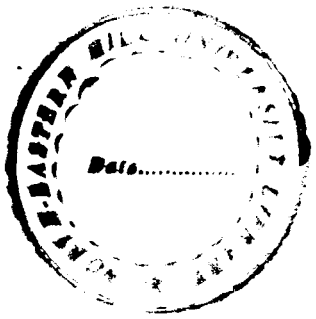
PROBLEMS AND PROSPECTS OF RURAL DEVELOPMENT IN NAGALAND

Abstract



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Thesis

1. Statement of the problem:

Rural sector is dominant in Indian economy, because more than two-third work force is engaged in rural areas. Nagaland, the trend of population is characterized by a fast growth rate and is dominated by rural population. The demographic features and occupational structural of the state are basically towards the expansion of primary sectors with very high decadal growth from 14.07% (1951-1961) to 64.41% (1991-2001). Population density has been increasing fast, which shows an increasing burden on the available resources. There is marginal growth of urban towns and, hence, less indication of transformation in economic sectors especially from primary sector to non-primary sectors. Dependency ratio is increasing with decreasing % share of workforce. Keeping these issues in mind, the state is obviously under pressure of fast increasing rate of population with less number of facilities and services with the limited resources. The geographical area of Nagaland is 16,579 sq. km. with a variety of topographic features of different elevations ranging from approximately 110m (the plain areas of the state) to about 3,826m in the eastern high ranges. As a result, only few limited areas of land along the foothills and river valleys provide ample opportunity for permanent agriculture. Jhum cultivation is widely carried out in many parts of the state. Forest areas are depleting and only few tribes of the state practice terraced/permanent cultivation. For how long, limited resources can hold the pressure of fast increasing population in the state. How much a labourer can produce from his one-acre/hectare of land? These are some of the interesting issues needed to know and to highlight the problems and also the prospects of rural development in the state.

Keeping the above rural development aspects in mind, it is obvious that the state has been enjoying a diverse frame of physiographic features as well as socio-economic parameters for development which are creating diversity and regional

disparities in the levels of development. On the other hand, problems and prospects of rural development are related to these conditions, the infrastructure available at village level and their accessibilities, the characteristics of development and their occupational structures where, the rural people are engaged. The rural economy is stagnant, in spite of various efforts, which are being implemented by Village Development Board by providing infrastructure for development. Thus, the present study would base on village level inquiries of the facts related to development issues.

2. The Objectives:

Keeping in mind the above discussion regarding the conditions of the demographic transition and socio-economic problems of rural areas of the state, the fallowing objectives have been put forward for pursuing the present study as:

1) to assess an overall performance of rural economy,
2) to study regional disparities in the levels of development and prioritization of the rural sectors of the economy,
3) to study the salient features and trends of development in its geographical frame, and
4) to identify the sectors of economy and areas of the state for proper development of the economy.

3. The Research Questions:

1. How does the transformation in rural economy taking place and what are the bases of such transformation?
2. How do the existing created infrastructural facilities and physiographic attributes influence the level of development?
3. Where are the most backward rural pockets in the state, and what are their most acute problems?

4. Sources of Data:

In order to test the validity of the above cited research questions and objectives, it is obvious that the study of physiographic factors is necessary like the topographical conditions, climate, soil, drainage and vegetation. The regional personality of physiographic attributes is highlighted for which the information is collected from toposheet (R.F.1/250,000 scale). The data related to climatic attributes as well as soil characteristics are collected from the Department of Soil and Water Conservation (Survey) and ICAR NERC. So far as block-wise and village-wise data of the various attributes of the development as well as demographic attributes are concerned, such data are collected from the secondary sources from the Directorate of Economic and Statistics, the Directorate of Agriculture, Horticulture, Rural Development Blocks and the Department of Planning and Coordination, the Census Operation, Kohima and Office of the National Informatics' Centre, Kohima.

Data related to the infrastructure variables like transport facility, electricity, health facility, educational facilities, agriculture, horticulture, animal husbandry etc. are collected from various concerned agencies.

6. The Methods:

It is specified that the availability of data and the situation in which the work is carried out are limited the results. However, scientific methods for getting the empirical results are used in the present piece of research. For example, the aggregations of developmental indicators/attributes, which are generated from the collected data at village level, are used to show the level of development. The composite index of development is prepared by using 'free-scale' technique.

The present study basically dealt with the three aspects of rural development such as;

(i) general performance of rural sectors, (ii) regional disparities and levels of development and (iii) transformation of rural economy. These aspects are methodologically dealt with the fallowing manner;

(a) The general performance of rural economy is based on the geographical personality. It is elaborated in which economy of the rural areas are emerging and, for the same, relevant cartographic methods are adopted to interpret the regional pattern of geographic phenomena as well as development levels.

(b) The land and labour productivities and production growth are major parameters of rural development. Because of non-availability of agricultural production data at village level for two points of time, the production growth parameters does not include in the present study. However, land and labour productivities have been calculated at village level.

(c) Since productivity is a function of total production and total area of the village, the land productivity is, thus, simply measured by considering average yield of principal crops. Paddy is a determinant crop in the state. Yield of paddy crop is considered as true representative of land productivity for which total paddy production and total cultivated area is used village wise.

(d) Labour productivity is the total production per agricultural worker, which is also calculated for each village by using labour statistics and crop-production at village levels.

Preparations of productivity as well as development maps and their comparisions with the physiographic features to identify the most under-developed areas are the major aspects of the present study. Therefore, mapping tool is used to depict the visual pictures of regional patterns and areal differences of development phenomena.

7. The Findings:

Before elaboration of main findings of the present research, some salient features of the state within which the development is taking place are forwarded in the following paragraphs:

1. The state of Nagaland is hilly and mountainous in its physiography, except some very small pockets of valleys and plains in the foot hills towards the western

side of the state. The undulating topography and variations in altitude is ranging from 110m to 3826m (plain to the highest peak). Thus, the whole area of the state is hilly with deep gorges and narrow valleys. The soils are fertile and the climatic conditions are also favorable to crops, but due to undulating relief, intensive agriculture is not much favorable. Physiographic factors directly control the productivity of the land.

2. Fast growth rate of population is a concerned to everybody in Nagaland; population growth rate was recorded 64.41% in the last census report (1999-2001), which is the highest growth rate in the country. Urbanization processes in the state are very slow. The population density has been increasing fast with the fast growth of population. The density rose from 22 persons/sq. km (1961) to 120 persons/sq. km in (2001) during the last four decades.
3. In spite of the engagement of fairly high share of population in the work participation (i.e., 45.22% in 1991, which is significantly higher than the national average), the dependency ratio is recorded high with continuously increasing burden of non-workers in the demographic frame. The distribution of workforce in different sectors is also taking into account. It is found that there is a concentration of workforce in primary activities. The percentage share of workforce tertiary sector has been slightly increased. It means that there is a gradual shift in economy. However, heavy or medium industries are negligible in the state.
4. The State Net Domestic Product (SNDP) was recorded double during the last 10 years period of time and agriculture (including livestock) is the highest contribution towards SNDP. Construction is also another source of income contributing fairly good percentage share, and lately, transport is contributing a fast increasing percentage share towards NDP. Increasing infrastructure especially road network may increase fast the NDP of the state.
5. About one-third villages of the state are well connected with the surfaced (pucca) road. And 15% villages are under highly accessible (0-4 km) but one-

third area of the state falls under the category of highly remote (inaccessible) by surfaced/pucca road. Topography is the main constraint to road accessibility in these areas.

6. The Village Council, or in other words *'Council of Elders'* is an old traditional supreme decision making body in matters relating to people and the village. This Village Council is a local self-government and the oldest institution, found in all the recognized villages in the state. Village Development Board is an agency, which is purposely meant to take care of development schemes in the village and the village community; it is under the control of Village Council. Thus, village development is possible through village council.

Main Findings:

The study area is endowed with more or less diversified physiography, which provides possibilities and embodied with potentiality for agricultural as well as horticultural development. The nature of slopes in the area is steep to very steep in some cases and the agro-climatic conditions are not much favorable for intensive agriculture. The people have responded to the difficult environment by adjusting themselves to the situation through shifting cultivation on the slopes or terrace cultivation wherever topography permits. However, agricultural practices are oriented towards subsistence food production; cropping pattern is monoculture towards paddy crop, which is grown in the patches of permanent cultivable valley areas and on the hill slopes. The agrarian products are inadequate to meet the demands of the population. However, the people are traditionally depending on other natural resources to meet their requirements. The abundance of forest resources too has been an important source of livelihood and work for most people.

(a) Land Productivity: It is considered as average yield of the principal crops, which has been recorded very low (16 qu/ha) in the state; it is recorded even lower than the other hilly states of the north-eastern region. Low productivity indicates less

availability of food and the state does not have sufficient food to feed the local people. Lack of application of modern technology in agriculture, less expansion of land share under permanent cultivation and traditional means of irrigation are main reasons behind low land productivity. However, there are noticeable areal variations in the land productivity. Out of a total 1224 village, 459 villages (38%) are accounted for in the moderately high category of land productivity. These villages are located in the areas of Kohima, Kikruma, Mangkolemba, also small pockets in Wokha and Medziphema blocks.

The villages having low and very low land productivity (below 13.3 qu/ha) are located in a few pockets in the state especially in the high hills and most remote mountains areas like Kiphire, Noklak, Shamator, Tobu Chen, Mon, Meluri, Zunheboto, Akuluto, Ghathashi, Peren areas of Jalukie block.

Increasing percentage area under irrigation (which is considered as agricultural infrastructure) and increase in the literacy rate increase the level of land productivity. It means crop yield is positively influenced by these two factors.

(c) Labour Productivity: The labour productivity, which is calculated as agricultural production produced per person of agricultural labour force (in present case, qu/person), has a significant variations in the state. More than three-fourth area of the state falls under low and very low categories of labour productivity. The following areas are noticeable under these categories.

(i) Almost whole of the eastern parts of the state is found to be low labour productivity, except very small pockets in the blocks of Meluri, Noklak and Chen. Low labour productivity is also seen in pockets of Tseminyu, Ghathashi, Wokha, Akuluto, Changtongya, Longleng and Peren areas of Jalukie block.

(ii) There is only 16% of the total villages in moderate category of labour productivity; this is noticed in pockets of Medziphema, Kohima, Kikruma, Zunheboto, Akuluto, Sitimi, Longkhim, Baghty, Mangkolemba and Ongpangkong blocks of the state.

(iii) High labour productivity villages are few in number in the state (i.e., 7.84%); they produce 56.87 qu/labour and the availability of food grains is 880 kg/person. These high labour productivity areas are found in very small pockets of Medziphema, Kohima, Kikruma, Kiphire, Sangsangyu, Ongpangkong, Changtongya, Baghty and Wakching block.

Undoubtedly, the demographic features influence labour productivity, employment of workforce in agriculture and the level of education/literacy, which provide the mental efficiency to work. In the state, workers intensity and percentage share of agricultural workforce influence labour productivity in negative manner, While, literacy rate is positively related with labour productivity.

Level of development is conceived in the present case as aggregated index of multi-dimensional attributes of the village-economy, which is measured by calculating composite index of 16 variables and is compared with the productivity parameters statistically. The main findings are given below.

Preparing scatter diagram of development levels versus land productivity for the entire state where number of observations (i.e., villages) are 1224, it is obvious that the degree of scatterness of the distribution is significantly high rather than expectation and, consequently, the degree of determinant of the distribution is calculated very low (R^2<1.42%) even for all expected cases of 'best-fit' distribution.

The development level follows exponentially in the best-fit distribution with respect to land productivity (i.e., crop yield). It means that the development pattern is not perfectly in consonance with the pattern of land productivity in the state. The areas of very high levels of land productivity, which is determined by two factors of yield: the percentage share of irrigated areas and literacy as described earlier, are likely to influence the over all development of the state because the land productivity is placed in 'power function' with very small value of its coefficient in the exponential distribution. However, it may be inferred from regression analysis that land productivity is a significant attribute of development in the areas of high level of development,

namely, Kohima, Medziphema, Jalukie, Phek, Wokha, Ongpangkong, Changtongya and Sangsangyu.

Similarly, level of development follows the same best-fit statistics subject to the labour productivity, which is more influenced by the labour attributes like percentage share of agricultural labour force and labour intensity. However, its distributional pattern is more concentrated toward the origin of the graph. It shows more scatterness at lower level of labour productivity.

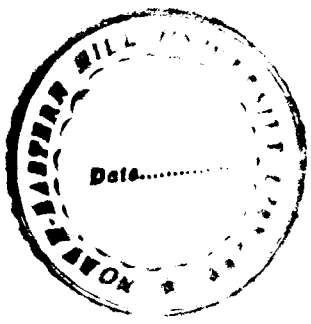
If the attributes related to agricultural labour is more influential for the development level in the state, the density of population is likely be the attribute, which would keep direct effect on development level. After analyzing the result of regression statistics of development versus population density of the state, it is found that the linear (or its advanced form, the polynomial with degree two) is the best-fit function. However, its degree of determinant is recorded only R^2=9.58% for the state. It means, the higher degree of scatterness of the distribution is owing to the variations in topographic features and tribal communities living in the different areas of the state. Such facts may be forwarded in another way saying that the areas of high population density have higher degree of development because population needs basically food and shelter and supplies labour to the system. As a result, the population density influences the labour and land productivities and, ultimately, it determines the level of development in the state. However, infrastructural attributes may contribute more to the development level.

Road network as basic attribute of infrastructure for the development is weak with less connectivity of points in the state. It concentrates the other infrastructural facilities/amenities like postal and bank services, educational and medical facilities. Infact, infrastructural development is 'road-based'. Since road accessibility is poor in the state, a few pockets developing along the road and on the main towns of the state is marked as the areas of high development. It means that road network has positive impact of development and influence socio-economic attributes in the state.

Most of socio-economic facilities like medical, banking and postal are concentrated in the urban areas. The developmental patterns are, thus, confined and are concentrated in a few pockets because of urbanization. The emergence of 'concentrated' pattern of development may only be allotted by adopting 'decentralized planning' through the expansion of road network and increasing the connectivity of road centers in the state.

In the end, it can be concluded that low level development areas are occupying a larger portion of the state and it is indicated that an urgent attention is needed to narrow down the gap between the high and the low level development areas of the state.

PROBLEMS AND PROSPECTS OF RURAL DEVELOPMENT IN NAGALAND



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OCTOBER, 2003

I, Khriesecha H. Nakhro, hereby declare that the subject matter of this thesis is the record of work done by me, that the contents of the thesis did not form basis of the award of any previous degree to me or to the best of my knowledge to anybody else, and that the thesis has not been submitted by me for any research degree in any other University/ Institute.

This is being submitted to North-Eastern Hill University for the degree of Doctor of Philosophy in Geography.

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(K. H. NAKHRO)

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INTRODUCTION

CHAPTER - I

INTRODUCTION

1.0 Background:

The concept of rural development is multi-dimensional and multi-faceted because the problems of socio-economic change of any society, which is growing in a specific environment, are varied and unfulfilled. Scientists conceive development and growth of socio-economic activities in different manner in which they are working. The organization and development of social activities within a specific frame of environmental conditions of an area have been studied in detail by the environmental sociologists such as Lassey (1977) and others. While the economic development for both rural and urban areas was dealt with the economists and regional planners, namely, Goulet (1971), Lewis (1978), Sundaram (1984), Bhat (1968), Grigg (1969) and many others who emphasized on proper economic development planning for the areas where less developed societies have been residing.

For the human welfare, freedom from ignorance, disease, servitude and fear are as important as freedom from want. Freedom from want is not just two square meals per day, fine clothes, protected shelter but also life's security. In this, one has to be freed from dependence on others. Freedom also includes the basic necessities and the infrastructural facilities such as

education, health care, transport and communication (telecom), power, safe drinking water and sanitation etc. as highlighted by Parik and Krishna (2002) and also by the Planning Commission (2002).

The development of any activity whether it is social or economic in the rural area is closely related to the availability of resources and the extent of their utilization within which a society develops. If such dimensions of development are conceived through the eye of geographers, the development of socio-economic activities follows as,

(a) A continuous chain of socio-economic activities, which have been organized over space according to available resources and infrastructural facilities, is called 'spatial-functional organization', which has hierarchy and continuous ordering from rural (lower order) to the biggest functional node of urban centres (higher order).

(b) The coordination of socio-economic activities, which is studied keeping in mind the available natural resources of the area or landscape, which are controlled by the physiographic conditions and available modern technology to mobilize them, and thus, development follows an integrated approach, which may provide a well-balanced and optimal pattern of growth of socio-economic structure of an area (Fig-1.1).

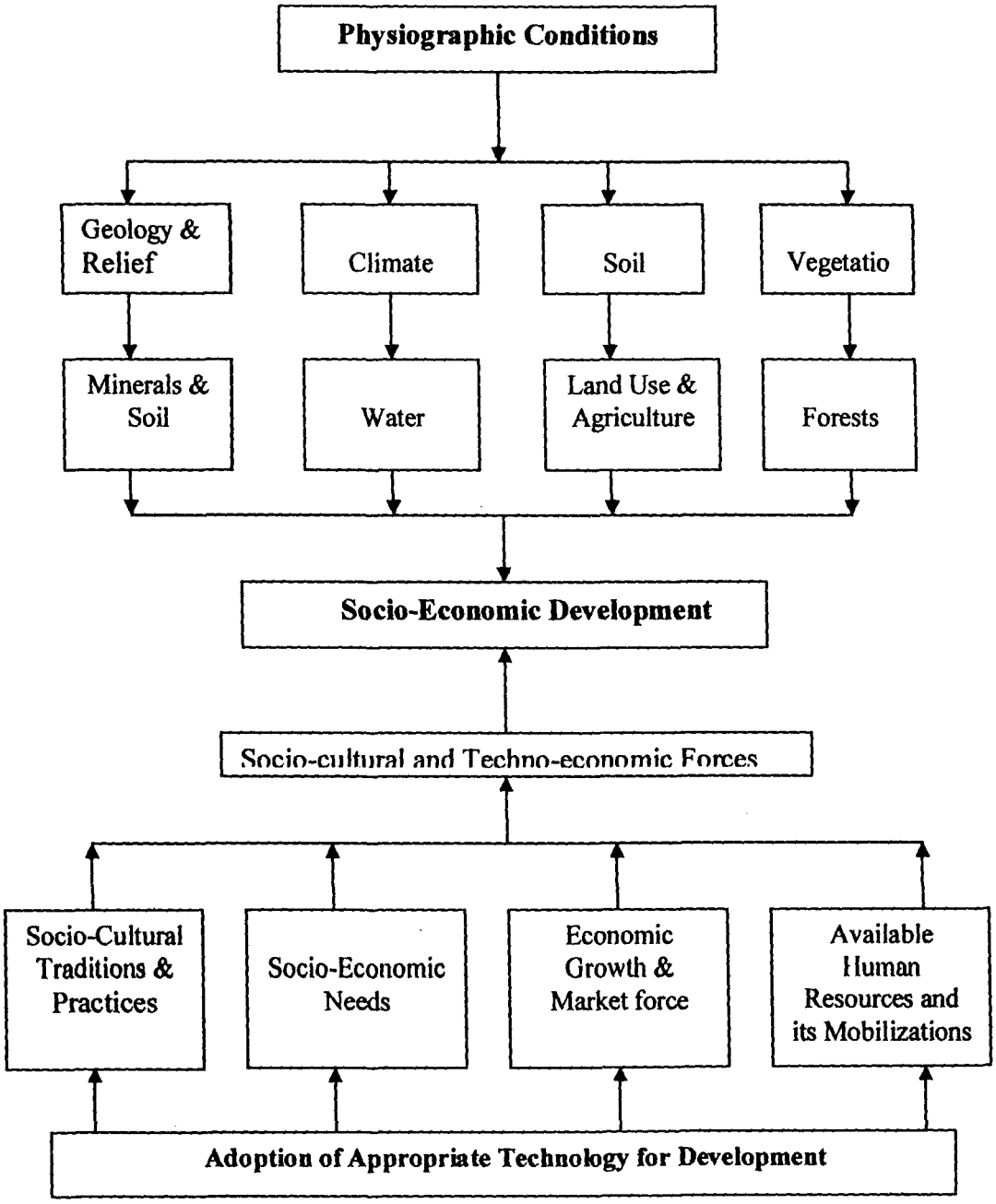

Fig.-1.1: Integrated View of Development.

(c) The changes of such activities overtime are conceived as processes, which are accelerated by the manpower available in the area for the welfare of the society living.

These dimensions may provide a sound base for the sustainable growth and optimal pattern of development to understand even problems and prospects of the people living in rural areas and also to provide them the full benefits of the resources available in their surroundings. For example, there is a variety of rural development programmes, which have been implemented by the Central Government to develop infrastructure for agriculture and road connectivity for intensifying interactions among people of the state of Nagaland. These programmes were operated in isolation, which became the main causes of their failure. Since the availability of local resources including manpower of an area is the spine of the body of a programme for rural development, the entire philosophy of development must be based on such aspects, which would provide the basis of resource integration, the kind of activities needed and the optimal pattern ought to be evolved for the development of rural areas. Further, the activity-specific and area-specific development may only be possible when the proper coordination of the activities related to the resources and problems of the people are conceived in planning processes.

1.1 Introduction:

There are many aspects of the development of an area or a state, which are being dealt from various angles. For example, sociologists study the social aspects of developmental

phenomena and are more related to the social activities and relation of the society, while economists emphasize the development of economic activities and conclude that social upliftment is the result of economic development. Likewise, geographers look into the problems of development, whether it is social or economic, within the frame of availability and utilization of resources and, sometimes, geographers consider man as a resource, which accelerates the processes of socio-economic development in its integrated manner.

So far as rural development is concerned, it is a multi-dimensional and a multi-faceted process of development related with the upliftment of a section of society living in rural areas. Their social as well as economic problems are different from urban societies, though both these parts of society are interdependent and mutually interactive over space. The main sectors of rural economy and its social activities are different and, therefore, the problems of rural societies are varied and multi-faceted. They (rural societies) have direct bearings on urban development. If rural economy is streamlined, the problems of urban development and urbanization may also be looked into because of rural-urban continuum. The democratic principles of welfare state may take care of this integrated and intertwined aspect of development.

Man and environment constitute the subject matter of development and it is one of the most debatable concepts during the modern time. Almost all the societies irrespective of the level of perception have given thrust in the social, economic and political

domain of activities for achieving development. Every individual and society in the post World War era have been marked to enhance their position for better living.

The concept of rural development is gaining momentum particularly in the Third World countries, where it has got wide recognition in the socio-economic and political processes for the development of the society. The developmental activities are for the entire society in which government is playing a major role for these activities. However, the organizational framework for these activities varies from nation to nation and even from society to society within a nation. Therefore, there are different perceptions and approaches to the development of an area. Since, India has varieties of socio-economic activities and different socio-economic landscapes, there are, therefore, many approaches have been adopted by the government for the well balanced development and self sustained growth of the nation.

1.2 Statement of the problem:

Rural sector is dominant in Indian economy, because more than two-third work force is engaged in rural areas. In Nagaland, the trend of population is characterized by a fast growth rate and is dominated by rural population (Table-1.1 & 1.2). Some of the features generalized from the demographic and workforce composition of the state, are highlighted here as:

(i) The decadal growth of total population is recorded very high from 14.07 % (1951-1961) to 64.41 % (1991-2001). The growth of the 1990s is recorded far higher than the national average (i.e., 21.34 %). On account of much faster growth of population in the state, population density has increased from 22 persons per sq. km. (1961) to 120 persons per sq. km (2001), which shows fairly increasing burden on land resources (Table-1.1).

(ii) There is a marginal shift of rural population to the urban areas during the last 40 years from 94.81 % (1961) to 82.26 % (2001), which is much lesser than that of the national average (i.e., 72.22 % in 2001). It means that there is insignificant growth of urban towns and, hence, less transformation among economic sectors specially from primary to non-primary.

(iii) Urbanization is in its initial stage in the state. The percentage share of urban population is increased from 5.19 (1961) to 17.74 (2001). However, the decadal growth of urban population diminishes from 168.28% (1961-71) to 69.44% (1991-2001). Thus, the processes of urbanization are weak and diversified in nature.

(iv) There is a fluctuating scene in sex ratio in the state. During 1961, there were 933 female per 1000 male, in the 1970s it decreases to 863, then it pick up again during the 1980s and the 1990s (Table-1.1).

Table-1.1: Population Composition in Nagaland over Time.

Year	Total Population	Decadal Growth (in %)	Density person/ sq.km.	Rural population			Urban population			Sex Ratio
				Total	% Share	Decadal Growth %	Total	% Share	Decadal Growth %	
1961	3,69,200	14.07	22	3,50,043	94.81	-	19,157	5.19	-	933
1971	5,16,449	39.88	31	4,65,055	90.05	32.85	51,394	9.95	168.28	871
1981	7,74,930	50.05	47	6,54,696	84.48	40.78	1,20,234	15.51	133.95	863
1991	12,09,546	56.08	73	10,01,323	82.78	52.94	2,08,223	17.22	73.18	886
2001	19,88,636	64.41	120	16,35,815	82.26	63.36	3,52,821	17.74	69.44	909

Source: Census of India, Nagaland, Kohima.

Table-1.2: Workforce Composition and its Changes.

Year	Total Work Force			Rural Work Force			Urban Work Force			Non-worker			Dependency Ratio
	Total	% Share	Decadal Growth (%)	Total	% Share	Decadal Growth (%)	Total	% Share	Decadal Growth (%)	Total	% Share	Decadal Growth (%)	
1961	2,19,310	59.40	-	2,12,461	96.87	-	6,849	3.12	-	1,49,890	40.60		0.6834
1971	2,62,114	50.75	19.52	2,36,220	90.12	11.18	25,894	10.96	278.07	2,54,335	54.69	69.68	0.9703
1981	3,73,754	48.23	42.59	3,31,714	88.75	40.42	42,040	11.25	62.35	4,01,176	51.77	57.73	1.0733
1991	5,21,668	43.13	39.57	4,48,106	85.90	35.09	73,562	14.10	74.98	6,93,309	57.32	72.81	1.3290
2001	8,49,982	42.74	62.93	*	-	-	*	-	-	11,38,654	57.26	64.23	1.3396

Source: Census of India, Nagaland, Kohima. * Data not available.

(v) An over all trend of workers in the state indicates a decreasing percentage share of workforce. There was a 59.40% share of population working actively and considered as workforce (1961), which was gradually decreased to its percentage share of 42.74 (2001). On the other hand, non-workers which constituted 40.60 % (1961) are alarmingly raising its percentage share to 57.26 (2001). As a result, the dependency ratio in the state has been rising over time (Table-1.2).

(vi) There is a growth in rural as well as urban workers in the state; rural growth with diminishing workforce share and urban growth with marginal increase in the workforce share. It shows that there is a migration of workers from rural to urban areas, while the share of non-working population is almost constant throughout (Table-1.2).

Keeping these issues in mind, it is obvious that the state is under the pressure of very high increase of population with less number of facilities and services with the limited state resources. Therefore, there is a need of proper planning for the rural areas for development of infrastructural facilities and to establish a proper strategy of land- man relationship for the betterment and for raising the standard of living of the people in the state.

1.3 The Objectives:

Keeping in mind the above discussion regarding the conditions of demographic transition and socio-economic problems of rural areas of the state, the following objectives can be put forward for pursuing the present proposed study as:

1) to assess an overall performance of rural economy,
2) to study regional disparities in the levels of development and prioritization of the rural sectors of the economy,
3) to study the salient features and trends of development in its geographical frame, and
4) to identify the sectors of economy and areas of the state for proper development of rural economy.

1.4 The Research Questions:

The objectives of the present study are closely related to the trends and regional features of various sectors of rural economy (like agriculture, household industries and allied activities), which may provide the basis of transformation and changes in the regional pattern development. Accordingly, three main research questions may be posted here to explain the objectives of the present study.

1. How does the transformation in rural economy taking place and what are the bases of such transformation?

2. How do the existing created infrastructural facilities and physiographic attributes influence the level of development?
3. Where are the most backward rural pockets in the state, and what are their most acute problems?

1.5 Methods and Data Collection:

In order to test the validity of the above cited research questions and objectives, it is obvious that the study of physiographic factors is necessary. For preparation of physiographic frame assessing the resource conditions for the rural development in the state, the attributes related to the topographical conditions, climate, soil, drainage and vegetation cover is considered and shown by maps.

The regional personality of physiographic attributes also is highlighted, for which the information are collected from concerned toposheets (RF1/250,000 scale) published by the Survey of India, Dehradun. The climatic as well as soil data are collected from concerned State Government offices. So far as block wise data of the various attributes of the development as well as demographic attributes are concerned, such data are collected from the secondary sources and various offices of the State Government, namely, the Directorate of Economic and Statistics, the Directorate of Agriculture, Horticulture, Forest, Rural Development Blocks, Department of Planning and Coordination, Census Operations, Nagaland, Kohima and so on (Table-1.3).

Table-1.3: Sources of Data.

Sl. no	Name of the Institutions / Organisations	Data Year
1	Agricultural Census of Nagaland, Deptt. of Agriculture, Government of Nagaland, Kohima.	1991
2	Annual Administrative Report, Dept. of Rural Development Blocks, Government of Nagaland, Kohima	1990-2000
3	Basic Statistics of North Eastern Region, North East Council, Shillong.	1995, 2000
4	Census of India, District Census Handbooks (all 7 districts of the state), Nagaland.	1991
5	Census operation of India, Nagaland, Kohima.	1961, 1971, 1981, 1991 & 2001
6	Levels of Development in Nagaland, Deptt. of Economics & Statistics, Government of Nagaland.	1997
8	Nagaland Forest- Statistical Handbook, Deptt. of Forest, Ecology, Environment & Wild life, Govt. of Nagaland.	1994-1998
9	Nagaland Village Council Act, 1978, Deptt. of Home, Government of Nagaland, Kohima.	1978
10	Report on Nagaland Minerals, Deptt. of Geology & Mining, Government of Nagaland, Kohima.	1995
11	Soil Survey Report of Nagaland, Deptt. of Agriculture Government of Nagaland, Kohima.	1975
12	Statistical Handbook of Nagaland, Deptt. of Economics & Statistics, Government of Nagaland, Kohima.	1991-2000

Data related to the infrastructural variables like transport facility, electricity, infrastructure available for the development of agriculture, horticulture, animal husbandry, health, educational facilities, etc. also are collected from secondary sources.

1.5.1 The Methods:

So far as methods, which are used for the completion of the present research work are concerned, it is specified that the availability of data and the situation in which the work is carried out are limited. However, some methods, which are common in almost all the

disciplines for testing the empirical basis is used here. For example, the aggregations of developmental indicators/attributes, which are generated from the collected data, are used to show the level of development. Village-wise statistics of these indications are collected and aggregated picture of development is prepared by using composite index.

The statistical expression and the index are given as:

$$CI = \sum_{i=1}^{n} (X_i / \overline{X}_i),$$

where $i = 1, 2, 3, \ldots, n$ as number of development attributes,

CI = Composite Index of development,

X_i= Socio-economic attributes and

$\overline{X}_i$= Mean of the i^{th} attribute.

Since the present study is based on three aspects of rural development such as; (i) general performance of rural sector, (ii) transformation of rural economy and (iii) regional disparities and levels of development. These aspects are methodologically dealt with the following manner,

(a) The general performance of rural economy is based on the geographical personality, and it is elaborated in which economy of the rural areas are emerging and, for the same, relevant cartographic methods are adopted to interpret the regional pattern of geographic phenomena as well as development levels.

(b) The land and labour productivities and production growth are major parameters of rural development. Because of non-availability of agricultural production data at village level for two points of time, the production growth parameters does not include in the present study. However, land and labour productivities have been calculated at village level. Since productivity is a function of total production and total area of the village, the land productivity is thus simply measured by considering average yield/ production per areal unit. Paddy is a determinant crop in the state. Yield of paddy crops is considered as true representative of land productivity for which total paddy production and total cultivated area are used village-wise.

(c) Labour productivity is the total production divided by the number of agricultural workers to measure labour productivity for each village. Based on the village-wise statistics collected and compiled from Census Department, Directorate of Economic & Statistics and Directorate of Agriculture, Government of Nagaland, Kohima are used.

Preparation of productivity as well as development level maps and their comparison with the physiographic features to identify the most under-developed areas is the major aspects of the present study. Therefore, mapping tool is used to depict the visual pictures of regional patterns and areal differentiations of development phenomena. In order to show the transformation of rural sectors at village-level, the required data for two points of time are not available. Therefore, the transformations of economic sectors as well as demographic features have been studied at the state level.

