiene is not of high order in Sikkim. As there are no preventive health care measures than can be taken by the population to avoid illness, the only preventive measures are periodic village and family rituals toward off the evils spirits. The majority of the people have no idea about the causation and preventive of diseases. Adequate modern facilities are not available, people depend on traditional medical care; herbs are used as medicines alongwith long rituals and animal sacrifice to cure different diseases. For combating various diseases, improvement of health system will certainly play a decisive role, but over-all improvement in socio-economic sector will bring about good results. In diseases like diarrhoea and other infections, pure drinking water supply, good sanitation, drainage, personal hygiene education and better nutrition will bring the desired results.

The present health programme is insufficient to meet the requirements of the dispersed populated state like Sikkim. An instensive care is to be taken to tackle the health problem of the state and to raise the quality of life of the people. Another major issue is registration of vital events. Vital statistics are very poor. So emphasis should be given in this direction. The main emphasis in health planning in these areas should be on; (i) expansion of proper health infrastracture through out the state; (ii) arrangement of requisite staff for the health centres;

(iii) prevention and eradication of water brone and communicable diseases;

(iv) providing modern equipments;

(v) enhancing training facilities and the quality of services;

(vi) promoting the indigenous system of medicine ;

(vii) maintaining nutritional standards and providing adequate immunization services;

(viii) water brone diseases are very prominent in the mountains area. So a high priority should be given to provide drinking water free of contamination.

Another vital issue is Education. Education is regard as the prime factor for the developments of the quality of life. It depends on the educational infrastructure and local motivation. Alongwith this a high priority should be given on girls education. As gender bais is very prominent in the state. The main objectives of the education policy should be to;

(i) expand education facilities in inacesssible rural areas ;

(ii) special emphasis to girls education;

(iii) extend the facilities of technical and vocational education;

(iv) improve the facilities for science and higher education;

(v) improve the skill of manpower. The quality of life largely depends on the enhancement of capability of man. So education framework should be designed on the basis of occupational oriention.

(vi) education policy should be matched with local requirements and development programme.

The major objective of the present study is to evaluate the present condition of human developments in Sikkim. In my study, the human development Index of Sikkim is found to be 0.3987 in 1992. And it is less than the national average i.e. 0.4081 in 1992. So it is evident that the human development Index of Sikkim is far behind the national level. Obviously from this we may conclude that the quality of life and development process is slower in the state than national level. Another objective of the study was to assess and evaluate the HDI at the grass root level too and social impact. The combined HDI of Sikkim is recorded as 0.3987. But the male human development Index is 0.4172 in 1992 and the female human

development index is 0.3837. Hence female HDI is lagging behind male HDI. From this we may assess the social impact of HDI at the grassroof level.

In the micro-level literacy rate has improved significantly from 34.05 in 1981 to 56.94 in 1991, although Adult Literacy must have an improvement. In the field of health, infant mortality rate and mortality rate has declined sharply and the life expectancy has increated significantly.

Our last objective was to make a comparative study between state and village level. State level and village level disparity arises due to urban - rural composition of population. But in sikkim, urban population is accounted to 9.10 per cent of the total population. But practically except Gangtok all urban places are of rural nature. As a consequence, the comparison is not so meaningful.

There are three major ethnic groups in Sikkim,e.g. Nepali, Bhutia & Lecpcha. There may be ethnic influence and impact on the human development of the state. There are some ethnic characteristics behind the adoption and development process. Ethnic diversity is clearly observed in my study regarding the consumption pattern. As Sikkim is a traditional society and religious belifs are dominent. So there is a scope to calculate human devolepment Index on the basis of ethnic composition to find out the inherent nature the people towards development.

Political participation and local motivation also plays a crucial role. The up liftment of human quality or human development strcsses on peoplis participatin in the formulation and implementation of programmes. Local bodies, e.g. panchyat, village and block level organisations, local level statutory organisatins should be positively involved in the planning and implementation process. Recently Non-Governmental organisations are also playing significent role in pursuiting various development related problems in the rural and urban areas. For proper implemention and linkeges particularly in eradicating illitarcy, family planning programme drugs de-addiction programme, intensive programme for rural income generation providing modern vocational training organisation and motivation of the local people for specific development should be emphesized. Government level intiative is to be undertaken to promote and increase social demand for literacy mission,

health facilities, income generation protecting environment and Govt. plan should be matched with local requirements and benifits.

Women are playing vital role in the Economy. They are ivolved with so many economic activities beside household works. Women are responsible for agricultural and Livestock activities. The direct involvement and participation of women in the planning, implementation and operation of projects will lead to an effective implementation of human development programmes. It is through their active participation that family welfare and planning programme can progress. Another extensive special programme is to be undertaken to take care of children below the age of five and pregnant and lactating mothers.

The human development Index of Nepal is 0.168 in 1992 and 0.289 in 1994 and Bhutan achieved 0.146 in 1992 and 0.247 in 1994. Sikkim achieved 0.3978 in Human development Index in 1992. During 1992, the HDI of Sikkim is better than Nepal and Bhutan Not only this the HDI of Nepal and Bhutan in 1994 are also less than HDI of Sikkim in 1992. So we can conclude that Human development of Sikkim has enhanced after merger with India. But in Comparison to national level (0.4081), Sikkim is lagging in respect to Human development. Another significent charaeteristics is that gender bais is also very wide in Sikkim. So we need a delicate planning to boost up the grass-root devlopments process to enrich our nation.