1.6 The Chapter Scheme:

The entire research material is organized into eight Chapters; the summaries of each of these chapters are given in the following paragraphs.

First Chapter of the thesis includes the introduction to the problems of rural development regarding the importance of the subject and the topic in particular. The statements of the problem, objectives, methodology and data collection have been included in this chapter.

The second Chapter deals with literature survey, which was done through the consultation of many books, journals, monographs, published and unpublished research articles etc. relating to the problems and prospects of development. Literature review was carefully categorized into five sub-tittles. As such it had given a proper insight of identifying a research problem and highlighting the objectives and also elaborating the knowledge of the present work.

The physiographic features of the study area are included in the third Chapter. It includes the geological formation, relief features, drainage systems, climate and temperature, humidity, rainfall, soil types, vegetation. Demographic features, such as population growth and its characteristics, population composition and the occupational structures which are useful in understanding the background of rural development in the state.

The fourth Chapter deals with the available infrastructure facilities for the development of the state. The five infrastructural indicators, such as road, postal service, financial institution, educational institution and medical facility are included in this chapter. With these indicators, accessibility of the villages through road connectivity and its inter-relationship with economic development is incorporated and the areal distributions of infrastructure facilities in the state are interpreted.

Chapter five deals with the historical background of rural development and the various rural development programmes in Five year plan-wise are shown. Democratic Decentralization in Nagaland, the role of local institutions and functions of the Village Development Board in the state are dealt in the chapter.

Chapter six accommodates the characteristics of rural development in Nagaland as the existing agricultural system, land use pattern, livestock's productions etc. The major characteristic features of development were analyzed in this chapter.

The Chapter seventh deals with the levels of development in the study area. The village level aggregated picture of development indicators is shown to understand the regional pattern of development and to identify the areas of under-development.

The last Chapter of the thesis, that is eight in number, discusses the summary and findings with suggestions synthesized out of the research study.

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CHAPTER -II

LITERATURE REVIEW ON RURAL DEVELOPMENT

CHAPTER - II

LITERATURE REVIEW ON RURAL DEVELOPMENT

2.0 Introduction:

Rural development has a wider view of rural society and its change. There are various aspects dealing with rural areas and its societies, which have been changing since long by many factors. The main characteristic features of society are based on the changes in economic, social, cultural, religion, believes, attitudinal, organizational and even political changes, besides the technological alterations. Therefore, rural development is a multi-faceted phenomenon and a multi-dimension of rural society and its changes. As a result, rural development has a variety of aspects of the development of rural society, which can be viewed and, accordingly, literature on this topic may be reviewed in the following manner.

2.1 Rural Development as Philosophy and Ideas of Rural Masses:

On carrying out review of literature, it is found that there are quite a few books available for the purpose. As early as the middle of nineteenth century, the western Christian Missionaries and social workers initiated spade works of rural reconstruction in India and some of the works were started by individuals. Rambhai (1959) and Pandey (1967) mentioned and categorized the activities of rural development into three well-

differentiated periods, the Missionary Period (1858-1919), the Experimental Period (1920-1947) and the Post-Independent Period.

Development of rural societies in underdeveloped nations and that of the rural societies in developed nations is totally different in its approach and strategy of development. In developing societies, rural people are socially and economically deprived from many factors. They are not just poor and ignorant, but have multiple problems such as poverty, illiteracy, ill-health, unemployment, inequality in income and wealth. These are some of the common phenomenon among the rural people, besides lack of infrastructures in the rural areas. Thus, the ultimate aim of rural development is to have an overall development of the rural people as well as of areas by providing infra-structural facilities.

The Ashridge Conference on Social Development emphasized that rural development should be designed to promote better living for all in the whole community with the active participation and initiative of the community. According to Mishra and Sharma (1979), rural development is not merely development of rural areas but also the development of quality of life of the rural masses into self-reliant and self-sustaining modern communities, so that each component of rural lives changes in a desired direction.

Chambers (1983) specifically mentioned that the target group in rural development should include poor man, women and children, poorest of the poor amongst the small-scale farmers, tenants and the landless labourers. He has critically analyzed and

stated that the poorest should be first put in order to narrow down the gap between the rich and the poor.

Singh (1986) pointed out that development is not only an increase in income and infrastructure facilities but it also brings about changes in the attitude of the people. Development is not only implementing government package programmes but it means to develop and to obtain a desirable change of the rural people.

All the above statements, opinion and comments about rural development are focused on the development of rural masses that targets the poor and economically weak persons.

2.2 Rural Development as a Process of Socio-Economic Change:

When development takes place, a change of situation is expected. A desirable change is a change in the people's attitude traditional and dogmatic beliefs, so that, when the old traditional belief is to be replaced by the new scientific reasoning, there is acceptance for improvement of the situation.

The U.N. Report on Rural Development (1966) had viewed that efforts of the people was emphasized to improve the economic, social and cultural conditions in the life of the nation. It means that this change would bring about a change in their socio-economic status, and improve their living conditions.

The first and foremost aspect of rural development is the availability and use of infrastructure facilities such as better housing, electricity, education, industries and so on (Copp 1972). Myrdal (1972) considers provision of infrastructure as not only necessary but essential too. Pratap (2001) emphasized on the necessity of infrastructure facilities for the development of both agriculture and rural development activities. Zhang & Fan (2001), on the other hand, emphasis that there have been competing arguments about the effectiveness of public infrastructure on productivity in literature but in reality at ground level, situation is different. World Bank (2001) presented the characteristics of rural infrastructure sector and the emerging approaches to infrastructure delivery systems by taking Africa as an example.

Poster (2002) forwards that accessibility and mobility are embedded in the development nexus; it is the means for progress. Field studies of mobility among rural settlement with poor road access in Ghana (Africa) illustrate the frustration and costs of living off road. They are marginalized and invisible even to local administration. State decentralization appears to have had little positive impact on reducing 'tarmac bias' and improving rural service delivery. A range of potential interventions from intermediate means of transport to electronic communications is reviewed and the opportunities for building social capital in the off road areas through nurturing improvements in state civil society relations are considered.

But Goulet (1971) finds that development starts from within the social system and touches the individual towards some conditions regarded as humanly better. The development processes do not manipulate from the outsiders and the individuals

would move towards self-sustenance. Therefore, it is a movement towards socio-economic changes. Ball (1974) had similar view that development involved changes in people's life. Meanwhile, Mc Namara (1973) felt that development would be meaningless unless it touches the individual human being especially the poor people. This strategy also came to be known as 'growth with justice' or 'redistribution with growth' (Chenery 1974).

Rural Development, according to the World Bank (1975), is a strategy designed to improve the economic and social life of a specific group of people, the rural poor. It involves extending the benefits of development to the poorest among those who seek a livelihood in the rural area. The group includes small-scale farmers, tenants and the landless. The World Bank and other international agencies and institutions placed emphasis on increasing production, raising productivity, increasing employment and mobilizing whatever land, labour and capital factors of production were available. At the same time, rural poverty and inequalities had to be reduced by development involving values and quality of life issues and the participation of the poor people in development activities and in decision-making. Central government has empowered Panchayati Raj institutions and other local-self government to initiate and participate in development activities. International Agencies just concluded 'World Summit 2002' on Sustainable Development at Johannesburg, South Africa, which has taken the decision to continue the fight against poverty in the world.

2.3 Rural Development as Government Mandate related to Administrative Setup:

About, three-fourth of the total population in India lives in villages. Gradually, due to the spread of education and political consciousness rural people have started demanding equal share in public funds. Since 1960, rural development is receiving top priority even in fund allocation as well as in the process of planning at the national level. When the country was exercising the Mahalanobis model plans for the country's economic development, the rural people were the sufferer because the maximum benefit went to the heavy and allied industries and hardly any benefit percolated to the villages.

Planners and policy makers of the country framed various development programmes in such a way that maximum benefits should go to the people. But due to the diversified nature, widening regional disparities and social cultural differences, in many cases, these programmes also became ineffective at the grass root level. Sometimes execution and implementing agencies were also manipulated, and the middlemen siphoned off a large portion of the amount.

Ghosh (1967) finds that close association of the elected representatives in the development activities is recommended. Rural development, on the other hand, is not just a set of government welfare programmes. Each programme has its own aims and targets for development of the people in rural areas. However, Harris (1982), in his experience from a study of agricultural development programme, pointed out that much of the government's development programmes are wrapped up in an ideology of modernization. In practice, many of the innovations and much of the advice, which are offered, are appropriate only for the rich cultivators.

Maheshwari (1985) ruled that the present administrative system for rural development is inherited from the colonial rulers and it is this system, which is still followed by the officials responsible for rural development programmes. Thus, it would be unrealistic to expect the colonial system to continue along with the new constitutional framework, as it would be subjected to various environmental pressures and forces.

During the early 1980s, Ministry of Rural Development, Govt. of India sponsored / conducted a series of workshops / seminars on the involvement of Non-Governmental Organizations in the activities of rural development based on which one may conclude that rural development cannot be possible only within the framework of bureaucratic levels unless mass participation is drawn from different organizations and different sections of the people. Development including planning for development must begin from the grass root level by mobilizing the people's power as stated by Sachchidananda (1982). Micro-level planning is best suited to tackle the rural problems.

On the other hand, Kothari (1991) said that development programmes had only touched the surface and so called for a micro-planning approach to find out solution to the multi-dimensional problems of rural India.

Sharma and Rajagopal (1995) praised the introduction of Integrated Rural Development Programme (IRDP) in the 1980s, which had thrown a new concept of inter-institutional linkages, which had in fact an important tool for achieving the objectives of economic development in rural areas. Singh (1995) says that rural development has attracted a great deal of attention from all political parties and the

governments both at national and state levels. It is receiving top priority even in the process of planning at the national level. Rural population in almost all the developing countries is enormous, with a high number of people living below the poverty line. In this situation, the attention of the government is very much necessary; other wise non-governmental organizations have to step into this crisis to educate and to set up welfare measures for development of the people. There is also a need to make a channel between the rural people and the development agencies.

In developing countries like ours, both development efforts and bureaucracy have functioned together since its inception but the role of bureaucracy in the development process has been controversial in many cases, as it does not fit in with the changing socio-economic needs of the society. An effective bureaucracy is coupled with vigorous modernizing elite as a prerequisite for progress.

2.4 Rural Development as a Model for Rural Resource Utilization:

There are many factors that affect the level and pace of rural development such as physical, technological, economic, socio-cultural, institutional, organizational and political factors. These factors operate at all levels – from household to the nation and the world as a whole depends on how they are managed. When we talk about rural resources; man, animal power, natural resources like mineral ores, forest products etc. are abundant in rural areas. The availability of resources, its management systems and the factors affecting the resource management process is to be taken care, as these factors can have both favourable and adverse effects on development.

Infact, proper use of local natural as well as human resources is a main dimension of rural development. There are many studies on human resource planning through which the proper nutrition, health care (medical facilities) and education (school-facilities) of the people are interpreted. Similarly, the studies on natural resource use are equally important for rural development.

Lassey (1977) stated that the focus of rural development should be on preservation of ecological integrity with a view to providing a continuous supply of life supporting resources. He further adds that appropriate land use, healthy living conditions and pleasing environment are to be taken care of beside socio-economic welfare measures.

Singh (1986) states that if the human resources of a country are not properly developed by proper nutrition, health care, education and training and are not productively utilized, these resources become a liability and an obstacle to development. But, if they are properly developed and utilized, they become a great asset and a major factor contributing to development. 'People are the most important and valuable resource of any nation' was the theme of the International Conference on Population and Development in Cairo, Egypt, September 5 to 13, 1994. Population resource needs planning at proper time otherwise these resources would add more problems and would raise the demands without productivity.

Both renewable and non-renewable natural resources constitute the bedrock of a nations' economy, if they are properly utilized. The quantity and quality of

available natural resources along with the intensity and efficiency of their use determine to a considerable extent the level and pace of economic development of a nation.

Maheshwari (1985) holds the view that rural areas have their own natural resources, and science could suggest ways and means of exploiting them with a view to giving additional and fuller employment to the local population. Singh (1988) classified resources into three main categories (i) natural resources (ii) human resource and (iii) land. He has further recommended the importance of integrated development planning for balanced utilization of local resources.

Pradhan (1999) and Uphoff (1999), both emphasized on the importance of local institutions in mobilizing the rural resources. Vimal (2000) presented the problems and prospects of watershed development in India, and recommended the importance of mass involvement in both water and land resource management.

Bekele (1998) shared an Ethiopian experience about the Village Level Resource Management Project. The project started to alleviate the accelerated resource degradation and stabilized the living conditions of the population. Similarly, Morse, *et al.* (2001) discusses the integration of sustainability indicators by draining upon the result of a 6 years research project based in African villages. The project looked at the issue that comprises livelihood sustainability, and in particular how the villagers themselves view this concept and what they deem to be important within it. Local visions of sustainability were recorded and sustainability indicators metrics applied to the

villages. It is concluded that an element of qualitative integration incorporating value judgments and subjectivity is inevitable with a concept such as sustainability.

The centrally conceived package of the programmes like the IRDP depends crucially on the latitude that they allow for the local level variation as Tenduldhar (1982) asserts. It must be understood that in order to have a successful development, IRDP cannot be based on single model only, since conditions differs from area to area, it should be location-specific for each area. IRDP being the single largest anti-poverty programme in India, the consent of the beneficiaries' skills and their potentialities is very important. Ruben (2000) presented the importance and issues of real markets and its role in rural development, based on an experience in Central America. Lou Hichi (1999) also presented an experience from the implementation of IRDP in Tunisia and concluded that the project must be based on viability at individual and local levels with transversal development approach.

Copp (1972) stated that the process is through collective efforts aimed to improve the well being and self-realization of people. He further contends that target should be on people rather than infrastructure and should widen people's range of choice. Taking into account the local resources should draw up the developmental programmes and the felt needs of the people having growth potentials. Thus from the above statements, it may be concluded that it is essential to have a proper management and utilization of the available resources in rural areas for the development and sustainability of rural people.

2.5 Rural Development in North Eastern Region:

In North Eastern Region and Nagaland in particular, studies on rural development are not numerous. Burman (1984) discussed the objectives and perspectives of poverty alleviation programmes, as because this was the main target of all rural development programmes at that time. He further stressed on the rural problems and its identification in both Nagaland and Manipur.

Saikia and Phukan (1989) have brought various aspects of rural development in the North Eastern Region. Yogi (1991) states that the region differs from the rest of India, only in kind and, not in degree, while the economy of the region is multi-structural as in the rest of the country. But due to the physical geography as well as the social and political conditions prevailing in the region, North East has a backward economy and even though the region covers a bigger area of production than the national average. However, productivity (production per ha) is recorded lesser.

In bringing out the indicators of development in the state of Nagaland, Saleh (1989), an economist, indicated the economic transformation-taking place in the state since 1964. Sahey (1989) based on his paper entitled, 'Decentralization: The Nagaland Way' and 'Nagaland Villages Choose Progress' asserts that socio-economic changes may be seen in the state. The performance of Nagaland Village Development Board (VDB), which is run purely in a democratic and decentralized manner both in planning processes as well as in execution of the programmes, has been working in its satisfactory manner. The National Institute of Rural Development has also been publishing the literature on rural development of the state.

Imnayondang (1990) has highlighted physiographic personality and historical of the state such as migration and population pressure on geographical land and also levels of development, based on various departmental reports. This geographic study of the area shows the regional pattern of development and pockets of backward areas of the state.

Maithani and Rizwana (1991) carried out a thorough study on VDB and its functioning. They highlighted some of the lacunae in VDB and emphasized the role of VDB and that it's functioning must be well coordinated with the state government officials. The study was a good piece of work as far as VDB is concerned.

Ao (1993) has examined and analyzed emerging agrarian relation, social structures and rural leadership in the foothill villages of Nagaland. Interestingly, he has carried out his study among multi-ethnic communities. He has also stressed upon the importance of people's participation in development processes based on the functions of Village Development Board in the state. Bag (2001), in his book on rural transformation, has studied the economic and social changes taking place in the state of Nagaland.

The VDB has played a major role in rural development at grass-root level in Nagaland and can be a role model in other states of the North Eastern Region. However, rural development still has a long way to go and it is dependent on various local factors and to obtain a desirable change there should be mass involvement both on the part of the rural population and the government officials for the upliftment of the rural poor.

2.6 Concluding Remarks:

From referred works and their dimensions of work for the rural development, it may be said that rural development is not only the available infrastructural as well as institutional provisions provided by the government (the central or/ and state) but also the changes in the mind-set of the people living in a specific environment of landscape and struggling with the specificities of physiographic phenomena. Therefore, the rural production processes and their area- and location-specific strategies are required in order to understand the local fabric of resource availability, production demands and technological and infrastructural deficiencies in the area.

Many studies are forwarded on the implementation of rural programmes and the role of institutions in rural development. Resource-based studies are also shown some relevant aspects of rural development especially for the North-eastern areas of the country. However, there is a deficiency of literature on the integrated view of rural development of this area especially for the hill area like Nagaland state, where physiographic is more important, which creates diversified pattern of socio-economic development.

The problems and prospects of rural development in the state of Nagaland may be viewed to analyze the facts regarding its physiographic and socio-cultural diversity evolved in its landscape.

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CHAPTER-III

GEOGRAPHICAL BACKGROUND

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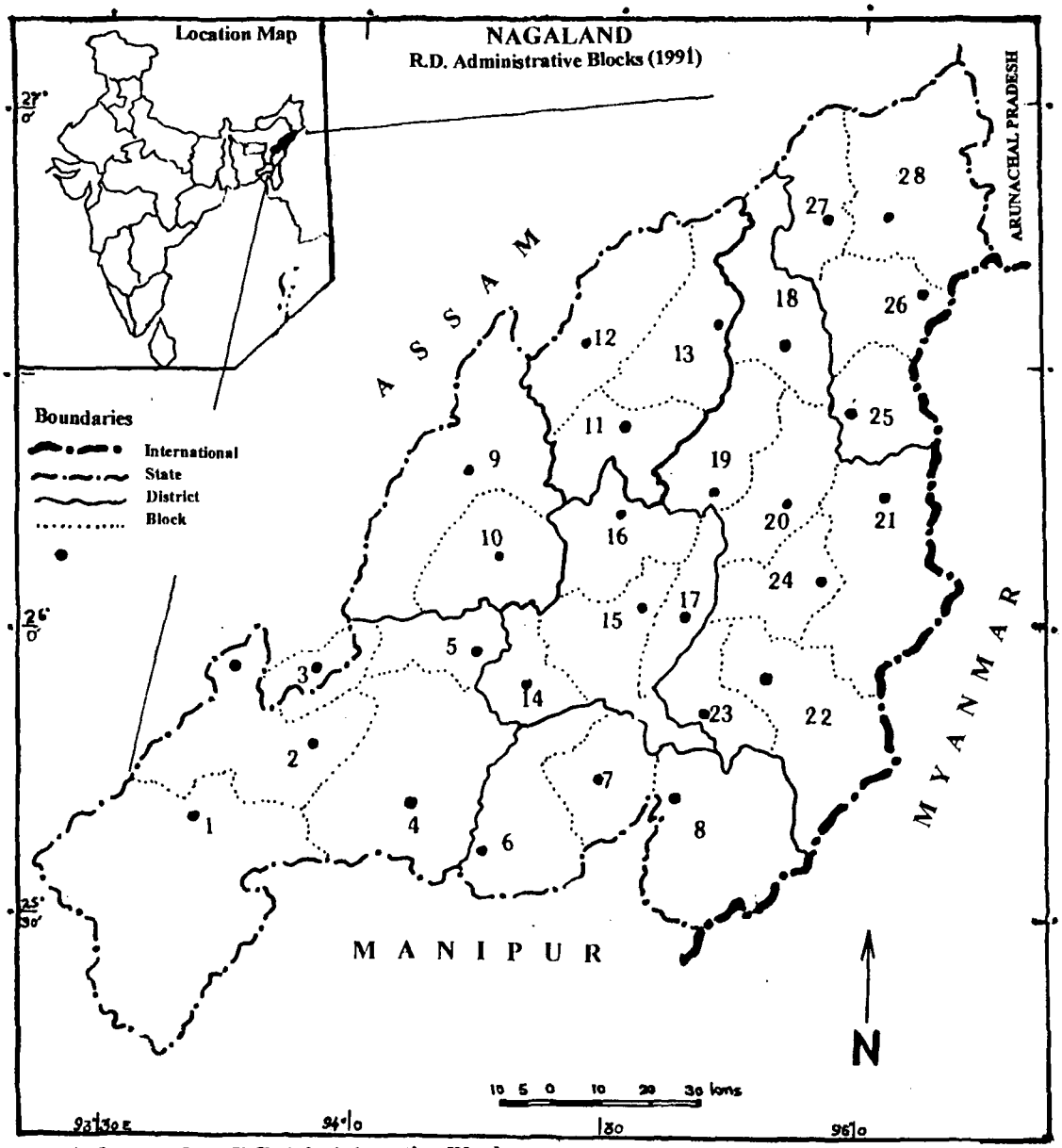
3.0 Introduction:

The state of Nagaland has hilly terrain with a variety of relief features, different drainage systems, various soil types and vegetation cover. The physiography creates specific situations and some times limitations for rural development like fragility, inaccessibility, specific resource niches and areas of population concentration. These aspects of physiographic conditions directly or indirectly influence (and somewhere control) the distributive nature of natural resources and human concentration. The study of such aspects of landscape would be helpful in understanding the required processes of rural development and also helpful in identifying the areas of available resources where the developmental processes may be intensified in future for raising standard of living of the local people. The detail features of geographic personality of the state have been highlighted in the following sections.

3.1 Location and Extent:

Nagaland the 16th state of Indian Union was inaugurated on the 1st December 1963. It is situated in the northeastern part of India between 25°6' to 27°4' North latitudes and



Names of the R.D.Administrative Blocks;

1. Jalukie	2. Medziphema	3. Kuhuboto	4. Tseminyu	5. Kohima
6. Kikruma	7. Phek	8. Meluri	9. Baghty	10. Wokha
11. Onpangkong	12. Mangkolemba	13.Changtongya	14. Gathashi	15. Zunheboto
16. Akuluto	17. Tokiye	18. Longleng	19. Longkhim	20. Sangsangyu
21. Noklak	22. Kiphire	23. Sitimi	24. Shamator	25. Tobu
26. Chen	27. Wakching	28. Mon		

Fig-3.1

93°20' to 95°15' East longitudes with an area of about 16, 579 sq. km. Assam in its North and West, Arunachal Pradesh in its North East, the state of Manipur in the South, binds the state. The state is bound by the long International boundary of Myanmar in its eastern side. On account of gradual slope of the state from East to West, it is well connected with the plains of Upper Brahmaputra and also has a direct impact of socio-economic set up prevailing in Assam. It includes the area of Niuland sub-division of Dimapur district, which is in the Assam plains but administered by Nagaland Government. The state is transitional in its geological structure, physiographic conditions and climatic attributes because of its situation close to the Tropic of Cancer and its geological formation of the Tertiary deposits of younger folded mountains of the Alpine-Himalayan orogeny. There are 28 Rural Development Blocks in the state. The boundaries are generally coincides with the relief features (Fig.-3.1).

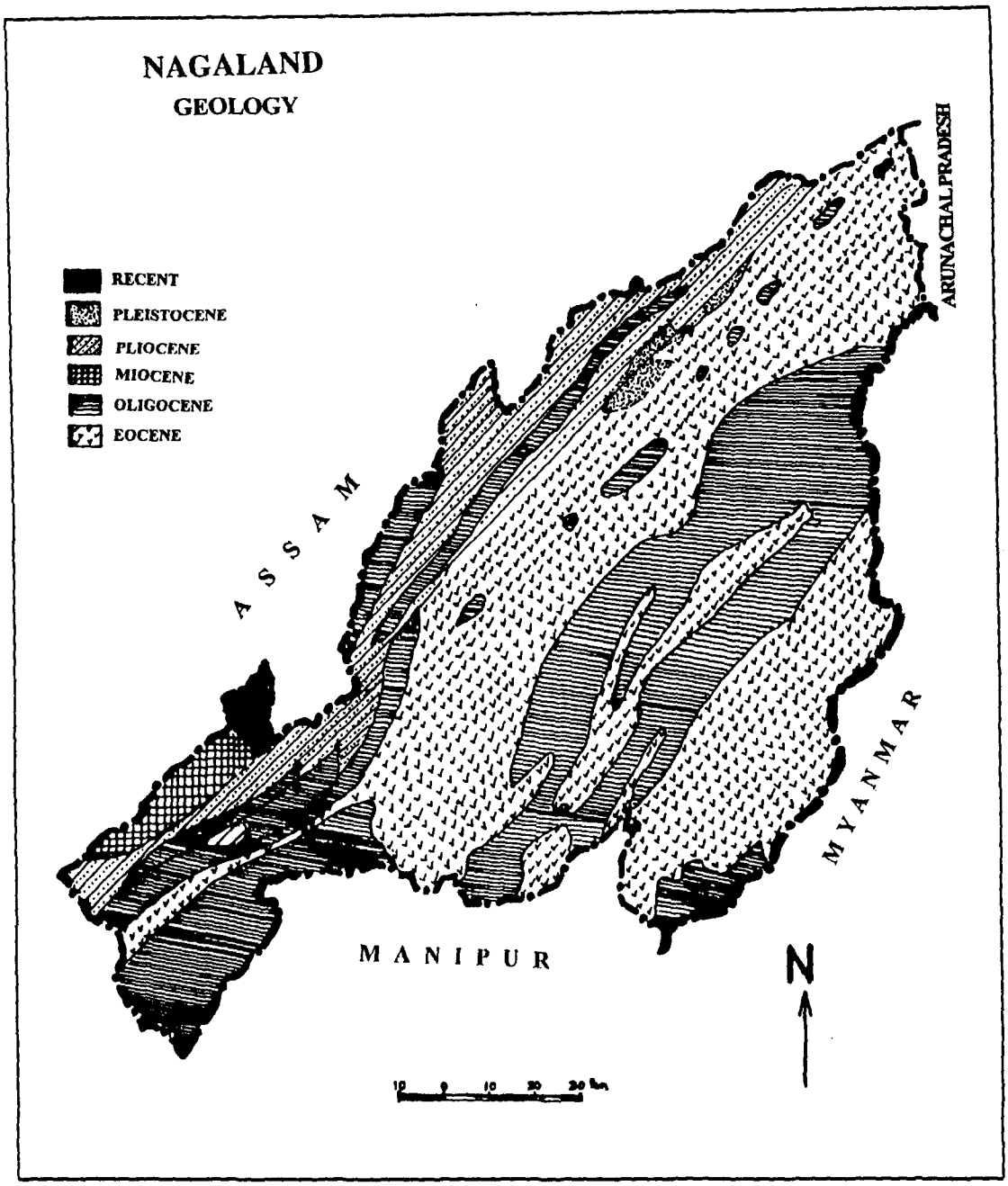
3.2 Physiography:

(a) Geological Formation:

According to geo-scientists, this region was once under a sea, which existed between India and Burma till the tertiary period. The land that now joins India and Burma did not exist at that time but came up much later, that the rocks are comparatively younger and of Tertiary origin (Ghosh 1982). This was proved from the fossil remains of marine deposits in different areas of the state. Besides marine deposition, there were volcanic activities in the basin. It has been proved by the existence of igneous rocks in the

eastern part of the state. The area remained submerged till the Eocene period that is 65 million years back when a powerful crustal movement initiated the first phase of mountain building activities. The sedimentary and volcanic rock layers were finally uplifted due to compressive forces from the sea floor, thus forming the first folded mountains. During the process, the water receded to the south into the present Bay of Bengal.

The first orogenic movement was partial; sedimentation took place in this basin forming a mountain range, which is today known as the Barail group formation. Numerous fossils of ancient flora and fauna are present in these rocks. Such rocks are mainly found in the eastern region especially in places like Pfütsero, Meluri, Kiphire etc. After the formation of Barail, Surma and Tipam groups of rocks, the second orogenic movement took place in this region, which gave rise to the more north-east, south-west trending hill ridges and valleys. These hills are higher than the previous ones. This movement took place during the period of Oligocene, Miocene and Pliocene. Third orogenic movement occurred during the Pleistocene and Recent periods and it shaped the present topographic features (Fig-3.2). It may be noted that all these three major orogenic movements were contemporaneous to the great Himalayan Mountain building activities. The state of Nagaland being within the tectonically unstable belt of the eastern Himalayas lies in an earthquake prone area.



Source: Geological Survey of India, N.E. Region.

Fig-3.2

There are rocks in the eastern region of the state, which are of comparatively ancient formation like Nimi and Zepuhu formations that were formed during the Palaeozoic and Mesozoic periods. In these two belts, some minerals of economic importance are found. The largest limestone deposit of the state occurs in the Nimi formation (Government of Nagaland 1978).

(b) Relief Features:

The state of Nagaland, which was once submerged in the deep sea, has at present complicated structural and physical features and the formation of land mass may be correlative with the young fold mountains of the Alpine–Himalayan orogeny. As a result, its topography is similar to that of any other young mountain terrain featured with high hills, sharp ridges, deep gorges and narrow valleys. These hills are a continuation of the Burmese arc, which joins with the Sub-Himalayan ranges in the north. The ranges stretch in general from northeast to southwest. The altitude in the state ranges from approximately 110m in the comparatively plain areas bordering Assam to about 3,826m in the eastern high ranges. The state can broadly be divided into three main physiographic divisions as:

(i) the high hills situated in the east,

(ii) the lower hill ranges in the intermediate zone, and

(iii) the plains and the foothills in the extreme west and north-western side of the state.

The high hills in the east are parts of the Patkai Ranges. In the south, such high ranges form the Barail Range. Saramati is the highest peak in the state, lying near the Myanmar border (3,826m). The Barail Range enters the state at its southwest corner and runs in a north-eastern direction beyond Kohima to merge with the Patkai Range. The Japvo, which is the second highest peak, is located near Kohima and stands at an altitude of about 3,014m, followed by Kahu (2,841m), Paona (2,791m) and Kapamedzü (2,429m).

The foothills of the west increase altitude in its eastwards from 600m to 900m to form the high mountain ranges in the extreme east. In the outlying hilly tracts, there are a few valleys, especially along the western side of the state, which have an average altitude of about 300m. Of these river valleys, the important ones are the Ghaspani valley in Dimapur District, Jalukie valley in Kohima District, the Baghty, Bhandari and the Merapani valleys in Wokha District, the Lakhuni and Tzurang valleys in Mokokchung District and the Tiru valley or Tirupathar in Mon District. The rest of the region is hilly with only occasional small river valleys here and there.

Lastly, the hills of Nagaland rise from the plains of Assam. The plains in the west as well as in the north-west form the Dimapur plain, which starts from Chümukedima and merges into the plains of Golaghat district of Assam. Its area is about 150 sq. km, which is situated in the south-western part of the state in Dimapur District. The plain of Naginimora in the mid-west of the state starts from Borjan and

extends upto Dikhu River on the west. The area of this plain is about 50 sq. km. The Tizit plain located in the Mon District is about 75 sq. km in area.

(c) The Drainage Systems:

Topography of the state is hilly, breaks into a wide chaos of gorges, spurs and ridges, and also many streams and rivers draining through it (Fig-3.3). Many of these hill streams dry up during the winter season but roar down torrentially in the rainy season. The drainage systems in the state are composed of the following three:

(i) The Brahmaputra Drainage System: The Doyang River is the largest and longest in the state. It originates from the Barail Ranges and flowing northward through hairpin bends to open into the Dhansiri in Assam. The principal tributaries of this system are the Dzüü and the Sidzü in Kohima District. As the river turns west, its largest tributary the Rengmapani in Wokha District joins it. During the later stage, it suddenly turns westward and then debouches into the plains and, finally, falls into the Dhansiri River in the Assam plain.

The Dhansiri river rises in the southwest of the state and it flows westward and then takes a northwardly course forming a boundary between Nagaland and North Cachar Hills of Assam. It flows past the Rangapahar and Dimapur plains and then flows on northwardly until it falls into the Brahmaputra at Dhansirimukh. Some

Source: Census of India, Regional Divisions of India, Vol-XV, 1981.

Fig-3.3

important tributaries of this river inside Nagaland are the Intanki, the Taham and the Chathe rivers.

The Milak of Assam also known as Jhanzi in Nagaland is another important river in Mokokchung, which flows northward and, finally, turns westward in the plains of Assam. Dikhu rises from the northern flanks of the Nurato Mountain in Zunheboto flows a westward course into Mokokchung and flows northward forming a natural boundary between Mokokchung, Tuensang and Mon districts inhabited by the Ao, Sangtam, Phom and Konyak people respectively and, finally leaves for the plains near Naginimora. Nanung and Yango are its important tributaries.

(ii) The Barak Drainage System: The Barak River originates from the springs of Yumai village in the Mao-Naga area in Manipur, which does not fall within Nagaland. But it has many tributaries that flow within the state, of these the Tasanki and Sulen are the major streams. Also, there are many small tributaries that wash off the southern slope of the Barail Range falling within Nagaland.

(iii) The Chindwin Drainage System: The tributaries of the Chindwin river of Burma drain the south eastern part of Nagaland, which lies between the Patkai and the Barail ranges. Of these, the most important one is the Tizu, which first flows towards the south and then through successive right-angled turns reaches Myanmar. The Tizu is fed from

the north by the Zungki River and by the Laniye River from the east. The Tizu River forms an important drainage system in the eastern part of the state.

There are many spots of scenic beauty together with lakes and waterfalls in the state. The important natural lakes are Shiloi and Zaneibu in Phek District and Totsu Wozhu in Wokha District. There are some historical relics and tanks belonging to the old Kachari kings in Dimapur plains; named as Bongola Pukhuri, which is in the western part of the state adjacent to the Assam plains, there are swamps and marshy tracts.

During the rainy season, many small waterfalls appear in the state. Most of these are rapids and waterfalls occurring on the rock beds of unequal resistance. Similarly, a number of springs are also found in the foothills, which are the source of drinking water in many rural areas in the state.

(d) The Climate:

The climate of Nagaland is controlled by the seasonal winds as in other parts of the country. These seasonal winds are the South-west Monsoon and the North-east Monsoon winds. These winds are controlled by the tropical monsoon, which are adjusted with the local factors like altitude, location of the area, direction of the prevailing local wind and seasonal rhythms.

Average annual rainfall varies from 150cm to 280cm with a large variability in the temperature that varies from 0°C in winters to about 35°C in summers. Occasionally, extreme weather conditions may also be observed but only for a short duration.

(1) The Seasons:

In Nagaland, agriculture is the main occupation of the people and, therefore, seasonal changes in weather exert a great influence on economic life of the Nagas. Seasons are characterized by considering variation with monthly rainfall and temperature. On the basis of rainfall, temperature and wind velocity and direction, the climate of whole year is conveniently divided into the following four seasons:

i) Winter (Cold weather) season (December to February),

ii) Spring (Hot weather) season (March to May),

iii) Summer (Rainy) season (June to September), and

iv) Autumn (Retreating Monsoon) season (October to November).

(i) Winter Season: The cold weather season starts in the later parts of November or early in December. During these months, it is bracing with a clear and fine weather. Few drops of rains, low humidity and temperature are the normal features of this season. The mean temperature during this season varies from 8.4°C to 16.4°C. The atmospheric humidity becomes low (60% to 80%). Condensation of water vapour is

common with dense fogs sometimes lingering till late forenoon. Rainfall is at its lowest and this is usually the driest season. The winter is quite severe with minimum temperature coming down to 1°C in some places during the night. Sometimes, serenity of the weather is disturbed with occasional rains. Sometimes, showers of rain are accompanied with light storms.

(ii) Spring Season: By late February, temperature begins to rise and appreciable weather starts from March. Temperature rises quickly; the cold air changes into warm with fast decrease in the atmospheric pressure from high to low. Mean temperature of the period is recorded 17.3°C and the mean range of temperature is about 11.6°C. The relative humidity varies between 40% (in March) and 78% (in May). Occasionally, thunderstorms occur during this period, which give some rainfall and also sometimes hailstorms occur in March and April. The weather becomes pleasant and fine during this period. However, the air is polluted by the smoke produced from the jhum fields due to burning of jungle.

(iii) Summer Season: The South-West monsoon sets in by the last week of May or early parts of June and it continues till September. The people of Nagaland are basically agriculturist and so, the rhythmical character of the monsoon rainfall is significant to them as adequate rainfall is required for agricultural purposes.

During this season, the relative humidity goes up to 95% and as such it is rather damp during summer. In the foothills, the temperature varies from 30°C to 35°C, while, on the hills, it rises up to 25°C. The highest rainfall recorded during this season is mostly precipitated in the month of July and August. Violent local storms often occurs in the areas where humid winds from the Bay of Bengal meet the hot dry land winds and these storms are often accompanied by violent winds, hail and torrential rains. As a result of heavy downpour, severe land erosion occurs in the hilly regions of the state.

(iv) Autumn Season: Towards the end of September, the rainfall begins to decrease in its frequency as well as in quantity and also the temperature decreases. The cool winds begin to blow from the Patkai ranges, which lie to the east of the state. This wind gets mixed up with northeast monsoon winds and it brings down the temperature substantially in the eastern region and, thus, the autumn season sets in.

During the period, the temperature at Kohima varies from 24°C to 14°C. The mean relative humidity is recorded about 75%. Sometimes, during this season, temperature, relative humidity and pressure may change suddenly, causing local storms and light cyclones.

(2) The Climatic Phenomena:

Atmospheric temperature, air pressure, rainfall, sunshine humidity is major elements of climate, which are influenced by the relief features, and the location of the area under

study. The elements are inter related themselves and form a nature of weather, seasons and climate, which have direct bearings on the developmental activities and socio-economic conditions. The details of these climatic-elements are given below by comparing them with elevation.

(i) Temperature: The physiographic difference of the state controls the regional variation in temperature. Maximum temperature even in the hills may rise up to 25°C in July, while minimum may go down to 2°C in December. Whereas, in the plain area like Dimapur and foothill areas like Medziphema, Jalukie, Tuli and Tizit, the temperature is recorded higher. In these foothill areas, temperature goes up to 35°C in July and August. As it is evident from the temperature figures, Kohima, the capital of the state, is situated at an altitude of 1,444.12m experiences a maximum of 25°C and a minimum of 5.6°C in January, Jharnapani is situated at an altitude of 250m, it experiences a maximum temperature of 34°C. Whereas, Pfütsero is situated at an altitude of 2,133.60m, experiences a maximum of 23°C and a minimum temperature of 2°C in December (Table-3.1).

Table-3.1: Mean Monthly Temperature and Relative Humidity of Three Stations (1998 & 1999).

(A) Jharnapani (250m a s l)

Months	Temperature (°C)		Mean	Relative Humidity		Mean
	Maximum	Minimum		Maximum	Minimum	
January	23.5	9.0	16.2	97.5	77.5	87.5
February	29.2	9.5	19.3	99.9	69.0	84.5
March	31.0	11.7	21.3	91.0	53.0	72.0
April	35.5	18.0	26.7	95.0	56.0	75.5
May	33.1	20.6	26.8	95.0	71.5	83.2
June	33.7	24.0	28.8	96.0	76.5	86.2
July	32.2	24.6	28.4	96.5	77.0	86.7
August	33.0	25.2	29.1	96.0	88.5	92.5
September	32.1	23.2	27.6	99.0	80.5	89.7
October	30.8	22.3	26.5	99.0	80.5	89.7
November	28.1	17.1	22.6	99.0	69.5	84.2
December	26.1	11.2	18.6	97.5	77.0	87.2

(B) Kohima (1,444 m a s l)

Months	Temperature (°C)		Mean	Relative Humidity		Mean
	Maximum	Minimum		Maximum	Minimum	
January	18.2	5.6	11.9	85.0	40.0	62.5
February	20.2	7.3	13.7	83.0	32.0	57.5
March	22.3	9.7	16.0	84.0	31.0	57.5
April	24.9	13.3	19.1	86.5	29.5	58.0
May	24.6	16.5	20.6	94.0	43.5	68.7
June	26.1	18.9	22.5	96.0	64.5	80.2
July	25.2	19.4	22.3	95.0	76.0	85.5
August	25.4	18.9	22.1	93.5	67.5	80.5
September	25.3	17.6	21.4	93.0	65.5	79.2
October	24.3	15.3	19.8	94.0	64.0	79.0
November	21.8	14.2	18.0	87.5	55.0	71.2
December	14.9	7.9	11.4	86.0	46.5	66.2

(C) Pfütsero (2134 m a s l)

January	13.1	3.8	8.5	-	-	56
February	16.8	2.5	9.6	-	-	55
March	20.0	3.1	11.6	-	-	40
April	22.5	4.2	13.4	-	-	53
May	21.0	4.9	13.0	-	-	79
June	22.4	6.0	14.2	-	-	87
July	23.4	6.6	15.0	-	-	90
August	23.0	5.9	14.5	-	-	85
September	22.4	9.2	15.8	-	-	75
October	19.9	7.6	13.7	-	-	78
November	16.0	3.2	9.6	-	-	78
December	13.8	2.0	7.9	-	-	62

Sources: - Table No.3.1a - ICAR Research Station, Jharnapani, Nagaland.
Table No.3.1b & 3.1c - Directorate of Soil & Water Conservation, Governmet of Nagaland, Kohima.

(iii) Relative Humidity: The northerly winds and the southwest winds are mainly responsible for the seasonal variation. During winter season from the months of December to February, there is clear sky, fine weather, light northerly winds, less humidity and low temperature which are the normal features in the region. The months of March and April are also dry in the state. During these months, burning of jhum fields are common and low humidity is prevalent. In general, high humidity is observed in the plains and foothill areas where Jharnapani is located and less in the eastern mountain parts of the state. It means that the hills and mountain ranges are drier especially in the winters (Table-3.1).

Table-3.2: Monthly Rainfall of Three Stations in Nagaland (1999).

STATION:	JHARNAPANI			KOHIMA			PFUTSERO		
Months	Total Rainfall (mm)	No. of Days	Intensity (mm/ day)	Total Rainfall (mm)	No. of Days	Intensity (mm/ day)	Total Rainfall (mm)	No. of Days	Intensity (mm/day)
January	1.4	1	1.4	5.2	1	5.2	7.3	1	7.3
February	0.0	0	0.0	0.5	1	0.5	63.6	5	12.7
March	6.1	2	3.0	22.4	3	7.4	97.6	10	9.7
April	27.4	3	9.1	6.8	4	1.7	75.6	9	8.4
May	247.8	14	17.7	181.7	26	6.9	175.0	20	8.7
June	114.5	12	9.5	273.6	25	10.9	275.4	29	9.4
July	222.3	19	11.7	262.5	26	10.0	331.4	27	12.2
August	225.2	20	11.2	403.8	26	15.5	200.8	16	12.5
September	225.2	21	10.7	368.8	26	14.1	221.1	21	10.5
October	178.6	15	11.9	233.1	15	15.5	145.0	13	11.1
November	31.1	3	10.3	9.1	3	3.0	10.2	1	10.2
December	2.0	1	2.0	4.5	1	4.5	24.4	2	12.2
TOTAL	**1,281.6**	**111**	-	**1,767.5**	**157**	-	**1,902.4**	**154**	-

Sources: -ICAR Research complex for NE Region Jharnapani, Nagaland.
Govt. of Nagaland, Survey, Directorate of Soil & Water Conservation, Kohima.

(iv) The Rainfall: There is a significant areal variation in rainfall in Nagaland. The northern parts of the state receive comparatively more rain than its southern parts. The annual average rainfall in the state is recorded about 200cm with 150 rainy days. It shows that near about 5 months is rainy period, which generally starts from June and ends in October. Highest rainfall is experienced in the month of July and August.

The south-west monsoon sets in during the middle of June and continues up to the middle of September. During this period, the region receives more than 60% of its annual rainfall. In the month of August, the highest rainfall is recorded at Wokha, (i.e.; 1,108.5mm) but, in the same year, it was only 4.5mm in the same station in November. During winter season, December to February, weather is normally clear and rainfall is absent except occasionally. Thus in this region, practically two seasons, winter and summer dominate the whole year (Table-3.2).

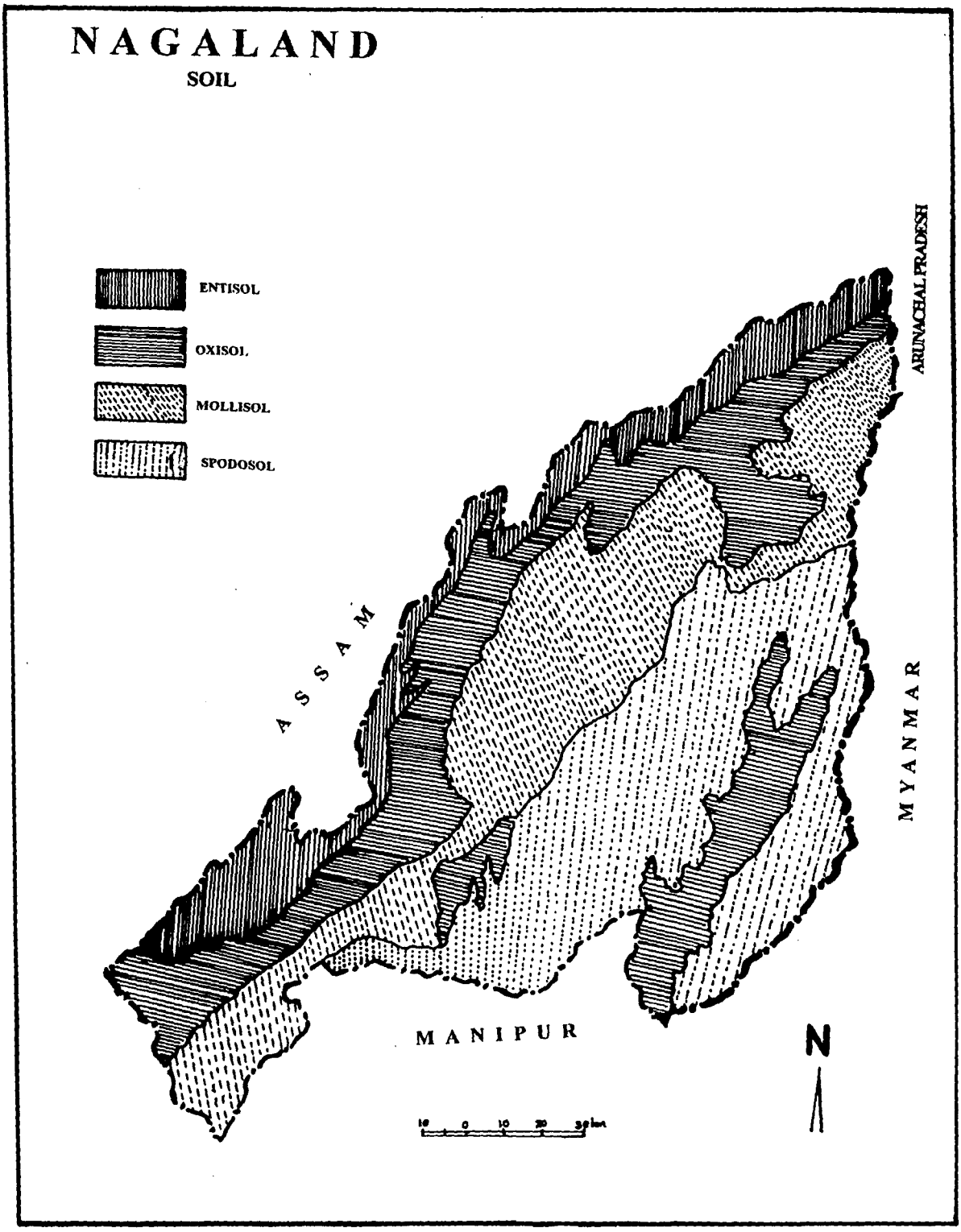
(e) The Soils:

The weathering processes acting upon geological structure of a region help in the formation of soils. Therefore, soil types are the result of climatic conditions and are composed of degraded geological material. The undulating topography and variation in altitude ranging from 250m to 3,300m has given rise to diversity in climate and vegetation within this small region. The various soil types of Nagaland are derived from tertiary rocks belonging to Barail and Disang series. The Barail consists of alternate layers of sandstones and shales with carboniferous intrusions or even coal seams. The underlying Disang series represent unfossiliferous shales, slates and phyllites.

River valleys and foothills are made up of alluvial and colluvial soils and, in the higher altitudes, it is mainly residual soils. On the hill slopes, the soils of the lower ranges are subjected to stronger weathering processes than those at high altitudes. The hill slopes of the temperate region are rich in organic matter, while the soils covered by pine forests do not exhibit much accumulation of organic matter. Soils are generally fertile and responsive to application of fertilizer. The soils of the state are acidic in nature and rich in Organic Carbon, Phosphate and Potash contents. The pH value ranges from 4.80 to 6.50, while the Organic Carbon content may be as high as 2.943%. The average Phosphate and Potash contents are 20 kg/ha and 120 kg/ha respectively. The soils of Nagaland have been tentatively grouped into 4 orders, namely: Entisol, Oxisol, Mollisol and Spodosol (Fig-3.4).

(i) Entisol: The alluvial soils existing in the valleys have been grouped under this order. It is further sub-grouped into recent and old alluvium and mountain valley soils. These are characterised by Ochric Epipedon, low Organic matter and lighter colour. The total area covered by this group of soil is about 2,241.8 sq. km (13.52%). This type of soil is found in the plains and adjoining areas of Assam (Fig-3.4). It is the most important group of soils useful for agriculture.

(ii) Oxisol: This group is constituted mainly by the non-laterised red soils of the foothills. The group covers an area of about 4,495.8 sq. km (27.12%). The sub surface horizon of this group of soils is characterised by low base exchange capacity, friable



Source: Soil Survey of India, Government of Nagaland, Kohima.

Fig.-3.4

and massive structure and accumulation of iron and aluminium. The soils of this group occur at the foothills and the lower ranges on the west, more or less up to an altitude of 750m from the sea level. These soils have a rain shadow belt and are predominantly under degraded grass and bamboo forests. This oxisol type is mostly found in the foothills running parallel along the borderlines with Assam and small pockets in the northeast of Kohima, and also in Meluri and Tuensang District at higher altitudes.

(iii) Mollisols: These soils are formed in cool and temperate regions, where temperate evergreen broadleaved rain forests are seen. It is characterised by a Mollic Epipedon, high organic matter and high base saturation. The sub-surface also has high base saturation, even much higher than that of Entisol and Oxisol soils. The area covered by this order is about 4,952.7 sq. km (29.87 %). This type of soil is found in the central parts of the state running parallel to the Oxisol type. It starts from Peren sub-division of Kohima District to Wokha, touching a part of Zunheboto and Mokokchung district areas and then to Mon district.

(iv) Spodosol: The soils of this order occur at higher altitudes, where temperate climate with coniferous vegetation is found. High cation exchange capacity and high base saturation are main characteristic features of this type of soil. The mean pH value recorded is 5.7. It contains about 1.804% of Organic Carbon with 54.3% of base saturation. The area covered by this order of soil is about 4,835.0 sq. km (29.16%),

which is dispersed in the southeast parts of Kohima and Phek districts and southern part of Zunheboto and Tuensang areas of the state.

(v) The Soil and Crops Relationship: Main food crop in Nagaland is paddy. It is well cultivated mainly in the Entisol areas where the pH value is comparatively less (mean 4.5). The cultivation of paddy is generally practised in the western part of the state where plains and open valleys with alluvial soils may be seen. In other parts of the state, rice is cultivated with the help of irrigation in the form of terrace cultivation. In the higher altitudes where the soils are of Mollisol and Spodosol orders and the pH value is comparatively higher, the jhum cultivation is a specific feature of agriculture. Other food crops are millets, yam, jobs tears, maize and pulses. In Mon district, where all the three types of soils – Entisol, Oxisol and Mollisol are found, yam and taro also constitute important food crops. Other crops such as potato, chilli, fruits, vegetables, mustard, sugarcane and soyabean etc. are also grown in many parts of the state irrespective of soil qualities.

(f) Flora / Vegetation:

Like other parts of the North Eastern region, Nagaland is also known for its diverse flora and fauna. The natural vegetation of the region within the monsoon belt varies with influence of the topographic features, altitudes and soils. Thus, a variety of flora species varying from the aquatic species to those growing on the higher altitudes are found in the state. It is evident from the accounts written by Master, a botanist, who

visited Nagaland in the year 1844 that the areas are an ideal home for many species of flora. It is also noted that some areas were once covered by thick evergreen vegetation. But continuous onslaughts by man, heavy exploitation and devastation caused by logging, burning of jungles have destroyed the natural vegetation to a great extend. Sharma (1978) stated that tribal economy is ultimately connected with forests. In Nagaland almost the entire population belongs to different Naga tribes and the land and its resources belong to either individual or the communities. Thus, in the absence of proper policies and because of the people's apathy, conservation of natural vegetation is neglected and the vast forests have dwindled considerably. Moreover, these problems have become more acute because of increasing of population pressure on land. A policy implication must be initiated towards the conservation of natural vegetation.

The legal status of forests and its distribution show that the role of villagers in the forest protection or depletions is obvious. More than 88% forestland belongs to the villagers in their own capacity or community forests (Table-3.3). Out of the total forests land of Nagaland, more than half of it is under virgin forests, which have been looked after by the villagers. It is noticed from the table that a quite significant share of forests is under degraded forest category (32.9%). It appears that there is a direct interference of human activities, which are degrading the forest areas in the state.

Table-3.3: Type of Forests in Nagaland (1999).

Sl.No.	**Legal Status of Forest Land**	**Forest Area (in ha)**	**% total Forest area**
1	(i) Reserved Forests (Original)	8,583	1.0
	(ii) Reserved Forests (Purchased)	19,247	2.2
2	Protected Forests	50,756	5.9
3	Wild Life Sanctuary	22,237	2.6
4	Village Forests:		
	(i) Virgin Forests	4,77,827	55.4
	(ii) Degraded Forests	2,84,280	32.9
	Total	**8,62,930**	**100.0**
Sl.No.	**Ownership of Forest Land**		
1	State owned	1,00,823	11.7
2	Cooperative	Nil	Nil
3	Private / Community	7,62,107	88.3
	Total	**8,62,930**	**100.0**
Sl.No.	**Composition**		
1	Coniferous	25,900	3.00
2	Non-Coniferous	7,61,195	88.21
3	Bamboo	75,835	8.79
	Total	**8,62,930**	**100.00**

Source: Department of Forests, Ecology & Environment and Wildlife, Government of Nagaland, (99)

Ownership of forestland is also an important aspect in this connection. Private as well as community owned forests ownership is prevalent. It is clear now that the policies towards protection of forest may only be initiated with the help of villagers. Further, it may be highlighted here that the villagers and forest are inseparable in this part of the country, that forest and forest products are very important for the people. So, the villagers are responsible for forest depletion as well as forest protection.

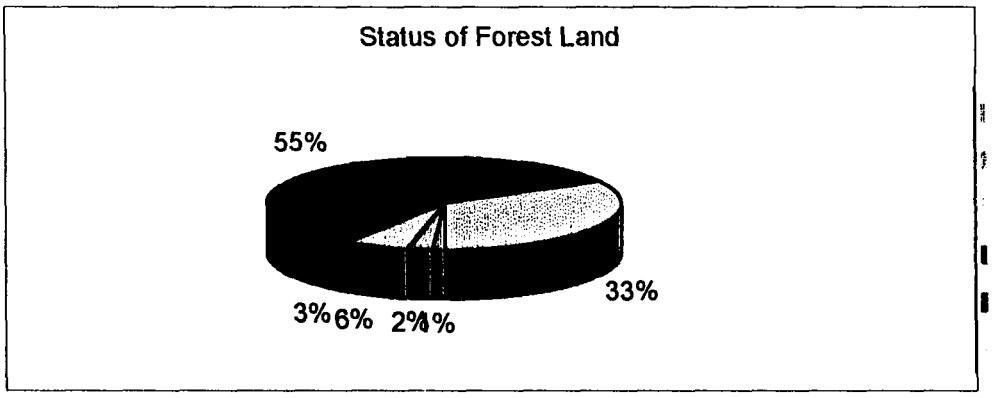


Fig-3.5.a: Type of Forests and its Legal Status in Nagaland.

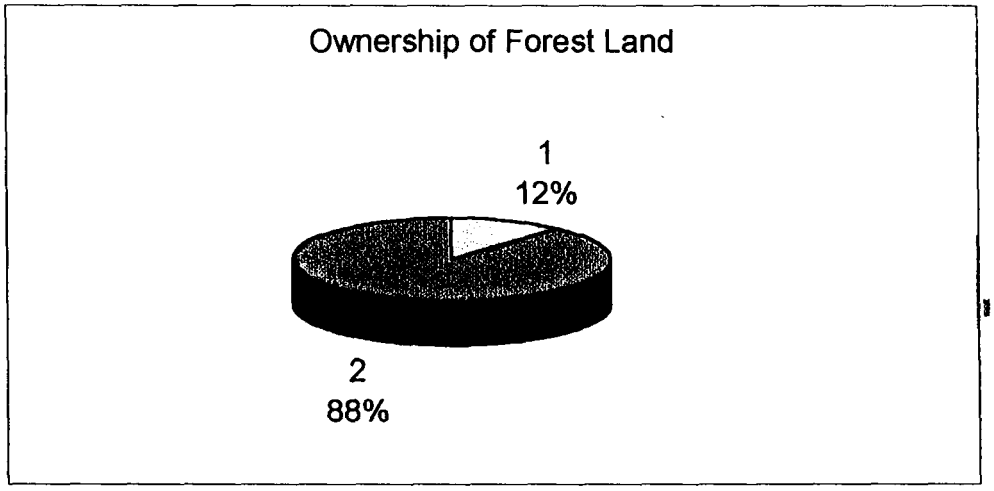


Fig-3.5.b: Ownership of Forest Land.

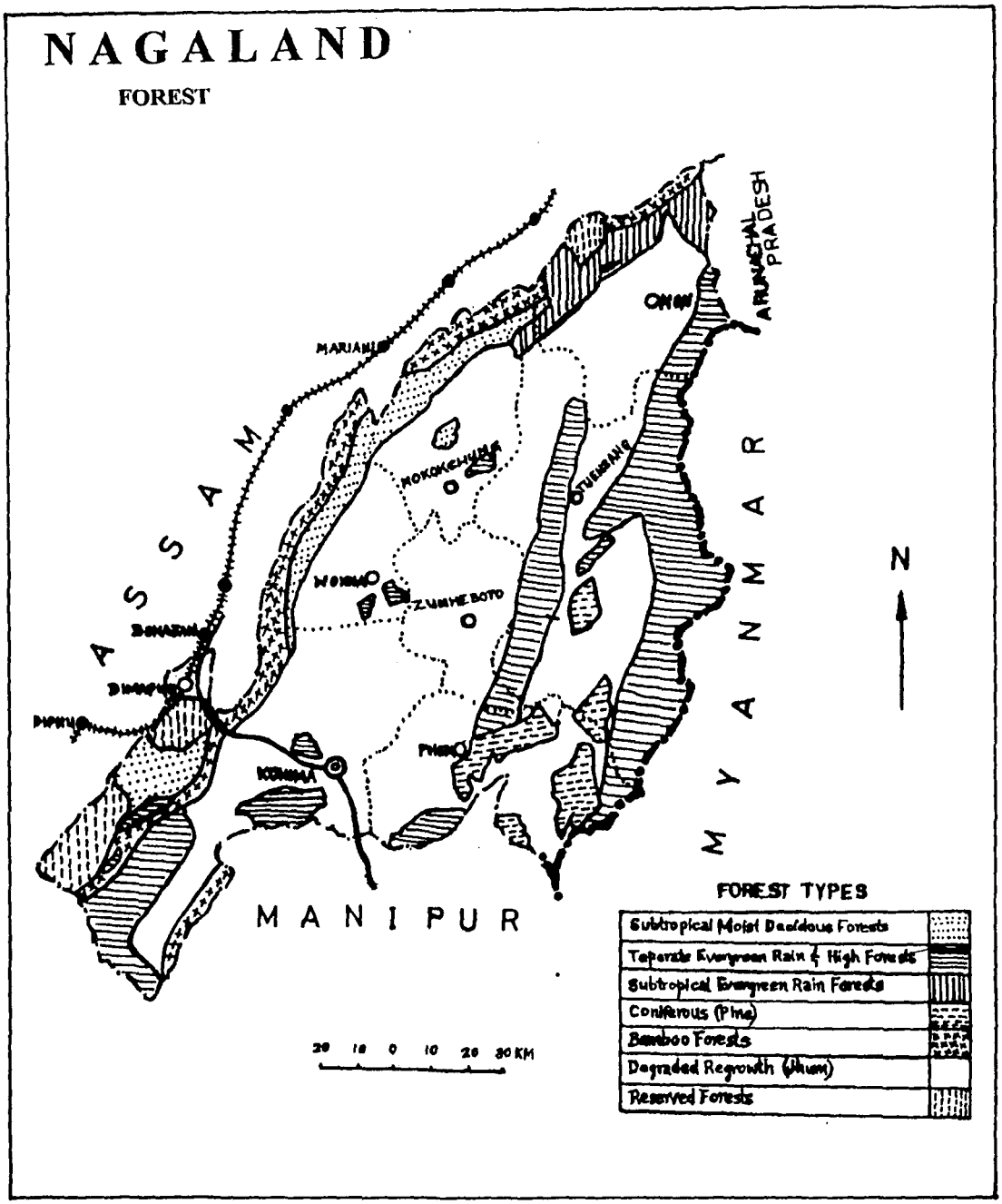
(i) Types of Natural Vegetation:

Nagaland has both evergreen and deciduous vegetation as determined by climate and pedological conditions. There are tall trees, shrubs and herbs. The deciduous types of grasses invariably dry up in winter. These vegetations differ from foothills to hills and

hills to high hilltops. Based on these conditions and characteristics, the natural vegetation of the state can be categorised into five types: (a) Northern tropical wet evergreen or sub-tropical evergreen rain forest, (b) Northern tropical semi evergreen forests or sub-tropical moist deciduous forest, (c) Northern sub-tropical broad-leafed wet hill forests, (d) Northern sub-tropical pine forests, and (e) Northern Mountain wet temperate forests. (Fig-3.6)

(a) Northern Tropical Wet Evergreen: This type of vegetation is found only in the north- western part of Mon district. It is important for lumbering, but now this type of forest is found only in the Zankam area of the district. The area is less undulating. There are many valuable trees in the region such as Badam (*Mansonia dipikai*), Dhuna (*Canarium resiniferum*), Hollong (*Dipterocarpus macrocarpus*) etc.

(b) Northern Tropical Semi Evergreen Forests: Such forests are found mainly in the foothills situated on the Assam-Nagaland border especially in Mokokchung, Wokha and Dimapur districts. The average rainfall in this zone is recorded at 180 - 200cm, while the mean annual temperature varies from 20°C to 25°C. The average altitude of the area is about 600m. The species composition makes it different from the previous with evergreen species dominating in the former and in the later it is the deciduous species. Some of the important species are Bhelu (*Tetrameles nudiflora*), Hollong (*Dipterocarpus macrocarpus*).



Source: Forest Department, Government of Nagaland, Kohima.

Fig-3.6

(c) Northern Sub-Tropical Broad Leafed Wet Hill Forests: These forests grow in altitudinal zone starting from 500m to 1,800m through out the state. Some of the important timber species are Koroi (*Schema Wallichi*), Khokon (*Chikrasia tabularis*), Poma (*Magnolia sp*), Gamari (*Terminalia myriocarpa*), Badam (*Mansonia dipikai*), Bhola (*Morus lavengata*), Hollock (*Artocarpus chaplasha*).

(d) Northern Sub-Tropical Pine Forests: The sub-tropical pine forests are found in the altitudinal zone staring from 1,000m to 1,500m, where most of the part of Phek and Tuensang districts are covered. The dominant tree in this area is *Pinus khasya.* However, the Quercus, *Schema wallichi,* Prunus, Betula and Rhododendron forests are also found in the area. These trees are tall evergreen coniferous with soft white stem and produce good quality timber.

(e) Northern Mountain Wet Temperate Forests: Such type of vegetation is found in the eastern parts of the state bordering Myanmar. A few small patches are also found in the south of Kohima and in Tenning areas of Peren sub-division. These forests cover the areas of most of hilltops and hill ranges in the state like Saramati and Japvo, etc. Some valuable trees of this group are Quercus, Michelia, Magnolia, Prunus, *Alnus Betula* etc.