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Appendix

Calculation of Human Development Index in Sikkim

1. Life expectancy of Sikkim during 1992-93 = 54.68 years.

(a) Life expectancy Indicator (Total) = (54.68 - 25) / (85-25)

= 29.68 / 60 = 0.4947

(b) Male life expectnacy Indicator = (55.467-25) / (85-25)

= 30.467 / 60 = 0.5078

(c) Female life expectancy Indicator = (53.78-25) / (85-25)

= 28.78 / 60 = 0.4797

2. (i) Adult literacy rate during (1992-94) =51.78

Male adult literacy = 57.056

Female adult literacy = 47.63

(a) Adult literacy indicator = (51.78 -0.00) / (100-0.00)

= 51.78 / 100 = 0.5178

The results are obtained from survey (1992-93-94)

(b) Male adult literacy rate = (57.056 - 0.00) / (100 - 0.00)

= 57.056 / 100 = 0.5756

(c) Female adult literacy rate = (47.63 - 0.00) /(100 - 0.00)

= 47.63/100 = 0.4763

2. (ii) Mean years of schooling

(a) Mean years of schooling = (1.93 - 0.00) / (15 - 6.00) = 0.1286

Mean years of schooling = 1.93

(b) Male mean years of schoolsing = (2.1 - 0.00) / (15 - 0.00) = 0.14

(c) Female mean years of schooling = (1.83 - 0.00) /(15 - 0.00) = 0.122

Male mean years of schooling = 2.1

Female mean years of schooling = 1.83

The results are obtained from survey (1992-94)

Educational attainment (Total)={2(0.5178)+0.1286 } / 3

= 1.1642 /3 = 0.3880

Educational attainment (Male)= {2(0.5756)+0.14} / 3

= 1.2912/3 = 0.4304

Educational attainment (Female) = {2(0.4763)+0.122} / 3

= 1.0746 / 3 = 0.3582

3. Income Indicators : According to Human Development Report -1994, India's real Gross Domestic production per capita (in PPP $) for 1991 is $ 1150.

The per capita net state domestic produce (NSDP) at (89-90) = Rs. 3118

An estication of the level of the Sikkim's real per capita GDP

An estimation of the level of the Sikkim's real per capita GDP

=K X {India'sreal per capita GDP (in PPP $)}

The per capita NSDP at (1990-91) = Rs. 3369

The national per capita GDP at (89-90) = Rs. 2766

The national per capita GDP at (90-91) =Rs. 2763.3

K =(The per capita net SDP at constant prices)/ (The natinal per capita income at constant prices) = AT 1991-92 =Rs. 2818.4

$K_{1989\text{-}90}$ = (Rs. 3118) / (Rs. 2766.02) = 1.127

$K_{1990\text{-}91}$ = (Rs. 3369) / (Rs. 2863.3) =1.176

Sikkim Income is below the threshold (PPP $ 5,120), need not adjustment.

India real GDP per capita (PPP $) for 1991 = $ 1150

The level of Sikkim's real per capita Gross Domestic Product (1989-90) $K_{1989\text{-}90}$ X (India's real per cpita GDP in PPP $)

$$K_{1989\text{-}90} = 1.127 \text{ X } 1150 = 1296.05$$

The level of Sikkim's real per capita GDP (1990-91)

$= K_{1990\text{-}91}$ X 1150 = 1.176 X 1150 = 1352.4

1096.05

(a) Income Indicator = (1296.05 - 200) / (5385 - 200) = 0.2114

(1989-90)

(b) Income Indicator =(1352.4 - 200) / (5385 - 200) = 0.222

(1990-91)

Human Development Index - Sikkim

	Indexed life expectency	Indexed Educational attainment	Indexed adjusted income 1989-90	Indexed adjusted income 1990-91	1989-90	1990-91
Total	0.4947	0.3880	0.2114	0.222	1.0941	1.1047
Male	0.5078	0.4304	0.2114	0.222	1.1495	1.1602
Female	0.4797	0.3582	0.2114	0.222	1.0493	1.0599

HDI - Sikkim

	1989-90	1990-91	
Total	0.3647	0.36823	India 0.382
Male	0.38316	0.38673	
Female	0.34976	0.3533	

No.of holding	Cumulative per cent		cumulative per cent	
area	1985-86	1991-92	1985-86	1991-92
1.Below 0.2	0.80	8.47	0	0.07
2.0.02-0.5	16.52	28.44	1.64	2.91
3.0.5-1.0	34.31	49.56	6.40	10.30
4.1.0-2.0	59.84	70.74	19.24	27.39
5.2.0-3.0	74.32	81.78	32.3	41.13
6.3.0-4.0	82.63	87.94	42.97	51.69
7.4.0-5.0	88.03	91.85	51.9	60.18
8.5.0-7.5	93.89	95.81	65.37	72.19
9.7.5-10.0	97.05	97.63	74.80	79.8
10.10.0-20.0	99.34	99.27	86.54	89.63
11.20 ha and above large	100.00	100.00	100.00	100.00

Source : Compiled from Agricultural situation in India.

Size Pattern of Holdings in Sikkim