(g) The Fauna:

Fauna of any region is of tremendous importance so far as the ecological balance is concerned. In Nagaland, there has been a rapid depletion in the wild life because of the illegal cutting of trees and burning of jungles. Besides, the government, which is responsible for the protection of wild animals, takes no policy measures.

Like other parts of the monsoon region, the common invertebrates found in the region belong to the categories such as: (i) Phylum Arthropoda - which consists of common insects like common fly, mosquito, bees, butterfly, mantis, shrimps, grasshopper, etc. (ii) Phylum Mollusca that includes snails and its various sub-species, and (iii) Phylum Annelida, which includes earthworm of various different varieties.

In small rivers, fish are found in different varieties. The rare fish varieties in the state are Boggra (*Channa punctatus*), Sareng (*Wallago attu*), Ngakra (*Clarias batrachus*) and Pengba (*Rohtee ootio*), cold fresh water fish like Trout, etc. Among the reptiles lizard, tortoise, boa constrictus, large size python, king cobra and some of the common poisonous snakes are found in the state. Common amphibians are frog and toads.

The avi-faunal species like fowl, kaleej pheasant, hornbill, black stork, common green pigeon, blue rock pigeon, spotted dove, great horn owl, woodpecker, etc. are common. The rare bird Tragopan is found in the higher altitude south of Kohima

(Japvo range and Dzükou valley). The state government has imposed a prohibition against killing and trapping of Blyth's Tragopan and is also successfully promoting captive breeding at Kohima Blyth's Breeding Centre.

Depletion of forests and the use of guns in the state have resulted in the reduction of wild animals all over the state. Bison and wild buffalos are found only in the Intanki area; elephants are found along the border with Assam in the plains of Nagaland. Among other wild animals, the large carnivores like leopard and tiger, the wild boar, barking deer, Himalayan black bear, wild goat, jackal, jungle cat, Indian porcupine, Royal Bengal tiger, wolf, fox, langur, rhesus monkey, flying squirrel, sloth bear, etc. are also found in the state.

3.3 Population and Demographic Features:

The population of Nagaland during the pre-British period is not known, as there is no written record on this account. Moreover, no villages in the past were ever under a constitutional government. The people only know that there were neighbouring villages and the towns in plain areas to where they travelled for days to buy some essential items such as salt, kerosene, etc. Even after the British rule started in the North East India, different parts of the present day Nagaland were annexed at different times. Therefore, no comparable population figures of the state covering a long period of time are available.

The British established Naga Hills District in 1866 at Samaguding (Chümukedima) at first, whose administrative jurisdiction covered the Angami villages, an area up to the watershed of Doyang in the east. Slowly other Naga areas were annexed to the district. During 1881, the general condition of the district was considered to be disturbed for census operation. Thus, the official census was taken in 1891 in the Naga Hills district for the first time in the history of the Nagas, even though it was partially operated. Since then, noticeable changes have been taken place in the state. The first census operation covering the entire area of Naga Hills district was conducted in 1961, after Tuensang and Mon sub-divisions were included to the district.

According to the first census operation done in 1891, the district's population was counted as 1,22,077 persons. According to 1901 census, it was recorded as 1,01,550 persons. The loss of 20,527 persons during the 1890s was mainly due to the adjustment of the boundaries of Naga Hills during that time under the British regime. At the time when Mokokchung area was brought under the political control (1,88,688), a good deal of the area on the plains, conforming the modern Borpathar area, Dhansiri valley and contiguous Karbi areas, towards the west were transferred to the then Sibsagar and Nowgong districts of Assam. The argument for this transfer was that the area lost was replaceable by the addition of the Mokokchung area. Further transfer of territory continued and in 1905 one part in the western portion, called Rengma Hills (which at present comprise the bulk of Karbi Anglong district) was taken away from Naga Hills (Ghosh 1982).

A) Growth Characteristics:

Population growth is a main attribute of demographic dimensions. It has been measured by using different methods such as (a) the simple growth rate of population (i.e., called linear growth in which the change is assumed at a constant rate), (b) the compound growth, where population increases in increasing trend and factor of population change overtime is considered for the measurement of growth, and (c) the exponential growth rate, when population increase is very fast over time and the rate coefficient and time variable are used as a 'power function' in it. The linear decadal growth rate measurement as used by Census of India has been adopted here for the assessment of population growth trend.

Secondly, the growth characteristics are only related to the analysis of general trend of population increase but also include the population composition. Changes in population composition alter the population trend and influence directly the population growth (Rao 1974, Siddiqui 1984). Therefore, the growth characteristics would be interpreted in relation to the general trend, male-female ratio, rural-urban share, density variations and the composition of tribal population in Nagaland.

(i) The General Trend: There is an alarming increase of population in the state of Nagaland especially after 1970, when it rose almost four times from 5.16 lakhs (1971) to 19.89 lakhs (2001). There was a slow growth of population prior to 1971. The decadal growth was recorded 6.55% in the 1920s and 6.04% in the 1940s; these were

the result of the Great World Wars, during these two periods of time, many Nagas were recruited in either Army or Labour Corps in both the wars. Then, during the 1950s, it was recorded 8.6%, the struggle for a separate sovereignty started in this period as a result, many volunteers went underground but gradually the decadal growth started picking up and it goes more than 50% during the 1980s and 1990s and was recorded the highest as 64.41% during the last decade of the century. There was an addition of about 7.8 lakhs people to the total 12.0 lakh population of the state during this decade (Table-3.4).

If the growth trends for the rural and urban population are compared, it is found that the growth trends have fluctuations. The rural population grew fast after 1951 when its record decadal growth of 67.6% during the 1960s. After that there is a gradual increase in the decadal growth from 32.86% during 1970s to 63.36% during the 1990s. However, three decades after independence (from 1951 to 1981) urbanisation took place in the state and the decadal growth of urban population was recorded more than 364% in the 1960s and more than 130% during the 1970s and 133% in the 1980s (Table-3.4). It means that the increase is because of its natural growth rate of about 4.0 to 6.3% annually. But the urbanisation took place due to migration of the outside population into the urban areas of the state.

(ii) Changes in Sex Ratio: The term sex ratio is commonly applied with reference to the proportion of women and men. This proportion is in terms of a given number of

women per 1000 men. Nature had intended that the strength of male and female members should be more or less equal.

There is a marginal increase of the sex ratio from 973 to 997 in the first four decades of the century (1901-1931), which shows a steady increase of both male and female population during the period under report. However, there was a fast increase in sex ratio during the 1930s. It means that the population of females exceeded that of the males. This was because of the tension built up during the Second World War. The fear of the Japanese invasion of this region led the outsiders (in-services and traders) to flee from this area, and also during this period thousands of male Nagas were recruited to the Volunteer Force (V-Force) and sent them to different parts. But after that there is gradual decline in the sex ratio, especially during the 1970s, 1980s and 1990s after independence because of immigration of male population at urban centres of the state.

(iii) Urbanisation: In 1901, there was only one small town in the state, which was Kohima (since the establishment of the Naga Hills District Headquarters in 1878) with a population of 3,093 persons. Even this small size urban population began to decrease and until 1961, it (Kohima) emerged to improve in the urban processes. When male workforce was in-migrated to the main town of the state, the process of urbanisation picked up with male dominated workforce after Nagaland attained her full-fledged statehood (Table-3.4). In 1961, Dimapur and Mokokchung were declared as urban

centres followed by Tuensang. In 1981, Wokha, Zunheboto and Mon district headquarters were added and then Phek district headquarter and Chumukedima town were added to the list. Although, these towns are administrative centres, they are also becoming commercial as well as educational centres for the people of the state. Likewise, there are many sub-divisional headquarters, which have civic amenities and basic infrastructures for health care, education and commercial services, which are coming up in the form of urban activities and can be declared as urban centre in the near futures.

The main reason for slow growth of urbanisation in the state is that Naga villages have their own traditional democratic independent administrative system in the villages, where the atmosphere is peaceful and full of festivities and time for merry making through out the year. This is one of the reasons why the people prefer to stay in the villages. There was lots of political turmoil in the state, which also contributed a major factor to the slow process of urbanisation.

Table-3.4 Growth of population in Nagaland (1901-2001).

Year	Total population	Decadal variation		Male population		Female population		Rural population		Urban population		Sex Ratio
		Total	Decadal variation (%)	Total	Decadal variation (%)	Total	Decadal variation (%)	Total	Decadal variation (%)	Total	Decadal variation (%)	
1901	1,01,550	...	...	51,471	...	50,077	...	98,457	...	3,093	...	973
1911	1,49,038	47,488	46.76	74,796	45.32	74,242	48.25	1,46,615	48.91	2,423	-21.66	993
1921	1,58,801	9,763	6.55	79,738	6.60	79,063	6.49	1,56,011	6.41	2,790	15.15	992
1931	1,78,844	20,043	12.62	89,536	12.28	89,308	12.95	1,76,085	12.87	2,790	0.0	997
1941	1,89,641	10,797	6.04	93,831	4.79	95,810	7.28	1,86,134	5.71	3,507	27.11	1021
1951	2,12,975	16,309	8.60	1,06,551	13.56	1,06,424	11.07	2,08,850	12.20	4,125	17.62	999
1961	3,69,200	28,975	14.07	1,91,027	79.28	1,78,173	67.42	3,50,043	67.60	19,157	364.41	933
1971	5,16,449	1,47,249	39.88	2,76,084	44.52	2,40,365	34.90	4,65,055	32.86	51,394	168.28	871
1981	7,74,930	2,58,481	50.05	4,15,910	50.64	3,59,020	49.36	6,54,696	40.78	1,20,234	133.95	863
1991	12,09,546	4,34,616	56.08	6,41,282	54.19	5,68,264	58.28	10,01,323	52.94	2,08,223	73.18	886
2001	19,88,636	7,79,090	64.41	10,41,686	62.43	9,46,950	66.64	16,35,815	63.36	3,52,821	69.44	909

Sources: (i) Statistical Handbook of Nagaland, Millenium Issue 2000
(ii) Census of India 2001, Nagaland, Kohima.

\# *In working out Decadal variation and percentage decade variation 1951 and 1961, population of Tuensang district has not been taken into account as the area was census for the first time in 1951.*

\# *1951 census of Tuensang recorded an area of 129.5 sq.km whereas 1961 census Tuensang district was increased to 5,356.1 sq. km.*

(iv) Population Density: The density of population means land-man-ratio. The fast growing population in the state resulted in an increase in the density of population. In 1961, there were 22 persons/ sq. km, which are increased to 120-persons/ sq. km. in 2001. The least density population in the country is Arunachal Pradesh with 13-persons/ sq. km and the highest is Delhi Union territory with a density of 9294-persons/ sq. km (2001), where as the all India average population density is 324-persons/sq. km. Unlike other parts of the country, the topographical situation in the state is undulating and more than fifty per cent of the area is not viable for settlement/agricultural operation due to its tragic conditions of the slopes. Hence, the increase in population density is a threat to the available resources in the state.

(v) Population Composition: The population of Nagaland is almost entirely tribal with distinct languages, costumes and cultural features. There are more than a dozen major tribes and nearly half a dozen sub-tribes in the state. Each tribe has its own dialect, dress, food habits, rites and rituals, festivals etc. An interesting social process of Nagaland is that some of the tribes living in a common territory are slowly amalgamating, while some others who earlier were identified as one tribe are breaking down to a couple of smaller tribes (Imnayongdang 1990). For example, *Pochuri* were formerly included in the *Chakhesang* tribe but now they identify themselves as separate group. And also, the three major groups of *Chakru, Khezha* and *Sangtam* living in the same territory in Phek district have now amalgamated into a major group called the *Chakhesang*. Many factors influence these social processes. The smaller groups that

assert their separate identity do so for political representation and economic gains in the state government welfare programmes. Of all the tribes and sub-tribes, *Ao* is the most numerous one, Mokokchung is the home of the *Aos, Semas* or *Sumi* are from Zunheboto district, *Konyaks* are from Mon district, *Chakhesangs* are from Phek district, *Angamis* are from Kohima along with the *Zealiang* and *Rengmas* in the same district. Wokha is the home of *Lotha,* and the *Sangtam, Phom, Chang, Yimchungre, Khiemmungan* are from Tuengsang district along with the sub-tribes of *Tikhir, Chirr* and *Makwares.*

There is mixed population of various tribes live in the Dimapur plain district at present, such as *Kukis, Kacharis, Garos* and *Mikiris* along with all the Naga tribes. There was a handful *Angami* village in the foot hills of the present Dimapur district, and were the first in contact with the British Expedition party, other tribes who had migrated in to the areas in recent time. There are more than 40 tribes and sub-tribes of Nagas living in the neighbouring states of Arunachal Pradesh, Assam, Manipur and even in northwest Myanmar.

Ao Naga tribe is in the majority and accounted for about 13.49% share of the total population, while *Makware* tribe shares only 0.08% to the total population in the state. There are also non-Naga tribes such as *Kuki* tribe, *Kachari, Garo* and *Karbi/Mikir* in the state in Dimapur district, which constituted a share of 2.44% of the total population (Table-3.5).

Table-3.5: Tribe-wise Composition of population in Nagaland.

Name of the tribes	Total population (1981 Census)	(in %)	Districts to which they belong
1. Ao	104,578	16.06	Mokokchung
2. Sema	95,312	14.64	Zunheboto
3. Konyak	83,651	12.85	Mon
4. Chakhesang	68,736*	10.56	Phek
5. Angami	62,555	9.61	Kohima
6. Lotha	58,030	8.91	Wokha
7. Sangtam	29,016	4.46	Tuensang
8. Phom	24,427	3.75	Tuensang
9. Chang	22,375	3.44	Tuensang
10. Yimchungru	22,054	3.39	Tuensang
11. Zeliang	21,085	3.24	Kohima
12. Khiemmungan	18,080	2.78	Tuensang
13. Rengma	15,313	2.35	Kohima
14. Tikhir	3,588	0.55	Tuensang
15. Chirr	1,560	0.24	Tuensang
16. Makware	612	0.09	Tuensang
Some non-Naga tribes in the state of Nagaland			
1. Kuki	9,837	1.51	
2. Kachari	7,212	1.11	
3. Garo	1,472	0.23	
4. Mikir	440	0.07	
Total	**6,50,885**	**100**	

* Chakhesang tribe is sub-divided into two, another sub-tribe called as Pochuri from Meluri area.
Source: Census of India (1981).

(B) Population Distribution and Spatial Variation in Growth:

The block-wise distribution of population in the state indicate an uneven distribution, some of the R.D. blocks like Medziphema have a total population of 82,473 persons (1991), where as the total population in Meluri R.D. block of Phek district has only 12,863 persons in the same period of time. But the uneven distribution of village covered under an R.D. block and size of population within the block may be because of

weak communication facilities and inaccessibility of the remote areas from the Block headquarters. Medziphema is in the foothill area near Dimapur plains. While, Meluri is in the hill area, three different tribes with indistinct dialect bounded the homeland of *Pochuris* and their area (Meluri R.D.block). The distribution of population of specific tribe in specific area creates unevenness in the population distribution (Table-3.6).

(i) Areal Variation in Decadal Growth: The decadal growth of population in the state varies from a slow growth rate of 4.76% in Phek block to as high as 163.37% in Longleng R.D. block. There are eleven R.D. blocks in the state, where their population growth rate exceeds to that of the state average (i.e., 36,075 persons in 1991). The decadal growth rate of population in Longleng R.D. block of Tuensang district is highest with 163.37% (1981-1991), followed by Kuhuboto R.D. block with 150.68%, where as Phek R.D. block have a decadal growth of only 4.76% in the same period. Both Longleng and Kuhuboto blocks are adjacent to the plains of Assam (Table 3.6), even though they are far apart from each other and have very high growth rate as 163.37% and 150.68%s respectively (Table-3.6). Kuhuboto is a newly established R. D. block and is occupied by mostly in migrants from the state as well as from outside Nagaland. Jalukie and Tseminyu blocks of Kohima district, Sitimi block of Tuensang district and Changtongya of Mokokchung District show more than 70% decadal growth (Fig.3.7). Only Phek, Akuluto and Noklak R.D. blocks have a decadal growth below the national level. The slow growth of population in Phek block is that it is near to Kohima, the capital of the state, where this urban centre serves all activities/ commercial/

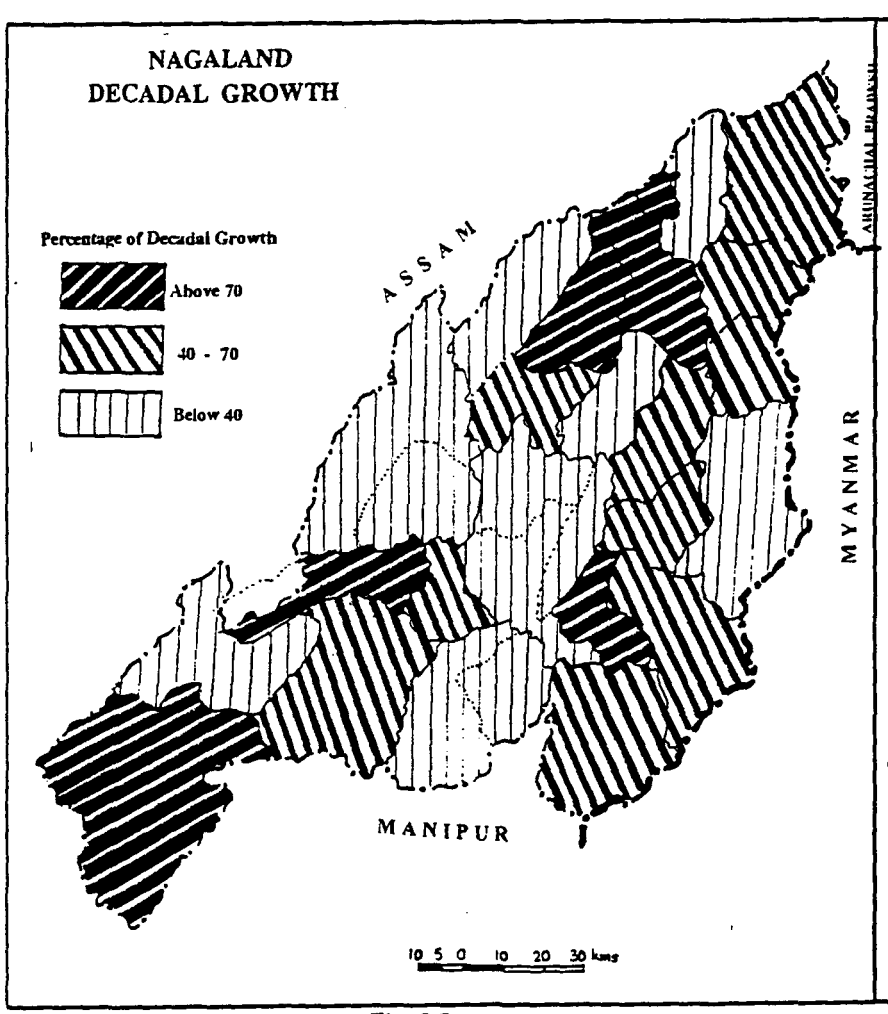

NAGALAND
DECADAL GROWTH
Percentage of Decadal Growth
Above 70
40 - 70
Below 40
ASSAM
ARUNACHAL PRADESH
MYANMAR
MANIPUR
10 5 0 10 20 30 kms

Fig.-3.7

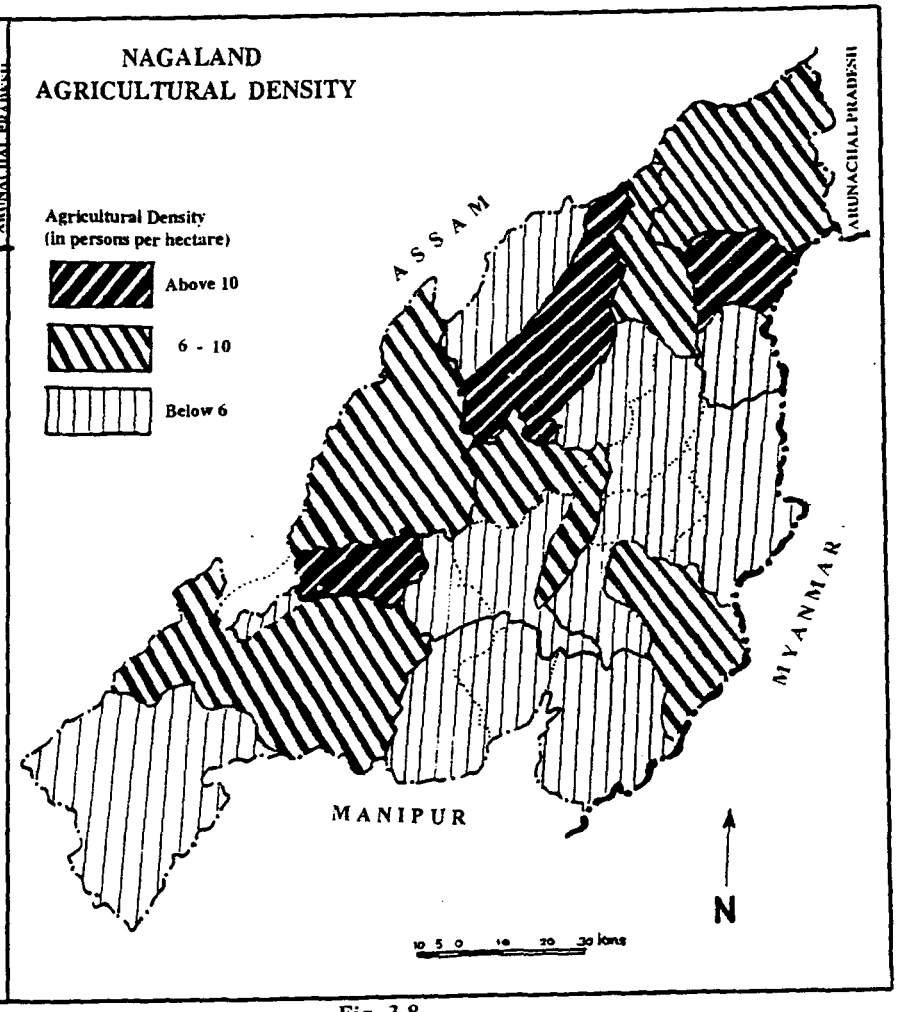

NAGALAND
AGRICULTURAL DENSITY
Agricultural Density
(in persons per hectare)
Above 10
6 - 10
Below 6
ASSAM
ARUNACHAL PRADESH
MYANMAR
MANIPUR
N
10 5 0 10 20 30 kms

Fig.-3.8

services. Hence, there is very little chance of immigration to this R.D. Block except natural growth of population. On the other hand, except Noklak block, all other blocks in the eastern sides of the state (Tuensang and Mon districts) all have a high growth rate (40% to 70%) and, incidentally, these areas are also low in literacy rate. Population increase in rural area is exceedingly high in the state as compared to the national level. The average decadal growth rate of the rural Nagaland is 56.30% (1981-1991).

(ii) Areal Variation in Agricultural Density: Agricultural density of the state is calculated dividing total population by the total cultivated area of the block. The figure of block-wise agricultural density shows that Changtongya R.D. block accommodates the highest with 47 person per hectare and the lower ones are recorded in density Sitimi and Mangkolemba R.D. blocks with 3 persons per hectare (Table-3.6). Changtongya, Onpankong, Chen and Tseminyu blocks have an agricultural density of more than 10 persons per hectare (Fig-3.8). The south-eastern parts of the state have shown a still low agriculture density population even lower than the state average that is calculated as 8 persons per hectare.

Table-3.6: Distribution of Population (1991) and Decadal Growth (1981-1991).

Name of the R.D. Blocks	Total Population	Decadal Growth Rate (1981 – 91)	Literacy Rate	Sex Ratio 1991	Agri. Density population / cultivated Area (in ha.)
1) Jalukie	56,511	83.32	51.36	903	5
2) Medziphema	82,473	31.08	52.87	835	6
3) Kuhuboto	38,296	150.68	42.19	909	5
4) Tseminyu	30,583	101.08	46.78	996	21
5) Kohima	71,118	50.36	57.16	940	6
6) Kikruma	66,670	38.86	50.65	920	5
7) Phek	14,257	4.76	47.20	900	4
8) Meluri	12,863	42.98	49.81	793	5
9) Baghty	36,926	37.78	58.34	919	9
10) Wokha	31,307	38.51	57.47	979	6
11) Ongpankong	38,000	46.32	64.16	934	13
12) Mangkolemba	30,915	36.65	69.00	904	3
13) Changtongya	64,656	72.23	66.46	951	47
14) Gathashi	17,750	56.27	54.91	964	4
15) Zunheboto	25,240	26.44	51.47	982	5
16) Akuluto	24,960	16.64	51.43	982	7
17) Tokiye	16,795	38.51	45.17	999	6
18) Longleng	67,703	163.37	40.63	867	8
19) Longkhim	27,951	30.32	45.28	935	5
20) Sangsangyu	19,229	49.39	38.15	937	5
21) Noklak	26,034	19.21	28.34	927	4
22) Kiphire	35,113	67.04	35.75	890	8
23) Sitimi	16,732	111.50	43.92	973	3
24) Shamator	19,126	53.34	31.98	966	5
25) Tobu	24,232	44.37	18.07	924	4
26) Chen	40,182	65.29	27.18	875	11
27) Wakching	17,675	36.98	42.01	859	6
28) Mon	56,820	63.14	27.60	890	8
State Average	**36,075**	**56.30**	**46.26**	**923**	**8**

Source: Census of India 1991, Nagaland

(iii) Areal Variation in Literacy Rate: Literacy rate in different blocks of the state shows that Mangkolemba, Changtongya and Ongpankong R.D. blocks of Mokokchung district have 69.00%, 66.46% and 64.16% (1991) respectively. Kohima (57.16%) and

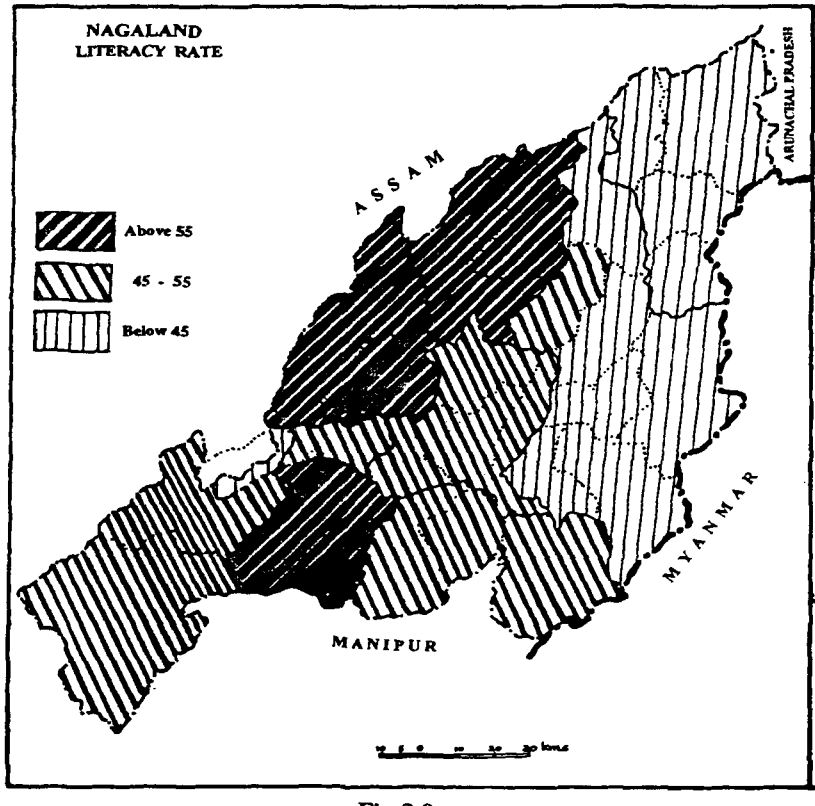


Fig-3.9

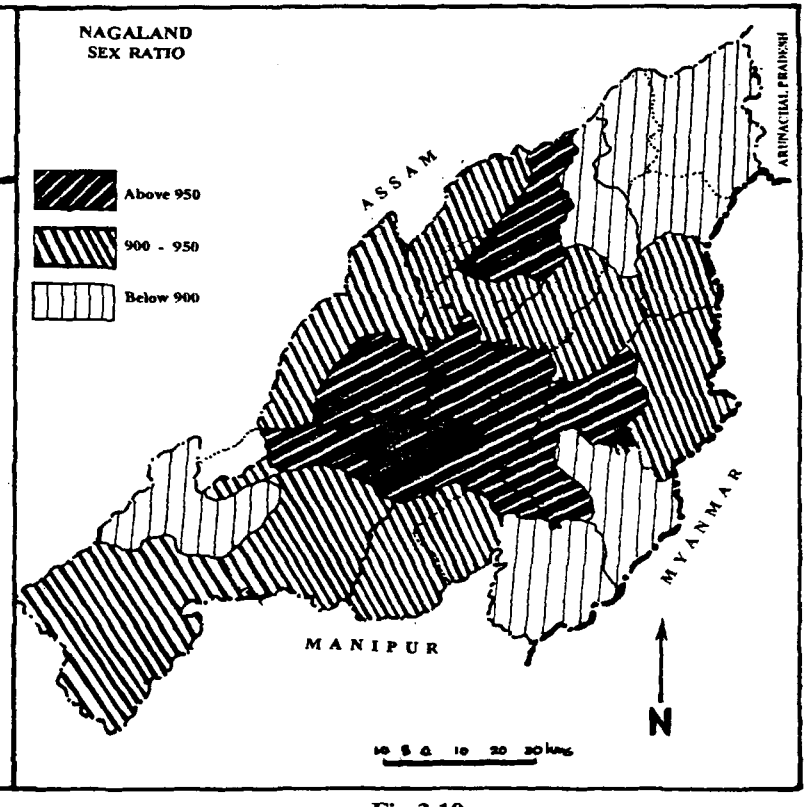


Fig-3.10

Wokha (57.47%) are neck to neck on the higher side of literacy rate (Table-3.6), where as Tobu R.D. block of Mon district has shown only 18.07% literacy rate in the same period of time. The figures indicate that literacy rate is still very low in the eastern part of the state bordering districts of Tuensang and Mon with Myanmar (Fig.-3.9), where all the blocks from these two districts are below the state average. The state average for rural literacy rate is 46.26%.

(vi) Areal Variation in Sex Ratio: Sex ratio of the state indicates that Tokiye, Zunheboto and Akuluto R.D. blocks have fairly higher with 999, 982 and 982 females per 1000 males respectively, Tseminyu of Kohima district with 996 per 1000 male. This is because of the out migration of male workforce, especially in Zunheboto district, where they are migrating towards Dimapur areas (Fig -3.10).

Meanwhile, Meluri of Phek district is least in sex ratio (i.e., 793 per 1000 male), which shows that female population is far less than their male counter parts, this may be because of females from this area have been migrating to some other parts of the state in search of jobs etc. There is also a possibility that the state own Cement Plant factory is located in this area, where female workers are least expected to be working in the plant and the labourers are imported to this area. Moreover, the presence of Army and BSF barracks are also added to it, as it is International Border area with Myanmar Security Forces are there.

3:4 Transformations in Economy:

As mentioned in the preceding chapter that Nagaland is moving towards a greater economic progress by utilizing its own available resources such as human as well as natural resources. Creation of infrastructural facilities is an important factor so far as economic development or transformation in economy of the state is concerned. These are still lagging in many areas of the state. However, it is looking ahead and anticipating all round progress for a faster growth of economy. Even though, the state attained its full-fledged statehood in the 1960's, the participation in the National Five Year Plans was fully involved from the Fourth Five Year Plan (1969-74) as because of the disturbed political situation at national level and also the insurgency problem within the state. The participation of the state in Third Five Year Plan (1961-66) and the consequence Annual plans (1967-69) was thus insignificance so far as economic development of the state is concerned. But, during the Fourth Plan, the funds were gradually allocated to the State for planned development in various sectors of the state and after that only the National Plans have some feed back to the economy of the State.

(a) State Net Domestic Product (SNDP):

State Net Domestic Product (SNDP) is an important indicator of level of economic development and progress in the State. It is presented by considering the total Net Domestic Product for 10 years (1985-86 to 1994-95) to understand the progress of the state. The effect of commodity prices and progress in relation to population are also given here by showing SNDP at constant and current prices (Table-3.7).

Table-3.7: State Net Domestic Products at Constant Price and the Per-capita SNDP.

Year	SNDP at Constant Price. (Rs. in crores).	Per capita SNDP at Constant Price (in Rs).	Per capita SNDP current price (in Rs).
1985-86	154 -	1654	2591
1986-87	171 (11.04)	1764	2781
1987-88	192 (12.28)	1907	3385
1988-89	206 (07.29)	1975	3706
1989-90	214 (03.88)	1980	4333
1990-91	238 (11.21)	1976	4990
1991-92	248 (04.20)	2006	5590
1992-93	283 (14.11)	2239	6273
1993-94	288 (01.77)	2170	7730
1994-95	306 (06.25)	2388	8550

Source: Basic Statistics of North Eastern Region, NEC, Shillong.

N.B: The figures in the second column, for the years 1985-86 to 1989-90 are based on the constant price at 1980-81, and the figures for 1990-91 to 1994-95 are based at a constant price of 1993-94.

A total SNDP was recorded Rs.154 crores in 1985-86 which rose to Rs.306 in 1994-95. It means that SNDP became double during the 10 years period of time. However, its annual increase is recorded faster in the early period (1985 to 1988) and slower during 1993 to 1994-95 as less than 10%. The year 1992-93 was recorded the highest increase in SNDP (14.11%). There is a gradual increase in per capita SNDP from Rs 1654 in 1985-86 to Rs 2388 in 1994-95 considering at the constant price of the commodities while per capita increase from Rs 2591 to 8550 was recorded when current prices of commodities were considered. The difference of per capita SNDP between the indexes of current and constant prices shows the effect of price fluctuations during the period of time considered (Table-3.7).

(b) Sectoral Contribution to SNDP:

Table-3.8: Net Domestic Product at Factor Cost by Industry of Origin at Current Price 1985-86 to 1994-95.

(Rs. in Lakhs)

Sl no	Sector/Industry	1985-86	1990-91	1994-95
A	**Primary Sector:**			
	1.Agriculture including Livestock	6,118 (23.43)	15,301 (23.07)	66,373 (21.69)
	2. Forestry & Logging	1,854 (7.10)	3,714 (5.6)	14,085 (4.60)
	3. Fishery (inland fish)	138 (0.53)	252 (0.37)	1,294 (0.42)
B	**Secondary Sector:**			
	4. Manufacturing			
	(i) Registered	184 (0.70)	1,545 (2.33)	2,606 (0.85)
	(ii) Unregistered	360 (1.38)	1,293 (1.94)	7,805 (2.55)
	5. Construction	5,153 (19.73)	5,284 (7.97)	25,618 (8.37)
	6. Electricity/Gas and Water supply	(-) 718 (-2.75)	(-) 75 (-0.11)	5,140 (1.68)
C	**Tertiary Sector:**			
	7. Transport & Commun.			
	(i) Railway	31 (0.1)	33 (0.05)	56 (1.15)
	(ii) Transport other means	276 (1.06)	3,047 (4.59)	49,070 (16.03)
	(iii) Communication	58 (0.22)	214 (0.32)	632 (0.17)
	8.Trade/Storage/Hostels /Restaurant	1,562 (5.98)	4,872 (7.34)	17,002 (4.56)
	9. Banking & Insurance	427 (1.63)	1,303 (1.96)	3,519 (0.94)
	10. Real Estate, ownership of Dwelling & Business service.	2,604 (9.97)	7,348 (11.08)	35,806 (11.7)
	11. Public Administration	4,596 (17.60)	12,697 (19.14)	50,246 (16.42)
	12. Other Services	3,472 (13.29)	9,428 (14.21)	26,825 (8.76)
	Grand Total	**26,115**	**66,331**	**306,077**

Source: Department of Economic & Statistics, Government of Nagaland, Kohima

The details of the sources of SNDP in the state would show the importance of the economy and their changing nature. Agriculture is the main source of income, which contributes about 23.43% to NDP in 1985-86, while the Public Administration and

other services (the Tertiary sectors of economy) are noticeable for their contribution towards NDP of the state (Table-3.8). The activities related to 'construction' accounted for 19.73% share to NDP in 1985-86, which was decreased to 7.97% (1990-91) and then rose to 8.37% (1994-95). There is a fast increasing share of transportation activities, which contributed only 1.06% to NDP in 1985-86 and 16.03% in 1994-95. It means that, in spite of many programmes implemented for agricultural development during early 1990's the share of agriculture shrinks marginally.

However, total amount of its contribution to NDP increased fast from Rs 6,118 lakhs to 66,373, lakhs during the same period of time. The State Government is boasting of the multi-fold production especially in the field of horticulture, floriculture and livestock production in the last five years time. Secondly, the fast increasing importance of infrastructure (transport) activities in the state is a fairly good indication of development.

3.5 Occupational Structure and Changes therein:

The occupational structure or the work-division of labour determines the socio-economic status of a society and workers involvement in the work. A worker is defined by the 1981 Census as a person whose main activity is participation in any economically productive work physically or mentally; works involve not only actual work but also effective supervision and direction of work.

Before analyzing changes in the occupational structure and its distributional pattern, the changing pattern of dependency (worker-non worker) ratio are to be interpreted because it is directly or indirectly linked with the occupational structure.

(a) Dependency Ratio: The 1961 Census, based on economic data and the involvement of work by individual person, classified into two different groups of people as worker and non-worker. The active group of population (18-59 years) is generally referred to the working group of population. The dependency ratio may be interpreted with reference to work participation of population in the state.

Nagaland is one of the states, which have fairly higher share of population in the work participation with 51.39% (1981) and 45.22% (1991). The all India level of main workers is 33.45% (1981), where Kerala state stood lowest at 26.68% in the same period of time (Census 1981 & 1991). There are varieties of reasons for the rise and decline in the work participation rates. Nagaland being a tribal state and the economy is primitive type of cultivation and labour intensive; both the sexes equally shared the work in their respective field. The division of labours as specialization in a particular work or trade does not arise. This is how work participation is high in the state. The overall figure of working population in Nagaland is recorded as 3,73,554 persons in 1981, which had been raised to 5,21,668 persons in 1991 with a decadal growth of 39.65%. During the 1980s, the percentage share of main

workers and marginal workers recorded a decrease and even most of the Blocks follow the decreasing trend. It means that the other segment of population (i.e., non-working force) has been increasing faster, which shows that the more number of children are being added to the population and the share of aged people is also increasing (Table-3.9).

The block-wise distribution of workers and non-workers indicates that Medziphema and Chantongya R.D. blocks have very low share of working population with 41.07% and 41.66% respectively in 1981, which again shrinks down to 37.16% and 37.5% respectively in 1991. It means that high dependent ratio in these blocks become higher than earlier (Fig-3.11a&b). The increasing burden of non-working population on the workers especially in Medziphema shows high profile of demographic transition in which the birth rate is higher with lower death rate. On the other hand, the extremely high percentage shares of working population in the state are recorded (as 67.24% and 62.25% respectively) in Tobu and Chen R.D. blocks in Mon districts, where low dependency ratio is revealed (Table-3.9). These two blocks are lying along the international boundary with Myanmar in the north-eastern side of the state. This International boundary is open, no fencing or demarcation, the imaginary boundary line passing through the middle of some villages in these areas. There is social affinity of the people in the area because people on Myanmar side are also belongs to the same Naga tribes mostly *Konyaks* in the upper and *Khiemmungam* on the lower side. The presence of migrant work force is there in these blocks. The presence of

servicemen from the Naga Home Guards and the Border Security Forces add to the higher share of work force population. However, there is faster increase in dependency ratio throughout.

Table-3.9: Dependency Ratio and Changes therein.

Sl. No	Name of R.D Blocks	Workers (%)	Non-Workers (%)	Dependency Ratio	Workers (%)	Non-Workers (%)	Dependency Ratio
		1981			1991		
1	Jalukie	50.80	49.19	0.9781	42.95	57.03	1.4474
2	Medziphema	41.07	58.19	1.4639	37.16	62.82	1.8985
3	Kuhoboto	57.31	42.55	0.7501	40.46	59.52	1.5563
4	Tseminyu	54.64	45.34	1.1569	42.41	57.60	1.3894
5	Kohima	54.30	45.69	1.1414	45.94	54.04	1.2035
6	Kikruma	53.34	46.56	0.8906	46.39	53.83	1.1765
7	Phek	50.74	49.24	0.9721	45.72	54.27	1.1869
8	Meluri	52.69	47.29	0.8980	47.78	52.21	1.0990
9	Baghty	46.12	54.24	1.1869	43.19	56.81	1.3156
10	Wokha	44.70	55.29	1.2551	41.06	58.65	1.4350
11	Ongpangkong	46.66	53.33	1.1626	40.77	59.22	1.4525
12	Mangkolemba	45.48	54.52	1.1991	45.71	54.29	1.1877
13	Changtongya	41.66	58.33	1.4244	37.50	62.90	1.6956
14	Ghathashi	50.44	49.55	0.9839	43.35	56.69	1.3090
15	Zunheboto	47.19	52.79	1.1370	44.10	56.50	1.2991
16	Akuluto	49.82	50.16	1.0303	46.33	54.63	1.2041
17	Tokiye	45.40	54.59	1.2025	45.41	54.58	1.2020
18	Longleng	48.93	51.06	1.0476	47.83	52.16	1.0903
19	Longkhim	45.35	54.63	1.2086	47.81	52.18	1.0713
20	Sangsangyu	49.47	50.59	1.0255	45.28	54.84	1.2209
21	Noklak	57.68	42.30	1.3627	49.28	50.71	1.0291
22	Kiphire	54.69	45.29	0.8288	43.77	56.22	1.2843
23	Sitimi	54.29	45.70	1.1877	45.51	54.48	1.1972
24	Shamator	52.38	47.61	0.9090	41.20	58.79	1.4275
25	Tobu	67.24	32.75	0.4872	62.29	37.70	0.6058
26	Chen	62.25	32.74	0.4951	54.42	45.57	0.8374
27	Wakching	49.79	50.19	1.0179	41.35	58.64	1.4186
28	Mon	59.39	40.59	0.6886	51.42	48.57	0.9446
State Average		**51.39**	**48.60**	**1.0389**	**45.22**	**54.83**	**1.2566**

Source: Census of India, Nagaland 1981 & 1991

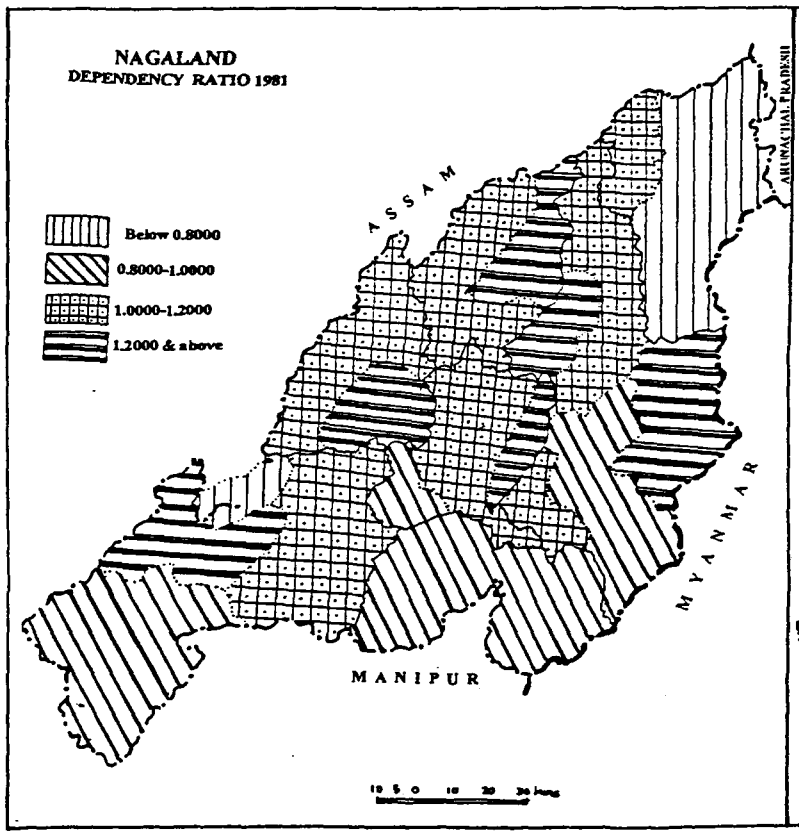


Fig-3.11(a)

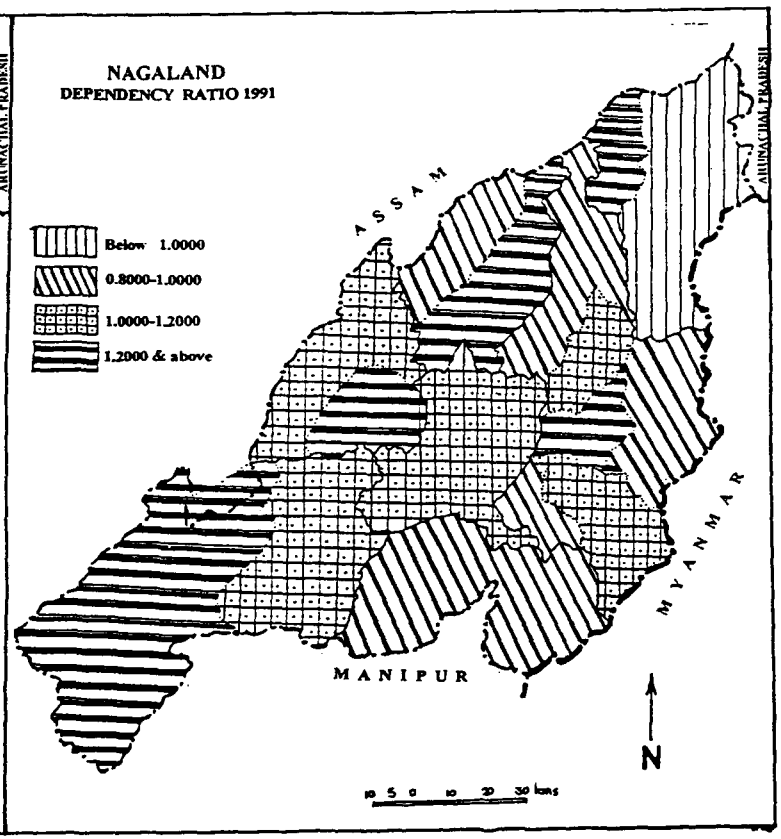


Fig-3.11(b)

It is indicated that almost all the blocks are on an increasing rate of dependency ratio; there are five blocks, which do not correspond with this increasing trend, are Noklak, Longkhim (in Tuensang district), Tokiye (Zunheboto), and Ongpangkong and Mangkolemba (Mokokchung district) (Table-3.9). There are three blocks in Mon district, which have dependency ratio lesser than unity (1991) and the rest of the blocks have more than one. The state average dependent ratio was 1.0389 recorded in 1981, which has been increased to 1.2566 in 1991. It means more children are added to the population.

(c) Occupational Changes: Working force is an indicator of development, which may be gauged through the study of occupational structure. It is also recorded an increase in the state during the 1980s. Going through the Block-wise figures of division of labour, it is obvious that there is a concentration of workforce in primary activities and it has been marginally increased from 82.645% (1981) to 84.45% (1991) (Table-3.10). In the Blocks, namely, Mon of Mon district, Chen, Sitimi, Longleng, Kuhoboto have more than 90% workforce concentration in primary activities. Therefore, major development processes are accelerated through the activities related to primary sector especially agricultural activities as also interpreted earlier.

There is also indication that some of the blocks are declining in its percentage from their primary activities, all together 12 RD blocks are shifting their

primary activities into secondary and tertiary activities, even though secondary and tertiary activities are being performed in its initial stage. The secondary activities are noticed negligible in the state. It means the workforce share engaged in industries (manufacturing and allied) is insignificant because the industrial sector is weak.

However, the overall percentage of secondary sector in 1981 was only 0.21%, which has been raised to 2.29% (1991). This is a good sign of transformation that workforce is shifting their occupations from agriculture into processing and manufacturing activities. The percentage in tertiary sector is declining but this is because of the rapid population increase and in the absence of heavy or medium industries, governmental service along cannot hold back the rising job seekers and population.

A balanced occupational structure and sectoral transformation of workforce to achieve the normative structure are major goals of rural development programme. It is observed that the more burdens of labour force are visualized towards primary sector with its stagnant conditions. The degree of sectoral transformation seems negligible because of weak operation of urban processes. It shows that the people living in urban areas, where tertiary sector dominates is changing their occupations from service to industries (cottage, as well as medium) through utilizing governmental loans

and investing their saving in establishing business and new industries. Medziphema, Changtongya and Baghty are main blocks, where such trends of occupational changes may be seen obviously (Table-3.10).

Table-3.10: Changes in Occupational Structure. (Figs. in percent)

Sl. No.	Name of R.D Blocks	Primary Activities (%)		Secondary Activities (%)		Tertiary Activities (%)	
		1981	1991	1981	1991	1981	1991
1	Jalukie	85.95	86.30	0.43	2.39	13.61	11.30
2	Medziphema	48.80	59.39	0.38	8.20	50.81	32.40
3	Kuhoboto	95.77	88.25	0.10	3.77	4.34	7.97
4	Tseminyu	84.49	91.06	0.88	1.65	14.61	7.86
5	Kohima	75.49	73.20	0.25	1.93	24.24	24.85
6	Kikruma	85.36	83.28	0.16	2.27	14.47	14.44
7	Phek	71.56	83.89	0.04	2.17	28.38	13.92
8	Meluri	71.84	70.56	0.12	3.73	28.04	25.70
9	Baghty	83.29	82.38	0.23	5.62	16.46	11.98
10	Wokha	86.14	82.95	0.21	2.54	13.64	15.18
11	Ongpangkong	74.64	82.08	0.08	1.85	25.19	16.03
12	Mangkolemba	81.10	84.79	0.57	2.04	18.32	13.16
13	Changtongya	78.72	79.95	0.41	6.38	20.86	13.66
14	Ghathashi	84.56	81.07	0.41	1.36	15.01	17.56
15	Zunheboto	82.90	84.68	0.11	0.91	16.97	14.40
16	Akuluto	84.75	82.18	0.38	1.81	14.85	16.00
17	Tokiye	87.48	85.11	0.12	2.07	12.38	12.80
18	Longleng	91.87	95.80	0.06	0.59	8.06	3.58
19	Longkhim	88.37	90.66	0.06	0.80	11.56	8.52
20	Sangsangyu	75.57	88.76	0.07	1.07	24.34	10.16
21	Noklak	86.29	85.60	0.08	0.72	13.61	13.67
22	Kiphire	84.36	84.56	0.06	0.72	15.55	14.70
23	Sitimi	92.85	90.82	--	0.57	7.14	8.60
24	Shamator	86.49	88.45	0.10	0.57	13.39	10.97
25	Tobu	89.44	93.02	0.05	0.56	10.49	6.40
26	Chen	92.80	92.60	0.08	0.57	7.11	7.36
27	Wakching	71.46	81.13	0.28	4.76	28.25	14.10
28	Mon	91.62	92.08	0.15	2.43	8.29	5.47
State Average		**82.64**	**84.45**	**0.21**	**2.29**	**17.14**	**13.31**

Source:Census of India, Nagaland, 1981-1991, Kohima.

3.6 Concluding Remarks:

Physiographic conditions of the study area and socio-economic organization of the people living there make an interesting case for study of the work pattern in the state. The nature of topography and other agro-climatic conditions are not suited for intensive agriculture. However, the people have responded to the difficult environment by adjusting themselves to the situation through shifting cultivation on the slopes or on terraces, and the settled cultivation wherever the topography permits it. In fact, agriculture is only oriented towards subsistence food production. Even though, the agrarian produce is inadequate to meet the demands of the population. The Nagas have traditionally depended on other natural resources to meet their requirements. It is also noted that, abundance of forest resources has been an important source of livelihood and work for most people.

The state is experiencing unprecedented growth in population during the last three decades. This factor provides challenges to the available land resources and its sustainability. The physiographic zones and the areal variation of demographic characteristics provide some important dimensions for accelerating planning processes in the state. The following conclusions may be drawn from the present discussion.

1) The areas of high population density on agricultural land with low population growth (i.e., not below national average) are concentrated in the foothill pockets of inter piedmonts where there is a dominance of primary sector of economy with its stagnant conditions. Low growth is recorded because of rural-to-urban migration of males in such areas.

2) On account of rural-to-urban migration of males in the central parts of piedmonts and foothills, the sex ratio is obviously recorded higher, more females per unit of males. On the other hand, the eastern most parts of the state of high mountains and international border have much lower sex ratio because of more military establishment for which young males are migrated.

3) The literacy rate is recorded higher in the western plains and foothills and lower in mountain area of the east because of inaccessibility of road and different terrain conditions.

4) Dependency ratio increases over time in the state with significant differences over space. It is because of fast increase of children population in demographic composition, which increases non-working populations and adds burden on workers.

In the end, it may be said that the interpretation of available infrastructure for rural development and its accessibility to the people living in village would be forward to understand its deficiencies and effectiveness.

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CHAPTER-IV

INFRASTRUCTURE FOR RURAL DEVELOPMENT

CHAPTER - IV

INFRASTRUCTURE FOR RURAL DEVELOPMENT

4.0 Introduction:

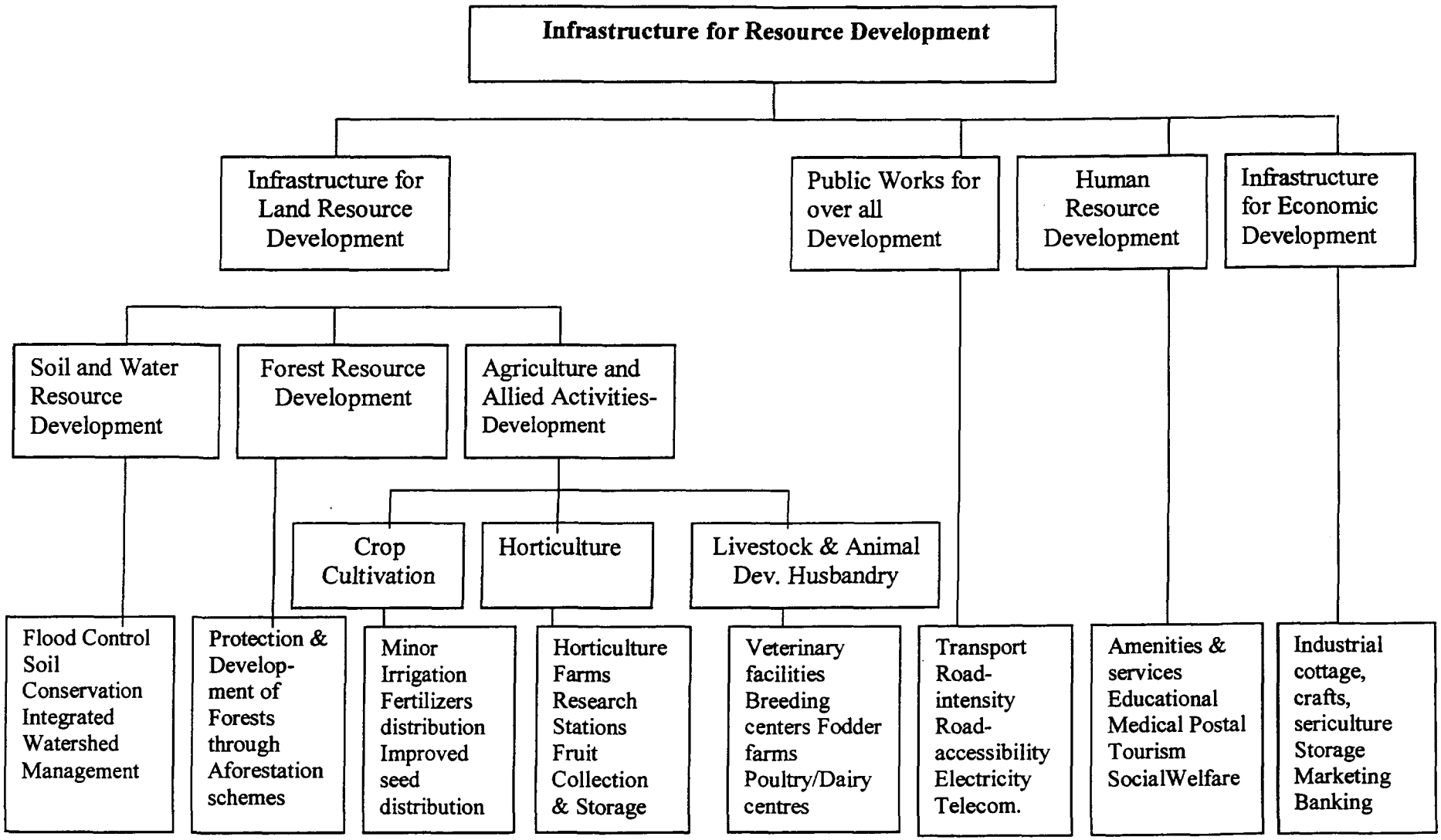
In the earlier Chapter, it was described that the economy of Nagaland is passing through the initial phase of development where majority of workers are engaged in the primary sector, while secondary and tertiary sectors are weak and developing in the form of urban centres. A common infrastructure for the well-balanced development of all sectors of economy and sustainable growth is required. As far as infra-structural facilities in the course of development are concerned, it is an absolute pre-requisite to growth. Hagen (1975) states that power-communication-transport-labour coefficients in production are fixed, in the secular course of development and without these facilities advance is throttled. It is true that economic growth is stagnant without proper infrastructures. Hoggart and Henry (1987), in dealing with local community for growth promotion, emphasize the presence of good infrastructure facilities for development that the smooth delivery service always keeps things ready for the next move.

Whereas Singh (1986) described about the inadequate infrastructure and even the lack of basic facilities and services in rural areas such as roads, safe drinking

water, electricity, schools, hospitals, police protection, transport and communication provide the basis of rural development. He further emphasizes that these public facilities and amenities are not only inadequate, but are very poorly organized and under-dependable in India. As a result, poor villagers are dammed generation after generation to poor education, poor health, unemployment and poverty. Improvement of such distressing situation requires intensive government intervention. Of course, government has already intervened by launching various development programmes to create and provide infra-structural facilities to the needy persons in lagging areas. Chambers (1983) views that villagers in developing societies are the last persons, they are socially, economically poor and ignored. They should be put unto the first priority, if any government tries to make policies for development.

Experts in Tamil Nadu carry out a study on agricultural development including information system and its flow to the rural areas, and have highlighted that lack of infrastructure in rural areas is the main factor, which slows down the process of development. The team recommends that there is need to strengthen infrastructure like education, health, communication, and marketing etc.

According to the World Development Report (1994), the infrastructure for overall development has been classified into four main groups of infrastructure elements and again sub-divided into various sub-groups (Fig-4.1). Second important aspect of balanced development of an area is the vocational characteristics and the



Source: S. Singh, A Resource Atlas for Arunachal Pradesh, Government of Arunachal Pradesh, 1999.

Fig.-4.1

distributional pattern of the elements of such infrastructure (Singh 1999). Movement of man, material and ideas from one place to another is the function of communication activities. In fact, socio-economic movement of ideas, goods, and of people by means, ranging from walking to telecommunication makes possible the specialization of location. Communication is the means of progress in modern development economics. Whether, it is physical or human communication, it plays a very important role in rural development (Srivastava 1992). Physical communication consists of roads, railways, shipping, aviation, and posts and telegraph. Human communication comprises mass communication, institutional communication and face-to-face communication (Sinha 1972).

With the growing economics, the political and social integration of rural localities into mass society and the improved infrastructure facilities and telecommunication have enhanced the homogenizing tendencies of popular culture, creating 'a planet reduced to village size' (Hoggart & Henry 1987). At the same time, the impact of television has also induced a reorientation in social linkages from horizontal to the vertical (Warren 1978), as the intra-local social ties (horizontal linkages) have been replaced with ties to the extra-local persons and institutions (vertical linkages). Many social analysts commented that social change in rural areas had largely comprised of replacement of the horizontal with the vertical. Another aspect of infrastructure is its accessibility, which is location specific. Location of a facility/amenity will determine its utilization. An optimal location of a facility/amenity

minimizes the distance between user and the facility and reduces the user's transport costs. A lot of literature is available on these locational aspects in which the accessibility criteria is used for spatial planning by Singh (1994), Campbell (1990) and various models for space partition was developed by Cooper (1963), Haggett (1977), Scott (1975) and O'Kelly (1986). On the basis of the locational aspects and accessibility of infra-structural elements, the available infrastructure for the development has been studied at district-level break up of collected data. The detailed analysis of available infrastructure for human resource development and overall development of the state is persuaded in the preceding sections.

4.1 Transport Network and Road Accessibility:

Optimal spatial organization of transport facilities plays an important role in the process of regional development over space. Transportation has become one of the most significant factors of development progress. Economic vitality of a region flows through the efficiency and facilities of a good transport network. Rural transport may be regarded as one of the main spatial interactions between the central places and numerous villages scattered within their perspective hinterlands (Singh 1964). It naturally links a centre point, markets and usually located at a junction and numerous villages scattered around them. But lack of surface roads and bridges is the main problem facing rural transportation in general. In our country, where one out of every three village, is more than five miles away from an improved road (Singh 1964).

The areal perspective of road distribution can be stated by preparing road intensity index which would reflect a realistic picture of utility and accessibility of road for use of the local people; this refers to the road length in relation to its areal extent. Hence, the higher the road intensity index, the greater is the degree of its accessibility and more is its utility for local people and *vice-versa* (Singh 1999). Development of roads has been recognized all over the world as a basic and important infrastructure for the development. Roads not only provide important link between rural and sub-urban areas of the country, but also connect the country with other international centres of trade and commerce (NEC 1985). While discussing about road and transport network planning for development, Singh's work on transport planning in Rohilkhand is worth mentioned (Singh 1988).

In the state, road is the only and main means of transport, which controls directly and indirectly the supply of materials, services and people mobility. The state is fully depended on the roads network. Railway line is connected only to Dimapur, where it touches a stretch of about 4.9 km within the state. While the National Highways serve as the main arteries, other types of roads are to be linked up, but in the absence of improved roads, market and industrial units are still lagging. According to administrative status of roads, they have been categorized as National Highways, State Highways, District roads and village roads. The N.H. 39 passes through Dimapur to Imphal via Kohima, stretching a total length of 110 kms within the state, and the N.H. 61 from Kohima to Amguri via Tseminyu, Wokha and Mokokchung covers a total

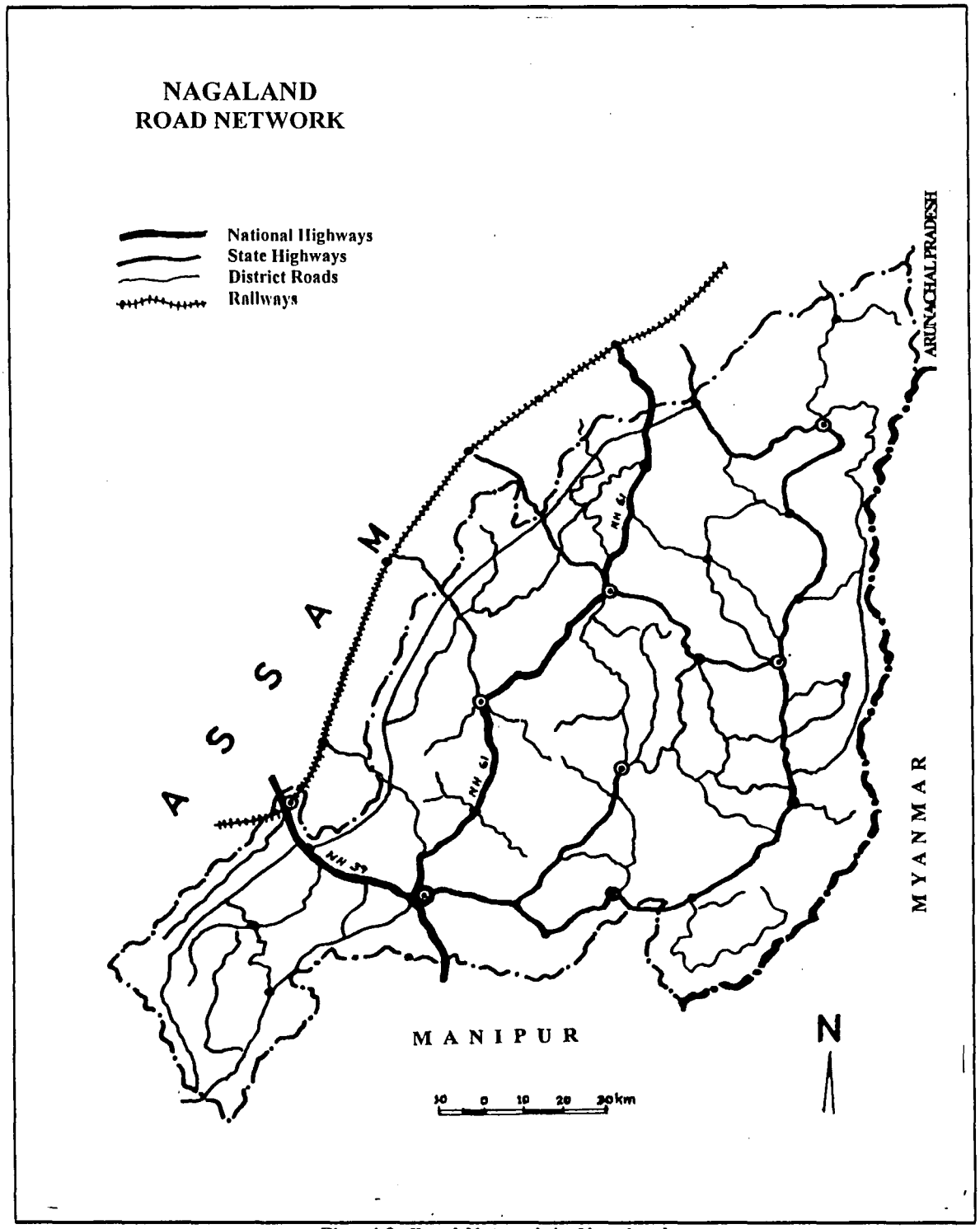


Fig.- 4.2: Road Network in Nagaland.

length of about 250 km (Fig- 4.2). Total road length in the state under the Public Works Department is about 9,859 km (1999-2000) of which 4,116 km is surfaced and 5,743 km is still unsurfaced. Thus, the road intensity of the state is 59.47 km per 100 sq. km (Table-4.1).

Table-4.1:District Wise Road Intensity of Road.

Districts	Total Area (in sq. kms.)	Total Road length (in km.)	Road Intensity (km per 100 sq.km)
Kohima	4041	1551	38.38
Mokokchung	1615	494	92.50
Tuensang	4228	2474	58.51
Phek	2026	1126	55.57
Mon	1786	1311	73.40
Wokha	1628	977	60.01
Zunheboto	1255	927	73.86
Total	**16,579**	**9,859**	**59.47**

Source: Department of Economics & Statistics, Govt. of Nagaland, Kohima.

Road accessibility refers to the distance of villages from pucca road. Classifying villages according to road accessibility classes, namely, connected villages (0 km), highly accessible (0-4 km), moderately accessible (4-8 km) and inaccessible (above 8 km distance from the surfaced/pucca road), the district-wise figures of accessibility categories are calculated. The following results of the distributional pattern of transport network are emerged.

(a) About one-third villages (28.87%) of the state are well connected with the surfaced/pucca roads. District Wokha has the lowest percentage of villages (12.38%) under this category as against the highest (42.85%) scored by Mokokchung and then followed by Mon (41.66%). The very low connectivity in Wokha district may be because it lies on the border with Assam, where border area disputes are frequent in this part of the state and the people are not much interested to improve the road connectivity, and also the NH-61 passes through the district from the two major urban centers of the state (Kohima to Mokokchung), where Wokha is located in its middle (Table-4.2, Fig-4.3).

(b) Highly accessible (0-4 km) areas have been recorded only nearly 15% villages of the state in which this percentage prevails in almost all the districts except Mon where a few villages have been classified in this category (Table-4.2). Mon villages are generally big in size. It is considered to be one of the least developed districts in the state. Road facilities were connected to the bigger villages and thus, 41.66% of the villages are well connected in the district but highly accessible villages or villages within 4 km distance are insignificance.

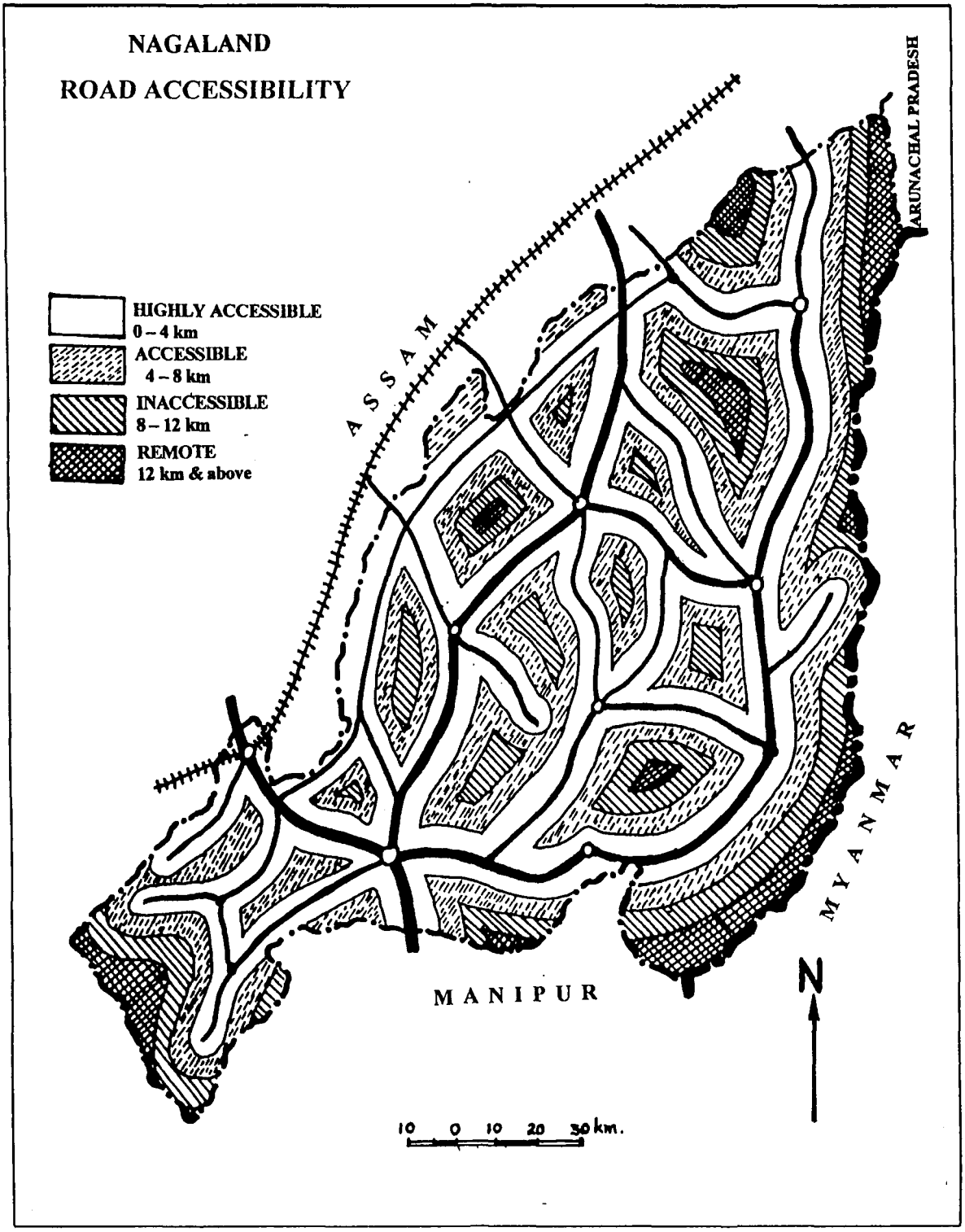


Fig.-4.3: Areas classified according to Road Accessibility.

Table-4.2: Road Accessibility.

Accessibility Class Distance in km	Kohima		Phek		Zunheboto		Wokha		Mokokchung		Tuensang		Mon		State average (%)
	No. of villages	%	No. of villages	%	No. of villages	%	No. of villages	%	No. of villages	%	No. of villages	%	No. of villages	%	
Well connected (0)	125	33.33	33	33.0	31	17.12	14	12.38	45	42.85	50	21.73	45	41.66	28.87
Highly accessible (0 - 2)	47	12.53	5	5.00	9	4.97	9	7.96	9	8.57	17	7.39	1	0.92	6.76
Moderately accessible (2 - 4)	36	9.60	8	8.00	11	6.07	11	9.73	9	8.57	17	7.39	0	0.0	7.05
Accessible (4 - 6)	45	12.00	3	3.00	14	7.73	5	4.42	10	9.52	14	6.08	1	0.92	6.23
Moderately inaccessible (6 - 8)	35	9.33	2	2.00	12	6.62	7	6.19	8	7.61	8	3.47	4	3.70	5.56
Highly inaccessible (8 - 10)	18	4.80	7	7.00	8	4.41	6	5.30	6	5.71	5	2.17	3	2.77	4.59
Remote (10 - 12)	11	2.93	3	3.00	5	2.76	3	2.65	1	0.95	9	3.91	4	3.70	2.84
Highly remote (12 - 14)	4	1.06	0	0.0	2	1.10	3	2.65	3	2.85	8	3.47	6	5.55	2.38
Extremely remote (14 & above)	57	15.20	39	39.0	89	49.17	55	48.67	14	13.33	112	48.69	41	37.96	36.00
Total	**375**	**100**	**100**	**100**	**181**	**100**	**113**	**100**	**105**	**100**	**230**	**100**	**108**	**100**	**100**

Source: Directorate of Economics and Statistics, Government of Nagaland, Kohima 1997.

(c) One-third area of the state falls under the category of highly remote (inaccessible), where pucca road is available only after a walk of 14 km. In such extremely low conditions of road connectivity, the pace of development is very slow. These areas are found in Eastern part of the state in Tuensang and Mon districts bordering with Myanmar, southwestern part of Peren sub-division in Kohima district, in the central part of the state in Zunheboto and western part of Wokha district. Topography is the main constraint to road-accessibility in these areas.

Though all the villages in the state have been connected with either pucca or village approach road (unsurfaced/kutccha road); the state being predominantly hilly, there are various constraints to the development of railways. Using of bullock carts as is used in plain areas, is also not advisable in the hilly terrain, deep gorges and streams. Foot-track and head loads are the only solution but for how long these people can go on like that situation with a dream of modernization. Road is the only possible alternative mode of transport, which may be intensified to connect the villages. Unlike in plain areas, villages in the state are scattered on hilltop and ranges, this makes it more difficult to connect the road facilities and it is very difficult to achieve the goal of cent percent road connectivity to the villages in the state.

4.2 Postal Services:

The network of postal service facilities is an organization controlled by the public sector, and the foremost aim of the postal services is to convey the private or public messages of various types from one location or individual to the other. Also, Post and Telegraph have been taken into consideration, that apart from their normal postal service, the Department also discharges certain agency functions like the work of postal saving bank, national saving certificate, postal life insurance etc. special scheme for women and children. Besides, telephone for public utility is also installed in some of the offices.

According to the State Directorate of Postal Services, there were 322 Post Offices and 864 nos. of letterboxes in the state in 1999 (Govt. of Nagaland, 2000). In this regard, an average area served by a Post office in the state is 51.48 sq km. Similarly; the population served by a Post office is 6,175 persons according to the statistics of 2001.

The distributional pattern and the service approach of Post Office are important aspects for the development of postal network. Accessibility of postal services based on distance between the location of post office and user's village would provide the basis of its effectiveness. Classifying villages into 9 categories based on accessible distance of the villages, the following distributional characteristics of postal services in the state are highlighted.

(a) The perfectly accessible villages, where post office is located in the village itself are noticed only in the 21% villages of the state. The percentage share varies from 7.73% in Zunheboto to 42.85% in Mokokchung. It means growing townships influence the distribution of P & T facilities (Table-4.3).

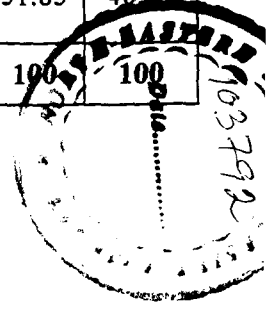
(b) The 60% villages of the state falls under highly to extremely high inaccessible categories in which the villagers will have to walk more than 8 km to avail postal facilities. The condition of extremely inaccessible areas is noticed especially in Mon, Tuensang and Zunheboto districts, which are far from the main township, where more number of P &T facilities are available.

It is found that postal services are concentrated towards the villages well connected with pucca roads and is yet to extend its services to a large number of villages in all the districts; only Mokokchung district shows better facilities than the other districts. When the world is going ahead with the latest information technology, somewhere, in some part of the world is still depending on the age-old system, and some are even yet to avail it. The state is mostly hilly and mountainous, villages are scattered and the problem of transportation has also added to the poor facility of postal infrastructure.

Table-4.3: Accessibility of Postal Service.

Accessibility Class Distance in km	Kohima		Phek		Zunheboto		Wokha		Mokokchung		Tuensang		Mon		State Average
	No. of villages	%	No. of villages	%	No. of villages	%	No. of villages	%	No. of villages	%	No. of villages	%	No. of villages	%	
Perfectly accessible (0)	50	13.33	28	28.0	14	7.73	14	12.38	45	42.85	49	21.3	29	26.85	21.78
Highly accessible (0 - 2)	30	8.00	6	6.0	7	3.86	9	7.96	9	8.57	14	6.08	1	0.92	5.91
Moderately accessible (2 -4)	28	7.46	6	6.0	8	4.41	11	9.73	9	8.57	9	3.91	2	1.85	5.99
Accessible (4 - 6)	34	9.06	7	7.0	19	10.49	5	4.42	10	9.52	14	6.08	3	2.77	7.04
Moderately inaccessible (6–8)	42	11.2	5	5.0	16	8.83	7	6.19	8	7.61	9	3.91	6	5.55	6.89
Highly inaccessible (8–10)	26	6.93	5	5.0	9	4.97	6	5.30	6	5.71	8	3.47	5	4.62	5.14
Extremely inaccessible (10 –12)	18	4.80	4	4.0	6	3.31	3	2.65	1	0.95	15	6.52	1	0.92	3.30
Extremely inaccessible (12 – 14)	16	4.26	0	0.0	3	1.65	3	2.65	3	2.85	12	5.21	5	4.62	3.03
Extremely inaccessible (14& above)	131	34.93	40	40.0	99	54.69	55	48.67	14	13.33	100	43.47	56	51.85	40.99
Total	**375**	**100**	**100**	**100**	**181**	**100**	**113**	**100**	**105**	**100**	**230**	**100**	**108**	**100**	**100**

Source: Directorate of Economics and Statistics, Government of Nagaland, Kohima 1997



Government has installed a Satellite Telephone and a Television set in each and every Village Council in the state during the early nineties. Recently, the Central Government has taken up a bold step on information technology (IT) to every doorstep for the North Eastern states that Community Information Centre (CIC) Project comprises of setting up of computer rooms in each and every Rural Development Blocks in all 487 R.D. blocks of the North Eastern Region. *

4.3 Financial Institutions (Banks):

In developing rural economy, finance plays a role like the lifeblood of trade, industry and commerce (Singh 1981). Smooth economic functioning of business, rapid economic development, and agricultural and small-scale industrial development are not possible without the availability of adequate finance. Credit facilities for agriculture development are the most essential one as far as modern agriculture is concerned. Capital is required not only for on-farm investment to improve the production apparatus and to provide various farm inputs and services, but also for the arrangement of infrastructure facilities such as power, roads, transportation, communication, markets, storage, education, training, extension and so on. The state is largely an agricultural dependent population; even-though the area does not have much scope for mechanical farming, because of its hilly terrain. Horticulture farming and cash crops farming have good potential in the state, so also does animals and birds farming. The International Conference on Financing and Development emphasizes on the good governance on

* The Guardian, Vol XII (No. 216), Shillong,

finance at all levels as it is essential for sustained economic growth, poverty eradication and sustainable development worldwide (The Telegraph 2002).

The financial institutions are also a major source of investment under various rural development programmes. The lending of institutional credit is being supplemented by the government subsidies to the beneficiaries at the grass root level. These financial institutions are delivering good services to the villages in the state, and as per the Village Development Board (VDB) record, each and every VDB has kept a fixed deposit of rupees one lakh to rupees two lakhs fifty thousand in the banks of their respective districts. There are 71 Commercial Banks in the state, out of which 32 Banks are located in Kohima and Dimapur (RBI 1999). Bank facility is far too low compared to the requirement of the population because one bank branch covers 28 thousand people in the state. Some of the salient features of the distribution of bank facilities are presented below.

(a) In all the districts, bank facilities are poor and inaccessible to the villagers. In Kohima district, only 14.66% of the villages have accessible to banking facilities within 4 km distance. More than 50% are in a distance of 14 or more km away from the nearest bank. It means that the bank facilities are concentrated only in a few centers, which are located along the roadside.

(b) The State average reveals that only 17.12% of the villages is within 4 km distance, where as 57.78% are still at a distance of 14 or more km away from the nearest bank. The highest accessible areas (within 4 km) are recorded 25% in Peek district, 20.33% in Wokha and 19.98% in Mokokchung, which are enumerated as higher percentage than the state average. Though, all the villages are maintaining their bank accounts through Village Development Boards, individual persons may not be aware of the financial facilities, loan system etc. for economic development.

(c) The bank accessibility is infect very poor in all the districts of the state. More than two-third number of villages falls under the categories of extremely inaccessible and remote location, which is more than 10 km from the bank (Table-4.4). Thus, bank facilities are concentrated only at a few points, which may be because of insecurity due to the insurgency problems and the topographical hindrances.

Role of financial institutions in providing increased financial support to the farmers, small-scale industries, cottage industries, craftsmen etc. in the state is of prime importance for setting up new units/up gradation/modernizing of the existing activities. The limited facilities of this institution are also a fact, which is due to insecure situations in the whole of the Northeastern region, as it is infested with insurgent activities. However, government can provide adequate security to these institutions, and bank facilities must be provided to the interior areas of the region for a balance development of the nation.

4.4 Educational Institutions:

Education is one of the important factors that enriches human resources in achieving a desired quality of life and helps also in determining the human occupation and income levels, and measuring the socio-economic development of the society (Parik 1967). This fact has also been revealed from various studies on the problem of education and economic development undertaken for the developing regions of the South and South-East Asia, by Haq (1965) and Latin America by Robertson (1974). An optimal spatial distribution of education and its facilities is a very significant factor in a balanced development of a region; it has a key role as they provide a distinctive social environment (Srivastava & Siddique 1981). Lener, in his studies of a Turkish village, finds that the literates are more mobile than their illiterate co-villagers, who are firmly home rooted in their villages. This has shown a clear picture among the literates and

illiterates that the illiterates do not want to change the old habits of their life, and also they are not keen on adopting the new technologies and practices.

Education is the single most important input in supply of manpower both in terms of quantity and quality. It creates awareness and adaptability towards new changes and the process of modernization. Education plays a crucial role in economic development and social modernization (Yogi 1991). Education determines human occupation and income which together reflect the general economic status of a community where the educational, occupational and income levels are generally low with the low economic status. Inequality in income and wealth is positively correlated with educational development in the country (Hagen 1975).

Education is helpful in reducing poverty for rural people who can use it to get better work/higher income, natural or physical assets or work yielding more, if one is educated (IFAD 2001). As stated above, education is important in overall development of the society. Spatial distribution of educational facilities would provide a sound base of space-efficiencies and accessibility parameters of educational facilities of the state. It would help in understanding economic planning and manpower planning of the area.

As per the records of the School Education Department, there are 1,675 Government Primary Schools, 1,301 Middle Schools, 249 Government High Schools and 4 Higher Secondary Schools and also a large number of private schools as 1,468

Table-4.5: Accessibility to High School Education.

Accessibility Class Distance in km	Kohima		Phek		Zunheboto		Wokha		Mokokchung		Tuensang		Mon		State Average
	No. of villages	%	No. of villages	%	No. of villages	%	No. of villages	%	No. of villages	%	No. of villages	%	No. of villages	%	
Village having high School facility (0)	87	23.2	40	40.0	53	29.28	21	18.58	55	52.38	108	46.95	41	37.96	35.48
Highly accessible (0 - 2)	51	13.6	23	23.0	8	4.41	14	12.38	17	16.19	8	3.47	1	0.92	10.56
Accessible (2 - 4)	59	15.73	4	4.0	5	2.76	15	13.27	14	13.33	8	3.47	5	4.62	8.17
Moderately accessible (4 - 6)	46	12.26	0	0.0	11	6.07	9	7.96	9	8.57	8	3.47	4	3.70	6.00
Highly accessible (6 - 8)	34	9.06	0	0.0	17	9.39	10	8.84	3	2.85	8	3.47	5	4.62	5.46
Highly inacc-essible (8 - 10)	21	5.60	4	4.0	3	1.65	5	4.42	3	2.85	9	3.91	6	5.55	3.99
Extremely inacc-essible (10-12)	16	4.26	1	1.0	3	1.65	5	4.42	0	0.0	12	5.21	6	5.55	3.15
Remote (12 - 14)	12	3.20	1	1.0	1	0.55	2	1.76	0	0.0	6	2.60	11	10.18	2.75
Highly Remote (14 & above)	49	13.06	27	27.0	64	35.35	32	28.3	4	3.80	53	23.04	29	26.85	22.48
*					16	8.83					10	4.34			
Total	**375**	**100**	**100**	**100**	**181**	**100**	**113**	**100**	**105**	**100**	**230**	**100**	**108**	**100**	**100**

* Distance not available

Source: Directorate of Economics and Statistics, Government of Nagaland, Kohima 1997

4.5 Medical Facilities and their Locational Characteristics:

Health is an important input for human beings; it fulfils the basic welfare need and also indirectly contributes to the efficiency of regional labour force. It is a fact that the individual's health contributes to higher productivity and economic development, which, in turn, provides them with higher wages and better prospects for good health (Singh 1995). Thus, societal development largely depends on the health facilities. Census of India (1971) stated that the expenditure on improving the health of a nation is regarded as a good investment yielding indirect return in increased efficiency and productivity.

According to the International Fund for Agricultural Development (IFAD 2001), human health assets comprise bodily and mental characteristics promoting longevity with full functioning and resistance to (or rapid recovery from) illness and injury. Thus, health is the primary essential input for a person to be productive and prosperous.

Most of medical facilities are concentrated in urban centers. Out of many medical officers and staffs, hardly 25% of hospital beds and 34% of the doctors are available in rural areas, where more than 80% of our population lives. Major portion of the expenditure on health services marked for curative services is predominantly incurred in the urban areas. They are accessible to the more privileged sections of the society (Banerjee, 1974).

Table-4.6: Medical Facilities and their Locational Characters.

Accessibility Class Distance in km	Kohima		Phek		Zunheboto		Wokha		Mokokchung		Tuensang		Mon		State Average
	No. of villages	%	No. of villages	%	No. of villages	%	No. of villages	%	No. of villages	%	No. of villages	%	No. of villages	%	
Available at village (0)	63	16.8	15	15.0	19	10.49	18	15.92	72	68.57	58	25.21	21	19.44	24.49
Highly Accessible (0 - 2)	13	3.46	2	2.0	8	4.41	10	8.84	3	2.85	11	4.78	1	0.92	5.95
Accessible (2 - 4)	29	7.73	0	0.0	9	4.97	11	9.73	8	7.61	11	4.78	1	0.92	5.10
Less accessible (4 - 6)	25	6.66	1	1.0	14	7.73	4	3.53	8	7.61	8	3.47	5	4.62	4.94
Moderately inaccessible (6 - 8)	23	6.13	1	1.0	16	8.83	6	5.30	3	3.85	10	4.34	7	6.48	5.13
Highly inaccessible (8 - 10)	25	6.66	2	2.0	7	3.86	5	4.42	3	3.85	13	5.65	7	6.48	4.70
Remote (10 - 12)	22	5.86	0	0.0	7	3.86	6	5.30	1	0.95	9	3.91	5	4.62	3.50
Highly Remote (12 - 14)	8	2.13	1	1.0	4	2.20	3	2.65	1	0.95	7	3.04	8	7.40	2.76
Extremely remote (14 & above)	87	23.20	43	43.0	88	48.61	50	44.24	6	5.71	98	42.60	53	49.07	36.63
*	80	21.33	35	35.0	9	4.97					4	1.73			9.00
Total	**375**	**100**	**100**	**100**	**181**	**100**	**113**	**100**	**105**	**100**	**230**	**100**	**108**	**100**	**100**

* Distance not available.

Source: Directorate of Economics and Statistics, Government of Nagaland, Kohima 1997.

It may be said here that they are unevenly distributed and are not accessible to the people living in remote areas. The distribution of these services is highly influenced by the road network and road connectivity. The villages located along the roadside have the advantage of these services.

4.6 Concluding Remarks:

Distributional pattern and locational characteristics of infrastructural facilities/ services for the development created in the state of Nagaland reveal the following features,

(i) According to a criterion given by the Government of India for optimizing the service pattern, the state of Nagaland needs more number of health, postal and bank service centres (Table-4.2 to Table-4.6). It is obvious to say that there is need of intensification of these services for their efficient use and welfare of society.

(ii) There are concentrated patterns of almost all the services (Postal, Health, and Bank) accept educational and they are highly influenced by the intensity and connectivity of road network.

(iii) Districts of Mokokchung and Kohima are more exposed to urban taste and are served by these facilities and are able to provide better services to the remote areas. The conditions in Zunheboto and Tuensang districts are deplorable,

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CHAPTER-V

HISTORICAL BACKGROUND OF RURAL DEVELOPMENT

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5.0 Introduction:

Rural Development, as such is not a new topic to the developing countries, because many developing nations have been practising and promoting rural development for decades and of course many of them have achieved significant success in their efforts especially in education, health care and family welfare, poverty eradication, self-employment generation, farm management and production, rural technologies and so on and so forth.

The historical background of any activity or programme provides its genesis, which may direct the authorities for its effective implementation in future. Many programmes of rural development were conceived and implemented for the development of Indian society and most of them failed because of either their inappropriate objectives or wrong implementation. These programmes could not provide the full benefits to the society. Therefore, the changing theme of rural development and its associated schemes, which have been implemented by the Central

Government and Nagaland Government for the upheaval of socio-economic status of the people of the state, should be viewed critically here to understand the salient features of rural development schemes implemented for the state.

5.1 Rural Reconstruction Works in India:

In India, the work of rural reconstruction may be traced back to the middle of nineteenth century. Several eminent persons have contributed their might for rural development. It is necessary to know about their past attempts, which have given the present shape of rural development programmes. A historical account may give a clear understanding of the dynamics of the programmes and changes, which have occurred over the period. Rambhai (1959) Pandey (1967) categorised the activities of rural reconstruction works into three well-marked periods.

(i) The British Rule (1858 – 1919),

(ii) The Experimental Period (1920 – 1950), and

(iii) The Post-Independent Period to the present day.

5.2 Rural Reconstruction during British Rule (1858-1919):

British government took over the governance of India from a trading company called the East India Company in 1858, after the first attempt to gain Independence by the Indians in 1857 called the Sepoy Mutiny. The basic British policy in India was governing political philosophy of Great Britain and was not concerned with the socio-

economic development of the people. But the British government could not adhere to such a policy for long; it was the famine in India, which forced the British Indian Government to think about the people of India. The frequent recurrence of famines forced the state administrative machinery to seize the food grain stocks and make arrangements for the distribution among the famine-affected people. All this was done without any apparent legal sanction, motivated as the action purely was by determination to control profiteering and to alleviate rural suffering.

As Mishra (1983) says, 'Rural development, thus, began as a humanitarian act, and the practice was not backed by any executive or legal sanction in the beginning. Legality and legitimacy were provided later. Rural development as a function to government initially began as a search for an alternative to 'laissez-faire'.

In 1866 as well as 1880, the Famine Commission proposed a separate department of agriculture in the government. It was Lord Curzon who was Viceroy of India, during 1901–05, whose efforts succeeded in establishing department of agriculture at provincial levels. The Northwest province (at present Uttar Pradesh) was the first province to set up an Agriculture department and a Central Agricultural Research Institute at Pusa (Bihar). This was followed by the Indian Agriculture Service, which was constituted in 1906. Even though the colonial primary objective was on trade, rural development was a by-product of colonial economy plus welfare.

5.3 The Period of Experiments and Rural Reconstruction (1920-1950):

The period of experimental (or the National Movement period) is marked by various experiences on rural reconstruction works tested by the nationalists and social reformers. The Non-Cooperation movement, started by Mahatma Gandhi in 1920, was the first political attempt in India to mobilise the villagers and ruralise the politics. The non-cooperation resolution was passed by the Congress in its Calcutta session of September 1920, articulated the approach to rural development by recommending hand spinning in every house and hand weaving which was an ancient and honourable practice of the people. *Khadi* became India's freedom dress, and its adoption by the Congress was the first genuine organised concern for the rural poor and the spinning wheel economy adopted by the Mahatma was the first popular exercise for rural development in India. Besides, promotion of rural industries, eradication of untouchables, provision of basic and adult education, women's upliftment and propagation of the national language were some of the main programmes started during this period. Soon, Sevagram and Wardha, where these ideas were translating into action, became household words in India for upholding a vision of the future.

The new wave of 'back to the village' movement quickly spread far and wide and a spurt in voluntary activities in the field of rural development occurred. Rabindra Nath Tagore set up the Sriniketan Institute of Rural Reconstruction in 1921 with the aim of making the rural population self reliant and self-respectful (Sriniketan Bulletin 1946). In the same year, the Martandam experiment was started under the

leadership of Dr. Spencer Hatch of Young Men Christian Association being about a complete upward development towards a more complete and meaningful life for rural people, spiritually, mentally, physically, socially and economically (Randhawa 1951). Mr. F.L. Brayne, the district Collector of Gurgaon, started an experiment of rural reconstruction in 1927 based on the virtue of hard work, thrift, self respect, self control, self help, mutual help and mutual respect (Brayne 1946).

In 1932, the princely state of Baroda launched a broad based programme of rural amelioration to promote the will to live better and a capacity for self-help and self-reliance. The Firka Development Scheme of Madras government launched the programme in 1946 based on Gandhian rural reconstruction approach. After independence near about 7,000 displaced persons were rehabilitated in Nilokheri town, S.K. Dey, former Minister for Community Development and Cooperation was the moving spirit behind this project, the scheme was also called as *Mazdoor Manzil.*

In 1948, Mr. Albert Mayer conceived a development programme for the rural areas of Etawah district. The project aimed at an over all development of the area productivity, social improvement as well as initiative, self-confidence and cooperation (Mayer 1957). The problem was to ascertain how quickly these results may be attained and remain permanently a part of the people's mental, spiritual, technical equipment and outlook after the special pressure is lifted. This project had paid off the investment

in terms of physical benefits as well as it brought about non-tangible improvements of real values.

5.4 The Post-Independence Period (1950-onward):

The rural concern of the government thus by no means entirely absent under colonial rule, but it was only after the country's independence that rural development acquired a high level of priority. The dominant philosophy of our constitution is justice in the social, economic and political walks of life. Gandhiji was emphatic about rural India and because of his intervention, local self-government had found place in the Directive Principles of the state policy and rural reconstruction drawn the attention of central government and acquired a high level of priority in the Five Year Plans. The various programmes of rural development adopted by the government under our various Five Year Plans are presented in Table-5.1.

Different rural development programmes were launched at different times in various Five Year Plans. Many of these programmes were planned and implemented due to the necessity of the situation that had arisen in the country. At the same time, many programmes were also launched due to the political interest of the country's ruling parties. However, whatever programmes came in the name of rural development were implemented by the concerned authorities and agencies for the up-liftment of the rural people in the country.

Table-5.1: Plan Period-wise Rural Development Programmes:

Plan Period	Programmes	Year of Introduction
First Five Year Plan	1. Community Development Programme 2. National Extension Service	1952 1953
Second Five Year Plan	3. Khadi and Village Industries Programme. 4. Village Housing Project Scheme 5. Multipurpose Tribal Development Blocks Programme 6. Package Programme 7. Intensive Agricultural District Programme.	1957 1957 1959 1960 1960
Third Five Year Plan	8. Applied Nutrition Programme 9. Rural Industries Project 10. Intensive Agriculture Area Programme 11. High Yielding Variety Programme	1962 1962 1964 1966
Annual Plan, 1967. Annual Plan, 1968 Annual Plan, 1968	12. Farmer's Training and Education Programme 1966. 13. Well-Construction Programme 14. Rural Work Programme (RWP) 15. Tribal Development Block 16. Rural Manpower Programme 17. Composite Programme for women and Pre-School Children.	1966 1966 1967 1968 1969 1969
Fourth Five Year Plan	18. Drought Prone Area Programme 19. Crash Scheme for Rural Employment 20. Small Farmer Development Agency 21. Tribal Area Development Programme 22. Pilot Projects for Tribal Development 23. Pilot Intensive Rural Employment Programme 24. Minimum Needs Programme 25. Command Area Development Programme	1970 1971 1971 1972 1972 1972 1972 1974
Fifth Five Year Plan	26. Hill Area Development Programme 27. Special Livestock Production Programme 28. Food for Work Programme 29. Desert Development Programme 30. Whole Village Development Programme 31. Training of Rural Youth for Self Employment 32. Integrated Rural Development Programme	1975 1975 1977 1977 1979 1979 1979
Sixth Five Year Plan	33. National Rural Employment Programme 34. Prime Minister's New 20-Points Programme 35. Rural Landless Employment Guarantee Programme (RLEGP) 36. Development of Women and Children in Rural Areas	1980 1980 1983 1983
Seventh Five Year Plan	37. Integrated Rural Energy Planning Programme 38. Special Livestock Breeding Programme (SLBP)	1985 1986
Eight Five Year Plan	39. Jawahar Rozgar Yoyana 40. Prime Minister's Rozgar Yojana (PMRY) 41. Employment Assurance Scheme (EAS)	1989 1993 1993
Ninth Five Year Plan	42. Basic Minimum Service (BMS) 43. Swarnjayanti Gram Swarozgar Yojana (SGSY) 44. Jawahar Gram Samridhi Yojana (JGSY) 45. Swajaldhara (Rural Sanitation & Drinking Water)	1996 1998 1998 2002

Source: Prepared from various Five Year Plan documents, Planning Commission, Government of India,

Table-5.2: Plan Outlay for Agriculture and Rural Development (figures in Rs.Crores)

Plans	Total Outlays (Rs. in Crores)	Agriculture and allied activities	Major/ Minor Irrigation	Village Small Scale Industries	Sub-Total
(1)	(2)	(3)	(4)	(5)	(6)
First Plan 1951 – 56	1,960	290 (14.8%)	583 (29.7%)	42 (2.1%)	915 (46.6%)
Second Plan 1956 – 61	4,672	549 (11.8)	430 (9.2)	187 (4.0)	1,166 (24.9)
Third Plan 1961 – 66	8,577	1,089 (12.7)	665 (7.8)	241 (2.8)	1,995 (23.3)
Annual Plans 1966 – 69	6,625	1,107 (16.7)	471 (7.1)	126 (1.9)	1,704 (25.7)
Fourth Plan 1969 - 74	15,779	2,320 (14.7)	1,354 (8.6)	243 (1.5)	3,917 (24.8)
Fifth Plan 1974 – 79	40,097	5,229 (13.0)	3,914 (9.8)	611 (1.5)	9,754 (24.3)
Annual Plan 1979 – 80	12,601	1,815 (14.4)	1,260 (10.0)	189 (1.5)	3,264 (25.9)
Sixth Plan 1980 – 85	97,500	14,349 (14.7)	10,350 (10.6)	1,780 (1.8)	26,479 (27.1)
		*Agri & allied	*R.D Programmes		
Seventh Plan 1985 – 90	1,80,000	10,573.62 (14.27)	9,074.22 (5.01)		19,647.84 (19.28)
Eight Plan 1992 – 97	2,47,865	54,992.00 (12.67)	34,425.36 (7.93)		89,417.36 (20.60)
Ninth Plan 1997 – 2002	8,59,200	42,462.00 (4.9)	74,686 (8.7)		1,17,148.00 (13.6)

Sources: (i) Indian Agriculture in Brief. 19th Ed. New Delhi 1982 (p. 89-92).

(ii) Statistical Outline of India, Bombay Tata Services Ltd. 1982 (p. 181-82)

(iii) India's Five Year Plan, Planning Commission, New Delhi.

**Ministries were bifurcated at the level of Central Government.*

Agriculture and rural development have been accorded a high priority in India's Five Year Plans (Table-5.2). This is evident from the high proportion of total public sector outlay of each plan that is allotted to agriculture, allied activities and community and rural development, major and medium irrigation projects, flood control and village and small-scale industries. During the Seventh Plan, some new departments/ministries were created and a separate Ministry of Rural Development was

established by bifurcation from its parent Agriculture Ministry was established. Out of the many department and ministries in the country, maximum allocation during the various plans was given towards rural development (Table-5.2).

5.6 Democratic Decentralization in Nagaland:

(a) The Democratic Decentralized Development: Development planning in India is particularly known as 'Democratic Planning and growth with justice.' It has been set forth as the cardinal principle of planned economic development since the commencement of the Five Year Plans. This democratic planning is based on the active support of the masses in plan formulation as well as in implementation of the planned programmes. Thus, in the early 1950s, the Community Development programme was launched to obtain the active participation of the people in their own development, then, Panchayati Raj institution was also revitalized to have the fullest cooperation of the people. Unfortunately, the decentralized planning or the bottom up approach of development could not be adopted in planning processes to make the democratic decentralization in subsequent years as known from the review of development scenes. This was explained by Jaya Prakash Narayan, who observed and said, "There is so much talk of building from below, building from the lower levels, planning from the lowest levels. Everybody is preparing these phrases because each five-year plan used them, but who is there to build from below, to plan from below? Everybody runs to

Delhi, everybody runs to Bombay, no one seems inclined to go down to the people except at election time perhaps. So words are being uttered without conviction."

Planning has essentially remained centralized (or vertical) rather than decentralized (or horizontal), and in such type of vertical planning local problems never receive adequate attention. All programmes are planned and directed by the centre, the implementation and machinery are uniform while the situation at ground level is diverse, leading to poor results and it defeats the objectives of the programmes. The quality and quantum of development are far from satisfactory in substance and speed. Despite the plethora of schemes and the huge amounts of money being spent on it, the efforts of rural development have failed to generate a significant improvement in rural situation, such as infrastructure facilities, income generation facilities, rural poverty, unemployment etc. Regional disparity is widened as developed areas become more and more developed while backward regions remain backward. The gap between 'the haves' and 'the have not' is also widened. As a consequence, the social fabric itself is under severe strain. The worst hit is, of course, the poor people for whom development is supposedly meant.

Nagaland, a tiny state in the Indian union, is in the eastern most part of the country. Its remoteness and the mountainous conditions of the state have made the region difficult to approach, and for the economic development, it is necessary to consider the imperatives of both geography and its history. The state had experienced

the process for socio-economic development plans directed by the Central Government. It is felt that this process now needs to be modified and preparation new guidelines to suit the local situation in the state. It is felt that without suitable changes, the process of planning may end up causing irreparable damage to the rural structure. The planning structure at village level is very much necessary.

(b) The Village Council: Traditionally, villages in Nagaland are located on hilltops, which are steep with high altitudes ranging up to nearly 3,000m of elevation. Naga villages are, infact, have inherited an age-old history of self-governance. (Mills 1926) remarked that which is the real political unit of the tribe and it is the village government that governs and administers over the entire people of the village. While another European, W. C. Smith wrote that Naga villages were bound together by social, political and religious ties. The village society had been largely egalitarian and there exists a strong sense of community feeling and self-reliance through self-help. It is a politically organized society having a *"council of elders"*, a supreme decision making body in matters relating to people and the village, which is the oldest institution in all Naga villages (Nakhro 1997). This in official parlance came to be known as *"Village Council"* under an act passed by the state government known as the *Nagaland Village Council and Areas Council Act in 1973*, and it was further amended in 1978. The Village Council consists of members representing each *"khel"* (or clan). All members of the clans in the village choose their representatives. Members of clan's representatives appoint the head of the Village Council. Disputes, if any are settled according to the

customary laws of the land with *Do Bashi* (interpreter) and *Gaon Burah's* (Village headman) assistance. The Village Council is the sole custodian and manager of the community property that belong to the whole village. Functioning of the village council is consensus among members and not necessarily by majority rule but with deep anxiety to maintain harmonious human relationships within the clans / *khels* and the village as a whole. Sharing of resources (land) in the name of clan community, *khel* community land, village community land and individual land is yet another notable feature. All members of the village have invariably a piece of land to cultivate; there are neither rich people nor wage earners in the village. Each and every village is independent. The value system is such that even a poor person can become the chief provided he deserves it. Thus, the traditional Naga Village Council was the local powerful structures and they are strongly regimented with both regulatory and judiciary functions.

(c) The Village Development Board: The strong community based local self-governance of the Village Council in Nagaland, the common property (lands) and its usage systems made the planners rethink on the development plans and administration and they decided that the money for various development programmes be kept as community fund (common property). The villagers themselves were given chance to formulate schemes / plans for the development and progress of the village or help the needy persons in the village. It is found here that the decentralized planning and implementation of the development programmes are taken care of by the grass-root level itself. Consequently, the name *Village Development Board* (VDB) was formulated under provision of *"The*

Nagaland Village and Area Council Act 1978." The Act empowers the traditional institution of Elders Council/Village Council to constitute VDB as an executive wing of the Village Council to undertake development works of the village. VDB is entrusted with development and management of community funds. The Village Council concerned chooses the members of the VDB and their tenure is usually three years unless decided otherwise by the Village Council. The minimum members of the VDB should not be less than five and the maximum would not exceed twenty-five. At least one fourth of the members should be women and twenty five per cent of the fund is reserved for development of women.

As per the Nagaland Village and Area Council Act 1978, many administrative, executive and judicial functions and powers are given to the Village Council. The salient features of the act provide strength for the micro-level potential leadership, dovetailing with self-reliant rural development programmes. The functions of the VDBs are multifarious; however, the primary objectives are-

(i) to identify, select and formulate the village development schemes as per requirement of the people in the village.

(ii) as the most popular and unique institution of the state that is assigned with the role of identification, selection, formulation of schemes at grass root level for bringing about socio-economic transformation in rural areas. It has

the responsibility of organizing the common fund as well as other funds received from time to time and implements all the development programmes of the village.

The VDB operates its funds under Grant-in-Aid, Matching Cash Grant, Jawahar Rozgar Yojana (JRY) and other programmes through suitable accounts in the bank. The Chairman and Secretary of the Management Committee of the VDBs operate accounts jointly. It is also the duty of VDB to implement all development / social welfare programmes of the Government, launched from time to time. The Board functions under the directives issued by the Village Council and the State Government. The Deputy Commissioner/ Additional Deputy Commissioner is the ex-officio Chairman of the VDB and the management Committee of the VDB in their respective district and independent sub-divisions.

The Rural Development Blocks is the principal agency to oversee the functioning of VDB programmes at the state level. At the district level, the Deputy Commissioner looks after all such activities in the blocks as well as in the village villages. He is the ex-officio-chairman of the District Planning Board. He also technically approves all plans after concerned Block Development Officer verifies the same. The BDO has to look after all the VDB works and provide guidance to the villagers from time to time in preparation of village development plans by way of providing model plans, which are prepared under guidelines issued by the Government.

(i) Resources of the Village Development Board: There are two sources of funds for VDB. The first and the foremost source is the common fund of the village raised from the contribution from the villagers themselves. As stated earlier, the Common Fund is the root of the emergence of the VDB programme. And the Matching grant is the Government contribution to the village common fund, which is equal to the amount of common, fund raised by the village and invested in minimum 5 years Fixed Deposit account in the bank. The matching grant is given subject to two conditions. First, it should be invested in a fixed deposit of not less than 5 years duration. Second, it should be reinvested continuously, so that, the common fund of the village invested in fixed deposit should always grow through continuous reinvestment. This scheme was initially introduced in 1978 in Phek District and slowly covered all the villages in Nagaland. In order to have a balanced distribution of resources among the villages, an upper limit of Rs.75,000/- was fixed by the Government, which was later raised to Rs.1,00,000/- in 1990. With good performance of the VDBs and the villager's interest on it, state Government has once again raised the amount to a maximum ceiling limit of Rs.2,50,000/- during 1995-1996. This amount serves as security for the villagers with the financial institutions for obtaining loan. This is one of the best schemes, which is operating successfully under VDB. The state Government has a financial crunch at present situation but the VDBs have enough money in their fixed deposits and grant-in-aid accounts against which they can borrow any amount from bank. According to reports, there are about Rs.10 crores in the bank accounts of VDBs in Nagaland, which in itself speaks of the success of the scheme in resource mobilization.

All the VDBs have to operate suitable Bank account for different sources such as Grant-in-Aid, Matching Cash Grant, Jawahar Rozgar Yojana and other programmes as provided in VDB Model Rules 1980. Each and every VDB has to keep a current bank account and Fixed Deposits in bank and no VDB shall be allowed to withdraw their Fixed Deposits, as it is the main basis for the existence of the VDB. When the term deposits expire, the concerned DCs / ADCs shall direct the VDB to renew their Fixed Deposits term for another five years.

Other sources such as Employment Assurance Scheme and Jawahar Rozgar Yojana funds form other major sources of funding which are distributed to the VDBs at the rate of Rs.750 and Rs.400 per household of the tax paying villages. The number of households recorded in 1991 census was taken as the basis for fund allocation to the VDBs.

(ii) Planning and Implementation Mechanism: Even though, Village Councils/VDBs are nodal agencies for planning and implementation of the various development programmes; BDO, District Planning Board and Rural Development Cell help and provide necessary guidance. The Deputy Commissioner starts the process first by sending the list of villages of last year that paid house tax on whose basis the allocation of grant-in-aid amount was made. The Village Council / VDB, upon receiving the amount available for the year, can decide upon what activity would be taken up, and then schemes are prepared as per their needs and the necessity of the village as a whole,

and submit the proposed schemes to the BDO for scrutiny and onward transmission to the District Planning Boards. The Directorate, Rural Development Blocks, provides model schemes for grant-in aid, JRY and EAS to the VDBs in advance. Though the officials assist in planning, the kind of works to be taken upon priority basis is purely the prerogative of the VDB.

The schemes / projects undertaken by the VDBs were mostly related to creation of durable assets and village infrastructures. Youth welfare schemes and women's schemes with earmarked budgets are redeeming features of the VDBs. The activities are mostly towards social aspect; however, income-generating schemes are also incorporated. For example, Community Multi-Purpose Building in some towns is earning a monthly income of more than Rs.20,000/- as rent by some VDBs. To some villages, the Community Bus, purchased from VDB fund is the only means of transport to their district headquarters. They transport vegetables, fruits, animals and other household products to market and in return they bring essential commodities, household items etc. back to their villages. The following are some of the activities of VDBs; construction of community building, community granary, approach road, foot path, public well, water reserve tank, play ground, school building, minor irrigation, drainage, community latrine, rest houses halfway between the village and the *khetis* (fields of cultivation), suspension bridge, rice mill, community bus, maintenance of village road, construction of youth welfare center, library hall, multi-purpose building for womenfolk, fishery ponds, social forestry, horticulture farming, rural housing etc. In

addition to the above activities for the village communities, nearly 100 percent of the houses have been converted to CIG or RCC roofed houses from thatch roof. It is rather slow but there is a change in appearance of the village itself after the introduction of VDB programmes in the state.

The VDB programme has made a remarkable progress in the state when judged by the speed with which it has spread to all the recognized villages of the state. The remotest and inaccessible villages are also at par with the rest of the villages in the state because there is VDB in their village. In spite of the turbulent and volatile politics in the state, VDB programme did not suffer any set back. Even if the state Government is begging loan for financial deficits from the Central Government, each and every VDB has kept a fat wallet in the bank. There has been a tangible improvement in the conditions of the villages particularly in respect to community infrastructures in a short span of time, which is not possible without the involvement of the VDB.

(iii) The VDB Model schemes: The State Government of Nagaland has framed rules known as VDB Model Rules for identification of the schemes for individuals or households. These model schemes include the following items along with the cost amount of the scheme (bank loan and subsidy amount for those people below poverty line). The following schemes are, Land development, Minor irrigation, Horticulture, Fishery, farm forestry, Animal power, Sericulture, Bee keeping, Poultry, Dairy, Piggery, Goatery, Duckery, Knitting & tailoring, Agricultural tools & implements,

Carpentry, Blacksmithy etc. These are some of the model schemes the Department of Rural Development has laid down for the people but the importance given to a scheme is according to the interest and choice of the people. The department also has given some schemes for community development such as Suspension bridge, Footpath or steps in the village, Village approach road, Public wells/water tank, Community granary, Community orchard/garden, Community halls, Community bus service and other experimental schemes.

(iv) People's Participation: People's participation in rural development is the most important point to be noticed. Without people's involvement in the process, it is bound to be a failure. Whether in planning, implementation, monitoring, and evaluation and in benefit sharing, active involvement of the people is also required for the success of the development programmes. Success or failure of any development programme is entirely dependant on how the people take initiatives for the implementation of the programme. As mentioned earlier, Nagas, in general, are very cooperative in any kind of development programme. Community involvement is very strong and also the feeling of oneness is a prestige for the Nagas. Thus, the success of VDB in the state is because of the total involvement of all the people in the programmes.

(d) State Allocation for Different Rural Development Programmes:

The state Government and the Department of Rural Development in particular is taking keen interest in the activities of rural development at grass root level and the decision was taken to allocate part of the Government of Nagaland's annual plan fund village-wise instead of mere sector-wise as is the common practice all over. The village-wise allocation was introduced from 1980-81 (financial year) under which every village receives grant- in- aid at a specific rate for carrying out schemes of community development as mentioned in the VDB activities of the state.

Table-5.3: Statement Showing Plan Expenditure under Rural Development Block
(Rs. in lakh)

Sl. No.	Programmes Implemented	1995-1996	%	1999-2000	%
1	Integrated Rural Development	280.00	12.14	120.00	3.87
2	Grant-in Aid to VDB for Community Development Scheme	-	-	1125.00	36.30
3	Addl. Grant in Aid Resource for Misc. Community development schemes	11.00	0.47	21.28	0.69
4	Matching Grants to VDB	-	-	-	-
5	E.A.S	780.00	33.82	558.00	18.0
6	Improved Chullah	2.78	0.12	-	-
7	I.R.E.P.	20.00	0.87	22.50	0.73
8	B.M.S. (Housing)	518.00	22.46	669.00	21.59
9	B.M.S. (Road)	199.00	8.63	228.00	7.36
10	TRYSEM	35.38	1.53	-	-
11	DWCRA	-	-	-	-
12	Indira Awas Yojana (rural housing)	200.00	8.67	145.00	4.68
13	Jawahar Rozgar Yojana	260.00	11.27	210.00	6.78
	Grand Total	**2306.16**	**100**	**3098.78**	**100**

Sources: Directorate of Rural Development Blocks, Government of Nagaland, Kohima.

Where: EAS- Employment Assurance Scheme

BMS- Basic Minimum Scheme

IREP- Integrated Rural Energy Programme

TRYSEM-Training of Rural Youth for Self-Employment

DWCRA- Development of Women and Children in Rural Areas

A total amount of Rs.2306.16 lakhs and Rs.3098.78 lakhs were allocated under different heads of rural development programmes during 1995-1996 and 1999-2000 respectively. It is indicated that the maximum share 36.3% (Rs.1125.00 lakhs) went to Grant-in-aid to VDBs for community development work at village level during 1999-2000 followed by EAS, 33.82% share in 1995-96 and 18.0% in 1999-2000. BMS for rural housing is another important scheme, which got a major share in the allocation of fund for development, 22.46% share in 1995-96 and 21.59% share in 1999-2000. Where as BMS for road development was 8.63% share and 7.36% share in 1995-96 and 1999-2000 respectively. There is no separate allocation of fund for TRYSEM, DWCRA etc., which were some of the important schemes in the 80s and 90s. Under Indira Awas Yojana (rural housing scheme), Rs.200 lakhs in 1995-96 and Rs.145 lakhs in 1999-2000 were allocated. Under Jawahar Rozgar Yojana an amount of Rs.260 lakhs (11.27%) during 1995-1996 and Rs.210 lakhs (6.78%) during 1999-2000 were allocated (Table-5.3).

The State Government have proposed the Ninth Plan for Central Government approval, and the same was approved and allocation was made as shown in Table-5.4. During the Ninth Plan, there was a total allocation of Rs.2006.43 crores to the state government, out of which 25.66% share of the fund was kept under the head of Social Service, 15.22% of the share for Transport and Communication and only 14.39% of the share for Rural Development followed by Agriculture and Allied activities with a share of 12.96%.

Table-5.4 The Ninth Five Year Plan (1997-2002) Outlays for the State of Nagaland under Different Major Heads of Development:

Sl.No. Major Heads for Development	Total Outlays (Rs. in crore)	Percent to total
1. Agriculture & Allied activities	260.00	12.96
2. Rural Development	288.80	14.39
3. Special Area Programme	27.00	1.35
4. Irrigation & Flood control	57.00	2.84
5. Energy	119.65	5.96
6. Industry and Minerals	121.00	6.03
7. Transport and Communication	305.40	15.22
8. Science & Tech. and Environment	5.00	0.25
9. General Economic services	204.00	10.17
10. Social services	514.79	25.66
11. General services	103.79	5.17
Grand total	2006.43	100.00

Source: Five-Year Plan, Planning Commission, Govt. of India, New Delhi.

5.7 Concluding Remarks:

Rural development through VDB initiations is doing well as far as village community is concerned. But it is also equally important that whether there is any improvement in an individual person or family in his/her standard of living.

The state is still lagging in development of infrastructural facilities in all respects. The absence of industrial sector in the state is another blow to the present generation, where educated youth as well as school and college dropouts are unable to

go for employment. As these groups of people are not in the position to go for agricultural operation/labourers, facilities for self-employment and small or medium type of industrial units can help to some extent, which can generate employment facilities for the youth.

There is hardly any revenue for the state government to generate its own resources (income) and thus, the state is fully dependant on Central Government for financial assistance. Even though, crores of rupees has been spent in the name of development every year, under different heads as shown above, there is very little improvement being seen on the face of the rural people, especially those in the remote areas. Village Development Boards are there at grass root level, but with this pace of development, it is not much helpful to the individual person. The identification of remote areas and approach to infrastructure facilities for the development are major aspects for consideration.

Notes:

1. Government of Nagaland has directed all the V.D.Bs to operate a joint account (Saving Account), and all transaction is made through this bank account. Each and every V.D.B in Nagaland has got a Fixed Deposit Scheme with a minimum amount of Rs. 1 lakh.

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CHAPTER-VI

CHARACTERISTICS OF RURAL DEVELOPMENT

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6.0: Introduction:

Rural development as a concept and as series of experiments in alternative methods of organizing production, welfare and exchange in rural activities has a long history. It has come into international usage to connote the process by which the efforts of people themselves are united to those of government authorities to improve the economic, social and cultural conditions in the life of the nation. The popularity of rural development, however, is mainly the signed of failure of technocratic and economic growth strategies pursued by most developing countries in the 1950s and 1960s as this was a period for the policy makers to increase productivity and per capita income through manufacturing. However, it was also a period of growth not only in economy but the elimination of problem of poverty and the gap between the rich and the poor were also widened. Academics and national as well as international policy makers carried out the search for solutions to the problems of rural poverty, inequality and unemployment (Lea 1983).

By the mid 1970s, it was observed that a new approach to the development dilemma was necessary to achieve growth in productivity, employment and income while doing something about the potentially disruptive inequalities. The new strategy of rural development is based on the improvement of socio-economic

conditions of the poor people in rural areas in an integrated approach. The aim of this strategy is to help the poor and needy person to improve and change his life situation, which means self-sustenance and free from dependent. And the later came to be known as 'Integrated Rural Development'.

In India, the problems in rural areas is concerned, as nearly as three fourth of the total population depend on agriculture with low output, rural poverty, unemployment, inequality in income and wealth, poor health, low literacy rate, poor transport and communication facilities etc. The people in rural areas are facing multi-problems, not only because of economically backward but also lacking in infrastructure. This mighty agriculture dependent population is mostly drawn from the socially and economically backward section of the society such as small-scale farmers, artisans, tenants, agriculture labourers and land less labourers etc.

Rural development in Nagaland is inseparable with agriculture. It is the main constituent of occupation, and the backbone of rural people. It is characterized by a very close relationship between size of land holding and the productivity pattern. While studying the socio-economic conditions of the people in rural areas, it is necessary that one has to know the actual facts of the size of land holding, productivity pattern, amount of production, labour input, and the number of population depending on it, or in other words, agricultural productivity of the region as major attribute to rural development. Therefore, two major aspects, which are related to rural development, namely, the existing agricultural systems prevailing in the state of Nagaland and, secondly, the attributes related to agricultural economy

and their characteristic features are to be interpreted in the present discussion. It would provide a strong base of rural development for the state.

6.1: Existing Agricultural Systems:

Agriculture is the dominant occupation of all the developing societies since time immemorial; agricultural land resources have engaged biggest percentage of the inhabitants of the world. The increasing pressure of population on land as population is growing at a geometric rate, where as the growth tendency of food production is weak and moving upward in its initial stage with its slow arithmetic rate, this seems to be stagnant and not producing sufficient food to feed over growing population. As a result, the gap between production and population curve is widening over time (Chadna 1992). An ever-growing demand of food and raw materials, there is an urgent need to use every piece of land property, which calls for scientific, rational and economic planning for the use of land resources without disturbing ecological or socio-economic balance of the area. In India, there has been a considerable change in the agricultural land use with the inception of the so-called Green Revolution.

Many socio-economic factors are responsible for this change but an enormous pressure of population on agriculture resources, diffusion of agricultural innovations; consolidation of holdings and the awakening among the farmers are important ones.

Traditional systems of cultivation are not only prevalent but they are also deep-rooted, leaving no scope for further improvement in the overall

productivity of land in the area. At this juncture of traditional and modernized agriculture practices, a rational assessment of land and its scientific utilization has become prerequisite with a view to eliminating the misuse of land problems and policies. The traditional agriculture practice is based on the geo-political and socio-cultural practices of the society. In this modern era, somewhere traditional practice is the only option left behind due to a number of factors.

(a) The Land Use Pattern:

Nagaland has a peculiar pattern of land use and ownership system. There is no cadastral survey of land in the state as such. Therefore, data on land use are insufficient and may not be very much reliable. But as per the available land records (based on reporting areas), the old fallow land or jhum re-growth is recorded the highest, which is being converted into agricultural land and tree crops. It means there is a start of agricultural intensifications in the flat lands and shifting cultivation and horticulture crops on the hill slopes.

The proportion of Net Area Sown is very small and proportion of fallow land is comparatively high in the state. This indicated the characters of hill areas where shifting cultivation is in practice. In the case of shifting cultivation, abandoned areas are kept fallow for vegetative re-growth. The jhum cycle period is also decrease to 5 - 8 years in some areas where maximum jhum cultivation is practiced; generally these fallow lands are kept for 10 – 15 years. It also appears that there has been some decline in fallow land and increase in Net Area Sown.

It is indicated that majority of the landholders are from the category of medium size landholders (4ha. to 10ha), which constitute about 33.35% to the total number of landholders and large size (10ha to 20ha and above) landholders that is 23.65%. Marginal landholders (below 1 ha) occupy a percentage share of 9.38% in the state. The average size of land per landholder is estimated as 6.84ha. There are very few landless cultivators and agriculture labourers. Their percentage is negligible. The cultivators' families exchange labour for labour in a reciprocal manner, which was a practiced adopted by the people from time immemorial, hence, agricultural labourers are not in great demand in the villages.

There is a gradual change in general land use pattern by the size of land holdings. Obviously, the small and marginal size of land holders have higher percentage share of its land (95 - 72%) under Net Area Sown. On the other hand, the larger land holding enjoy the diverse land use patterns, it is clear from the Table-6.1 that percentage share under Net Area Sown decreases and area under fallow land other than current fallow and the uncultivated area in land use increase as the size of land holdings increase (~~Table-6.1~~ Fig-6.1).

Table-6.1: Land use patterns by its Holding size in Nagaland (1990-1991).

Sl. No.	Size class (ha)	No. of land holding			Net area sown (ha)	%	Area under current fallow (ha)	%	Other uncultivated land (excluding fallow) (ha)	%	Fallow land other than current fallow (ha)	%	Cultivated waste land (ha)	%	Land not available for cultivation (ha)	%	Total (%)
		No. of Land holders	%	Total Area (in ha.)													
1	Marginal Below 0.02 0. 02 – 0.5 0. 05 – 1.0	- 4473 8825	- 3.16 6.23	- 2020 6522	- 1923 4742	- 95.9 72.7	- 97 1134	- 4.80 17.38	- - 377	- - 5.78	- - 183	- - 2.8	- - 86	- - 1.32	- - -	- - -	100
2	Small 1. 0 – 2. 0	21403	15.12	29962	15218	50.79	4421	14.75	3840	12.81	5709	19.05	774	2.58	-	-	100
3	Semi medium 2. 0 – 3. 0 3. 0 – 4. 0	12953 13250	9.15 9.36	32081 43982	14073 13501	43.86 30.69	4325 4958	13.48 11.27	4574 6798	14.25 15.48	4565 8444	14.23 19.19	4769 8168	14.86 18.57	675 2113	2.10 4.80	100 100
4	Medium 4. 0 – 5. 0 5. 0 – 7. 5 7. 5 –10.0	13686 18185 15320	9.67 12.85 10.82	59907 113050 124951	15218 26481 27941	25.40 23.42 22.36	6124 13887 12482	10.22 12.28 9.99	10715 22374 23926	17.88 19.79 19.15	15520 27680 35165	25.9 24.48 28.14	8697 15643 18556	14.52 13.82 14.85	3633 6985 6881	6.06 6.18 5.51	100 100 100
5	Large 10.0 – 20.0 20. 0 & above	25543 7868	18.05 5.56	311015 244696	63136 35828	20.30 14.64	34565 19107	11.11 7.80	64829 59608	20.84 24.36	88629 61666	28.49 25.20	35824 55440	11.52 22.65	24032 13047	7.72 5.33	100 100
6	**Total of all sizes**	**141506**	**100**	**968186**	**218061**	**22.52**	**100200**	**10.35**	**197041**	**20.35**	**247561**	**25.56**	**147957**	**15.28**	**57366**	**5.92**	**100**

Source: Department of Agriculture, Agricultural Census 1990-1991, Nagaland.

N.B: Figure in parentheses shows the percentage. Percentages are to be calculated category wise horizontally.

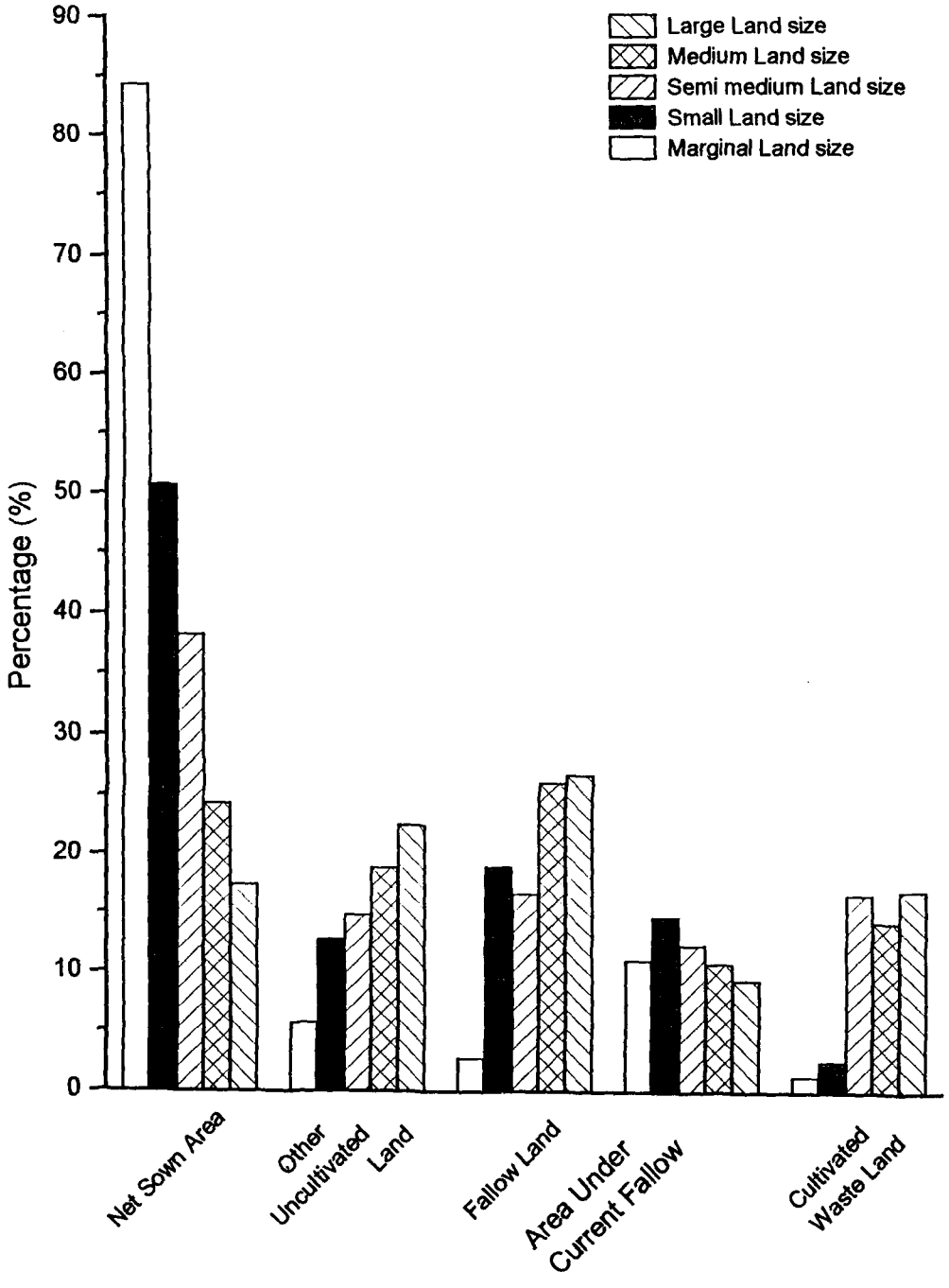

Fig - 6.1 Percentage share of Land Use Pattern by Holding size

Table-6.2: Land Use Classification by its Ownership (1999)

Sl.No.	Particulars	Area (ha)	% to total area
1	Area under Govt. control:		
	(a) Reserved forests	8,583	0.52
	(b) Protected forests	50,756	3.06
	(c) Proposed to be reserved	19,247	1.18
	(d) Wild life Sanctuary	22,237	1.34
2	Area under Private Control:		
	(a) Village Forests		
	i) Virgin accessible forests	1,87,827	11.35
	ii) Virgin non accessible forests	2,90,000	17.49
	iii) Degraded forests	2,84,280	17.15
	(b) Jhum land:		
	(i) Current Jhum	1,01,400	6.13
	(ii) Jhum re-growth	5,31,202	32.04
	(c) Settled cultivation:		
	(i) Irrigated cultivation	50,250	3.03
3	Area under Dual control:		
	Towns, villages, roads, river etc	1,12,118	6.76
	Total	**16,57,900**	**100.00**

Source: Department of Forest, Chief Conservator of Forest, Nagaland

It is reported that 52.09% of the total geographical area is under forests including area under wild life sanctuary, about 9.16% is under cultivation of crops, however, fallow land (jhum re-growth) constitute for a percentage share of 32.06, which occupy a large portion of the state land (Table-6.2). Area under Government control is only 6.06% of the total land and area under dual control is 6.76%, which covers areas of towns, villages, roads, river etc. Thus, land holding and land ownership belongs to either individual person or the village community.

The problem of fragmentation of land is not prominent due to peculiar pattern of land ownership, tenure and its uses. The number of landless farmers and landless agricultural labourers is negligible. There are also not unduly large individual holdings and hardly any intermediary rights. The need of any legislation or other measures to put any ceiling on land holdings does not arise in this system. There are no laws or regulations governing ownership of land in the state excepting a small area of about 259sq.km (Dimapur *Mauza),* which was surveyed previously as a part of the former state of Assam where the Assam land and Revenue Regulations apply. Otherwise, there has not yet been cadastral surveyed and no systematic record or right have been built up. The only legal framework for determining the right to cultivate land is the Jhumland Regulations Act in 1970.

(b) Land Ownership System:

The ownership of land and the individuals right to use it is almost exclusively determined by tradition and what is loosely referred to as "Customary Laws" which are un-codified, and yet very effectively applied, and in the event of any dispute, are propounded and interpreted by the traditional village councils or elders councils. This village council is the authority for directing community actions on land and interpretation of customary laws in regard to ownership or use of community land by individuals. Except the *Semas* and the *Konyaks* tribes, the land is owned either by the village community as a whole or by a clan within the village or by individuals.

The *Angamis* and the *Chakhesangs*, who mostly practice terrace/ permanent cultivation, have individual ownership system of land. Every individual own land property and enjoys every right over it. The right is permanent in heritable and transferable; ownership of land is either by heritance or purchase. There are few cases, where, a clan, in such cases, holds properties jointly the clan elders decide by whom the land should be cultivated or be given. Generally, it goes to the eldest or the poorest among the clan. Amongst the *Angamis* and the *Chakhesangs,* the land property is inherited from the parents. If there is a need to sale the inherited land, one must inform his nearest kin and relatives first. Usually the daughters are not entitled to property except in rare cases when the father gives it as special gift. A person having no male issue may make a will in favor of his daughters; otherwise the nearest kin will inherit it.

Table-6.3: Area under Different Land-use and Changes therein.

Sl. No.	Classification	1991-1992 Total area	(%)	1999-2000 Total area	(%)	Changes
-	Total Geog. Area	16,57,900	-	16,57,900	-	-
-	Total Reporting Area	15,59,633	100	15,71,812	100	-
1	Forests	8,62,532	55.30	8,62,532	54.87	0
2	Area not available for cultivation	27,848	1.78	65,230	4.15	+ 37382
3	Other uncultivated land Excluding fallow lands	2,26,440	14.52	1,87,530	11.93	- 38910
4	Fallow lands	2,28,060	14.62	1,69,860	10.80	- 5820
5	Net Area Sown	1,94,073	12.44	2,62,010	16.67	+67937
6	Area Sown More than Once	20,680	1.34	24,650	1.57	+3970

Source: Government of Nagaland, Directorate of Economics & Statistics, Kohima.

On account of increasing population pressure in the state, there is an increase in land use category. Area not available for cultivation, which includes land under roads and human settlements, increases from 27848ha (1991-92) to 65,230ha (1999-2000). It shows a significant increase of about 2.37% (Table-6.3). This may be the result that the expansion of towns and village areas, roads etc. to larger extends.

The area under different land use is changing overtime, where as the forest cover areas during 1991-1992 and 1999-2000 remain the same. While, other uncultivated land (barren land, mountains etc. but excluding fallow land), during the year 1991-92 was reduced from 226,440ha to 187530 ha in 1999-2000. There was a decrease of areas in the case of fallow land and current fallow during the same period of time. It is reduced from 14.62% share (i.e., 228,060 ha) to 10.80% share (169,860 ha). However, the areas under categories of Net Area Sown as well as Area Sown More than Once (ASMO) are found to be on the increase side.

Land use efficiency and the intensity of cropping are almost impossible to many of the areas. In the absence of major irrigation facilities, due to the strategic topographic situation of the land, farmers fully depend on rainwater for cultivation.

There is a silent revolution going on in the whole of the state that, people started growing/planting horticultural crops, fruit trees and value timber species in mass that, the village councils of some villages have to ban for further plantation on community land. *

(c) The Cropping Pattern:

Cropping pattern is controlled by traditions and soil fertility. Rice is the main stable food and it occupies about 70% of the total cultivated area and constitutes about 75% of the total food grain production in the state. Besides, maize, millets, job's tear, oilseeds, pulses, taro, yam, potato, sweet potato, fruits and many other vegetables are grown. Traditionally, Nagas did not cultivate winter crops, only in recent years non- traditional winter crops such as wheat, barley and some pulses and oilseeds have been introduced. They are gaining much popularity among the local farmers. Plantation crops like cardamom, tea, coffee, spices, rubber and sugarcane are also in cultivation, which is high potential for commercial production. Horticultural crops are in popularity for which the climate and soil are eminently suitable. Food grain production scenario in the state has shown an upward trend during the last three decades from 62,000m tonnes during 1964-65 to 282,65,000m tonnes by 1998-99. Productivity has also been increased from 700 kg/ha to 1300 kg/ha of land. This is the result of using improved technology such as improved seeds, better agronomic practices, use of fertilizers, irrigation facilities small farm powers and machineries etc.

As the state is predominantly occupied by agriculture and it is an age-old traditional method of slash and burn or in other words 'jhum cultivation' that, about 75.2% of the total main workers fully depend on agriculture. This jhum cultivation is by and large same as other tribal belt areas of the world. Even though, all Naga tribes practice jhum cultivation, the *Angamis* in Kohima district and the *Chakhesang* in Phek district have been practicing terraced cultivation on the hill slopes and river valleys. Rice is the stable food and it is being growing in both terraced cultivation and in jhum cultivation.

(d) Advantages of Mixed farming / Multi-variety Culture:

In today's world, we talk so much about biological diversity, environment, agro-ecosystem and so on, without knowing what it is and where it exactly is. The whole of North Eastern region has a peculiar diversity. The lives style, cultures and practices of the people are all unique in nature. The agricultural practices too is different, the biological diversity is with the traditional farmers. Since time immemorial, the people knew the right time and seasons, when to start the different works of livelihood, which crops to be used and where to sow the seeds. This, in one way, is the beginning of technology, and on the other side, the system of agro-ecosystem we find in here.

Mixed farming and Mixed cropping in the natural practice of the tribal people in the state of Nagaland. The main elements of Mixed farming in the villages are pigs, poultry birds and cattle, generally, these are found in every family holding. Even then, their main occupation is not animal keeping, as it is rearing for

meat purposes and for self-consumption. In some areas buffalos, Mithun and goats are also rearing, number of Mithun or cattle attached to a particular family determine its social status. The number of animal sacrificed also marks the prestige of social occasion or ceremony.

Mixed cropping is a way of tribal life in agricultural farming, even in an acre of jhum land, varieties of crops are found, such as paddy, maize, millets, job's tear, sorghum, soya bean and different kinds of vegetables etcetera. The oilseeds are only consumed in the form of chutney and oils, as cooking medium is not popular. Pulses items such as rice bean, cowpea, grain French bean, and lima bean are also found in small pockets. Vegetables such as pumpkins, sponge gourd, brinjal, cho-cho, squash, potato, tomato, chilly, cabbage, ginger, turmeric, radish are available. All the crops are grown as mixed in the jhum fields and some may even be cultivated in their kitchen gardens.

Mixed cropping have got many advantages that, in mixed cropping farming utilization of solar energy and other inputs are maximized, incidences of insects-pests and diseases are also reduced considerably due to host preference in the mixed cropping. It also offers a variety of products for consumption of the farmer's family and helps a balanced nutrition. The only disadvantage is that, this practice usually carried out in small scale, as it requires lots of labour works and thus, surplus production is not possible from these traditional practices.

6.2 Agricultural Crop Production:

Though the region is fertile, the production is much lower in comparison with the other regions of the country. Agricultural production is increasing at a slower pace. Rice is the main and, among the different agricultural crops, it is the highest in its production.

Table-6.4: Area Under Principal Crops (ha) & Production of Crops (tonnes)

Crops	Crops Area (in ha)			Crops Production (in Tonnes)		
	1986-87	**1995-96**	**1999-00**	**1986-87**	**1995-96**	**1999-00**
Cereals	1,53,590	1,81,500 (18.17)	1,98,500 (9.37)	1,03,020	2,22,500 (115.98)	2,93,200 (31.77)
Pulses	10,800	11,100 (2.78)	2,15,500 (1841.44)	7,500	12,000 (60.0)	13,500 (12.5)
Oil seeds	13,000	22,900 (76.15)	45,000 (96.51)	10,410	26,760 (157.06)	44,550 (66.48)
Fibres	240	350 (45.83)	600 (2.0)	110	2,880 (2518.18)	830 (-71.18)
Miscella -neous	4,690	5,436 (21.37)	5,470 (110.17)	1,06,020	1,45,279 (80.31)	77,280 (-46.8)
Total	**1,82,320**	**2,21,286 (21.37)**	**4,65,070 (110.17)**	**2,27,060**	**4,09,419 (80.31)**	**4,29,360 (4.87)**

Sources: Department of Agriculture, Marketing Cell, Government of Nagaland, Kohima.

Cereals- Rice, wheat, maize, millets, jobs tear and others

Pulses- Arhar, gram, peas, beans and others

Oilseeds- Sesame, rape & mustard, lin seed, groundnut, soyabean, sunflower, castor

Fibres- Cotton and jute

Miscellaneous- Tea, sugarcane, tobacco, potato

A profile of major agricultural crops area and crop production is shown (Table-6.4). It indicates that the area coverage (in ha) under principal crops is increasing, so also crop production is increasing trend. Crop production under miscellaneous crops falls down during 1999-2000 as compared to the year 1986-1987 and 1995-96. This was because of changing of crops from one to another by

the farmers. For example, the closing down of Sugar Mill in Dimapur has affected the farmers from growing sugar cane in the plains and foothill areas and shifted to some other crops. In many cases, instead of seasonal crops farmers have started growing perennial crops and other cash crops. Tea plantation, rubber plantation, horticultural farming and plantation of value timber species are the latest development in the state through governmental participation (i.e., Forest Department, Wasteland Development Department, Agriculture, Horticulture etc.) and non-governmental organizations such as NEPED, VDB etc. and also individual initiation. Crops production as well as agricultural coverage is increasing year by year in the state.

(i) Irrigation:

The total irrigated area and irrigated area under different crops are shown (Table-6.5). The net irrigated area has been increasing in a very slow pace. It was 53,000 ha in 1986-87 is increased to 63,000 ha in 1999-2000. The less irrigated area and its slow increase is mainly due to the unfavorable topographical conditions of the state; Minor irrigation is only possible means in such a situation and in most cases rain fed irrigation is possible.

Underground water sources for irrigation purpose are not possible except in the Dimapur plains by some farmers. The traditional practice of terrace cultivation in Kohima and Phek districts has shown the highest percentage share of minor irrigation (27.47% and 24.25%). There is indication of irrigation in pockets of other districts too.

Table-6.5: Net Irrigated Area & Irrigated Area under Different Crops (in ha).

Districts	1986-1987		1999-2000	
	Net Irrigated Area	Irrigated Area under Crops (Gross)	Net Irrigated Area	Irrigated Area under Crops (Gross)
Kohima	14,550 (27.53)	15,010 (27.36)	16,700 (26.42)	19,600 (27.47)
Mokokchung	3,715 (7.03)	4,002 (7.29)	6,800 (10.76)	7,400 (10.52)
Zunheboto	2,151 (4.07)	2,356 (4.29)	3,250 (5.14)	3,950 (5.54)
Wokha	8,252 (15.62)	8,497 (15.49)	9,850 (15.58)	10,800 (15.14)
Phek	10,283 (19.46)	10,658 (19.43)	15,300 (24.21)	17,300 (24.25)
Tuensang	10,210 (19.32)	10,517 (19.17)	6,550 (10.36)	7,100 (9.95)
Mon	3,679 (6.96)	3,820 (6.96)	4,750 (7.56)	5,200 (7.29)
Total	**52,840 (100)**	**54,860 (100)**	**63,200 (100) (19.61)**	**71,350 (100) (30.06)**

Source: Department of Agriculture, Government of Nagaland, Kohima.

(ii) Use of Fertilizer:

Use of fertilizers/manure plays an important role in the agricultural production. Soil fertility is being decreased due to the continuous cultivation. Consumption of fertilizers in Nagaland is one of the lowest in the country; it is only 4.5 kg/ha in 1990-91, which is extremely low as compared to Punjab (i.e., 171.2 kg/ha) in the same period (Table-6.6).

Table-6.6: Consumption of Fertilizers and Pesticides (in tonnes).

Year	Fertilizers			Pesticides	
	N	P	K	Solid	Liquid
1986-87	159.80	138.38	19.39	83.28	292
1990-91	496.22	469.59	147.53	18.90	700
1993-94	496.06	454.35	138.85	31.07	610
1996-97	416.07	321.92	85.26	20.82	580
1999-00	480.14	280.00	59.60	09.00	400

Source: Department of Agriculture, Government of Nagaland, Kohima.

Though, soil composition and soil type in the state is favorable for agricultural crops, soil is rich and is fertile and thus the use of chemical fertilizers is

not very common. The practice of agriculture is traditional type. The people usually tilt the land in small scale for self-consumption, except in the foothill and valley areas of the state. Fertilizers consumption was little higher in the eighty's and early ninety's was that, when the farmers shift their crops from sugarcane to others in the plains and foothills areas, loss of soil fertility was noticed and the concerned department has provided fertilizers to the farmers at subsidized rate. However, commercial crops are coming up fast and the consumption of fertilizers is also will be on the increase side.

6.3 Livestock production.

(i) Introduction: The climate and the topography of the state have confined agriculture to the limited areas and limited period during the year. Rearing of livestock, since time immemorial, has not been only a hobby of the Nagas, but also because of the key role that the livestock has played in the development of rural economy, it has become an integral part of life. Livestock is also indicated the social status of a person among the rural folks.

The unique aspect of livestock and poultry birds for the people of Nagaland is that cent percent of the total population of the state are non-vegetarian by virtue of their food habit. The livestock not only provides valuable animal protein essential for maintaining physical health of the people, but it is also the source of power supply for cultivation of crops in the state. With the increasing population the demand for livestock products viz., meat, milk and egg as well as for animal power

is increasing, and it is natural that livestock industry should grow fast to make available the adequate quantity of animal protein as well as animal power supply for the speedy economic growth process of the state.

There is another important aspect, that unemployment problem is increasing everywhere, more so in rural areas. Absorption of large number of educated unemployed as well as rural masses in this industry is quite possible even in remotest areas. Traditionally, Naga people are used to rearing animals, almost all the households in villages are found to be keeping pigs and poultry birds and a few heads of cattles, and if these could be made remunerative, the expansion of the livestock development programme on scientific way as well as technical know how can be helped from the concerned department.

(ii) Livestock Census: The Department of Veterinary and Animal Husbandry, Government of Nagaland, Kohima has revealed a total livestock population in the state during 1972, 1978, 1982 and 1987 as 10.53, 10.94, 14.59 and 17.33 lakhs respectively in their Census Reports. With an increased number of populations in the state, the numbers of livestock also have been increased; the census record shows an average growth rate of livestock in the state at 18.68%. This has projected that a total livestock population came up to about 24.1 lakhs and 29.55 lakhs in 1997 and 2000 respectively. Livestock population of almost all species is increasing in all the districts, except in Mokokchung, which the numbers of livestocks are on decreasing trends.

There is a marginal increase in the concentration of almost all type of animal species in Kohima District. The percentage share of bovine, sheep and goats and even pigs and poultry has been increase during the last ten years (1987-1997). It shows that there is an increasing demand of meat with the increasing population of Kohima District, which concentrates the animal wealth (Table-6.7).

Table-6.7: Various Species of Livstocks in the State.

Species	Year	Kohima	Mokok-chung	Tuens-ang	Zunhe-boto	Phek	Wokha	Mon	Total
Bovine	1987	1,01,968 (44.16)	22,170 (9.61)	30,785 (13.32)	33,168 (14.36)	9,256 (4.00)	18,610 (8.06)	14,942 (6.47)	**230,899 (100)**
	1997	2,09,128 (44.86)	30,396 (7.25)	44,553 (10.62)	55,271 (13.18)	21,130 (5.04)	33,841 (8.06)	25,620 (6.11)	**419,939 (100)**
Mithun	1987	-	-	-	-	-	-	-	-
	1997	89,540 (81.09)	-	10,766 (9.75)	7,110 (6.44)	2,996 (2.71)	-	-	**110,412 (100)**
Sheep & Goat	1987	19,468 (26.94)	6,988 (9.67)	16,431 (22.74)	13,040 (18.05)	2,822 (3.90)	6,835 (9.46)	6,658 (9.21)	**72,242 (100)**
	1997	67,348 (41.30)	6,890 (4.22)	23,777 (14.58)	28,871 (17.70)	5,380 (3.30)	15,807 (9.69)	15,008 (9.20)	**163,081 (100)**
Pigs	1987	63,858 (20.70)	65,747 (21.31)	48,416 (15.69)	63,327 (20.52)	21,008 (6.81)	29,608 (9.59)	16,504 (5.35)	**308,768 (100)**
	1997	173,536 (30.37)	71,933 (12.59)	77,540 (13.57)	102,137 (17.88)	28,484 (4.99)	66,300 (11.61)	51,248 (8.97)	**571178 (100)**
Poultry	1987	3,59,511 (33.89)	1,92,367 (18.13)	107,143 (10.10)	182,264 (17.18)	97,344 (9.17)	83,586 (7.87)	38,596 (3.63)	**10,60,8 11 (100)**
	1997	-	-	-	-	-	-	-	

Source: (i) Zeliang, T., and R.D.N. Singh, Department of Veterinary and Animal Husbandry, Kohima, Nagaland.

(ii) Government of Nagaland, Planning Cell, Directorate of Veterinary & Animal Husbandry Kohima, Nagaland.

The state as a whole is spending about Rs. 766.40 crores annually for meat, milk and eggs, where as the availability of these products is worked to be only 31.57% of the total consumption of animal products (Zeliang & Singh 1998). However, taking into account that nearly 50% of the availability of meat is being consumed annually, the overall contribution to the State Domestic Products will drop down to 22.07% amounting to only Rs.169.17 crores per annum as per estimated available during 1997-98 (Table-6.8). It is also made available as per record of the same year that an exceeding amount of Rs. 597.32 crores/annum had been incurred through purchase of livestock and poultry birds only from outside the state for consumption.

Table-6.8: The Contribution of Livestock Products to State Economy.

Particulars	Total Demand		State Domestic Products		Total Net deficit (Rs. in Crores)
	Average Consumption	Monetary Value (Rs in crores)	Availability	Monetary Value (Rs. in crores)	
1. Meat	150 gm/ head/ day	574.87	38 gm/ head /day	145.63	429.24
2. Milk	200 gm/ head/ day	164.25	104 gm/head/day	85.41	78.84
3.Eggs	½ egg/ head/ day	27.37	0.10 No./head/ day	10.95	16.42
TOTAL		766.49		241.99	524.45

Source: The Revised Annual Plan (2001-2002), Government of Nagaland, Department of Veterinary & Animal Husbandry. Kohima.

Assumptions: (i) Average consumption based on individual consumption per head per Day.

(ii) Human population of 15 lakhs has been assumed, calculated at 5% growth rate from 1991 Census up to 1997.

(iii) Availability of animal products based on sample survey report during 1997 conducted by the Department.

In Nagaland, per capita meat consumption is highest in the country and except in villages; all livestock are imported from outside the state. This drainage of huge amount of the state economy should, therefore, be looked into seriously and all possible measures should be taken up with a concerned effort so as to restore a stable state economy in near future. So also, employment facilities can be created to the educated unemployed as well as rural youth who are under-employed and the rural masses in general. The concerned Department, the State Government agencies as well as Non-Governmental Agencies must take this seriously and contribute all possible help in this matter, so that the State economy can be improved so also the lives of individual person in the state.

Apart from subsistence agriculture, household industries and artisan production has been the important limb of economic life of Naga people. This is obvious in a self-contained and self-subsistence economy in which most of the consumption is actually produced by the members within the community. Thus, artisan production in weaving, wood carving, stone work, carpentry, blacksmithing, bamboo work and manufacturing of many households implements and items has been the important activities of the people, but these activities are doing along with agricultural activities. It has neither been considered as main activities nor secondary activities. These are only subsidiary activities.

6.4: Socio-economic Characteristics:

The problems and prospects of development in the state of Nagaland may be understood by interpreting the characteristic features of socio-economics attributes at village level. A classificatory approach has been adopted for the same.

6.4.1 The Choice of Attributes:

There is a variety of ways to choose the attributes for development because development is multi-variate concept. However, on the availability of village-wise data, the following nine attributes are chosen for the present study, which are placed into six main categories.

(A) The attributes related to Size:

The total size of land and labour provide the basis of production operation. Three attributes, which are directly or indirectly related to the development of village economy, are included in the present analysis.

(i) The size of cultivated land: It is a major attribute of available land resources. The economy of the state is closely related to agriculture. Therefore, this attribute would provide a base of agricultural operation. On the other hand, larger size of village-cultivated area has diversities in its physiographic conditions where the diversification of agricultural activities are expected while the smaller size of cultivated land has more

homogeneous physiographic conditions with the scale of economies (Visser 1999).

(ii) The total amount of production, which is associated with the production size and must be positively, related to the above-cited attribute. Generally, the economy of the villages of Nagaland is agriculture-based in which paddy crop is dominant (as described in the earlier section of the Chapter). Therefore, total production of paddy is considered to characterize this attribute.

(iii) The population size that is a good indicator of available human resources. It shows the total requirement of food in the village and available labour force to be provided employment/engagement in various activities at the village level. These must be a positive relationship with the other attributes of size. For example, larger the cultivated land size in the village, greater is the population as well as production size of the same village and *vice-versa.*

(B) Food Availability:

In hill and mountain areas, there is a deficiency of food grains. As a result, the food consumption patterns are different in these areas. Agriculture is practiced only in a few flat patches and on the sloppy areas. Even then the locally produced food is not sufficient. The assessment of surplus/deficient food areas of the state would provide

the base of rural development. One attribute related to available food is included here.

(iv) Index of food availability: It is calculated by dividing total population to the total production of the village that gave a result in terms of kg/person.

(C) Attributes related to Agricultural Productivity:

Agricultural productivity is a key component of entire system of socio-economic development in rural areas. It is attributed by many production factors like land (which explains the physical conditions of production), labour that produces some part of the production and capital as in the form of technological enhancements in production processes. The application of modern technology is at its initial stage in the agricultural practices in Nagaland. The farmers have started using HYVs seeds and Chemical fertilizers especially in the inter mountain valley areas where land is flat and fertile. However, there is an involvement of labour force in the agricultural practices. Two main attributes of productivity, namely the land and the labour productivities of agriculture have been considered for the present discussion.

(v) The Land Productivity, which is defined as production per areal unit of cultivated land and calculated dividing total agricultural production by the total cultivated area of the village.

(vi) The Labour Productivity, which is indication of production produced by the employed labour in agricultural practices. The separate effect of

employed labour cannot be drawn from the combine effects of many production factors in the system. However, total agricultural production per agricultural worker (cultivator plus agricultural labour) has been calculated to precede the present discussion.

(D) Attributes related to available Labour:

Demographic and social dimensions of population are equally important when we analyze the productivity pattern because agriculture is main activity of the people whether they are fully employed in agriculture or not, it is a way of life and culture of Naga tribes in the state. Occupational structure, engagement of workforce in agricultural activities and available workforce for agricultural operations are the main aspects to be included for highlighting the characteristics of rural development and its problems.

(vii) Share of total workers to total population. It is calculated in percent by dividing total workers to total population. It would reflect the ratio of available workforce in the village.

(viii) Share of Agricultural workforce: It shows the employment share of workforce in agricultural activities.

(ix) Workforce intensity in Agriculture: It reflects an employment of agricultural workforce per unit of cultivated area.

(E) Attribute related to Social Dimensions:

There are many social dimensions of population like share of tribal population, sex composition, social amenities and the rituals and festivals. The village-wise data of such dimensions are not available. However, an important dimension namely, the literate population, has been included here, which shows a human resource development and useful for defining the dimensions rural development.

(x) The Literacy rate: It indicates the literate's percentage in the total population.

(F) Attributes related to Agricultural Infrastructure:

The application of modern technology is yet to be availed in the state. There is a negligible use of chemical fertilizers and mechanization for the intensification of agricultural practices. However, there is use of irrigation through its traditional means. One attribute related to the means of production is used to observe its effect on rural economy.

(xi) Percentage share of Irrigated Area, which is calculated dividing total irrigated area of the village by the total cultivated land to get its share.

6.4.2 Independent versus Explanatory Variables:

Out of a total eleven attributes related to rural development problems, a few attributes reflect the direct impact on which the entire analysis is resting upon. They

may be treated as major components of the system. These have been treated here as independent variables to characterize the features of rural development. They are,

(a) The size of cultivated land; which comes out as major independent attribute through which the production as well as demographic sizes of the village is also reflected. The dimensions of rural development are directly/indirectly influenced by the land size. It also reflects the available natural resources of the village.

(b) The land Productivity; it is more related to the production in relation with the physical conditions of land. It means the natural processes of production.

(c) The Labour Productivity; which shows the effects of labour on production processes. It is also an essential attribute/variable because the agricultural practices and rural development activities are labour-dominated in the state. It is treated as independent variable in the present case.

Remaining eight attributes are considered as explanatory variables, which may explain the causes of variations in the rural development. The salient features highlighted basing on the classification of explanatory variables for the independent attributes are interpreted in the following paragraphs.

(a) Distributional Characteristics Land Size:

The village size as considered here in terms of total cultivated area of the village, is an important determinant of rural economy. The larger size of cultivated land of the villages may have diversified economy with the variety of agricultural activities and *vice-versa* (Visser 1999). The economies of location may also be seen in the larger villages. Since Nagaland has a primitive subsistence economy of the villages, the socio-economic set up of the rural masses would be influenced by the size of village. The validity of this fact has been tested to classify villages coinciding cultivated area size of the villages as determinant for the present classification.

In order to obtain the basis of agricultural production and to determine the socio-economic characteristics, the villages have been classified into eleven categories by the size of its cultivated area, such as the villages having (i) Extremely Very Small size of cultivated area (0 – 50 ha), (ii) Extremely Small (50 – 100), (iii) Very Very Small (100 – 150), (iv) Very Small (150 – 200), (v) Small (200 – 250), (vi) Medium (250 – 300), (vii) Big (300 – 350), (viii) Very Big (350 – 400), (ix) Very Very Big (400 – 450), (x) Extremely Big (450 – 500) and (xi) Extremely Very Big size of cultivated area (500 ha & above). The characteristics features of the distribution are given below:

(a) The distribution shows an interesting feature that about 80% villages (960 out of a total 1224) falls under the categories of extremely small to very small size of cultivated land (i.e., 0-200 ha; the first four categories

given in the Table). It means concentration of village's lies towards the small size where peasant economy prevails (Table-6.9).

(b) In fact, there are positive relationships of areal size with production and also with the population size of the village. However, there is a slower increase in the size of cultivated area from 33 ha/village to 617 ha/village than the increase in population size from 351 person/village to 3161 persons/village as the areal size increases. It means the large size villages have more concentration of population in the state (Table-6.9).

(c) The agricultural productivity (land as well as labour) does not vary much subject to changes in the size of cultivated land of the village. However, there is slightly diminishing tendencies of land as well as labour productivities, when village size is enumerated bigger. It means there are diseconomies of size scale.

(d) Share of agricultural workforce is positively related to workforce intensity. Of course, high pressure of workforce increases its intensity. There is slight decrease in the percentage share of workforce as land size increases. Consequently, the workers intensity also diminishes as land size of the village increases.

(e) The share of irrigated land does not vary much in the villages by its size of cultivated area because of the minor irrigation is possible everywhere in the area.

Table-6.9: Distributional Characteristics of Land Size.

Categories	Classes landsize (in ha)	Village			Land productivity (qu./ha)/ villages	Food available (kg/person)/villages	Labour productivity (qu/persons)	% share of total workers to total population	% of Agricultural workforce	Intensity of agri. Workforce person/ha	Irrigated area (%)
		Total	%	Av/Cv							
Extremely Very Small	0-50	392	32.03	Av	16	337	14	47	82	4	33
				Cv	14	148	237	36	27	154	52
Extremely Small	50-100	340	27.78	Av	16	328	12	46	85	3	30
				Cv	12	77	291	39	19	98	40
Very Very Small	100-150	121	9.88	Av	15	324	12	46	87	3	31
				Cv	7	70	184	41	20	104	46
Very Small	150-200	107	8.74	Av	15	336	10	46	85	2	30
				Cv	5	49	89	23	22	66	44
Small	200-250	81	6.62	Av	15	420	12	47	83	2	29
				Cv	6	100	89	21	20	75	49
Medium	250-300	41	3.35	Av	15	348	10	45	88	2	34
				Cv	6	49	60	23	25	60	47
Big	300-350	28	2.29	Av	15	375	11	46	83	2	31
				Cv	5	51	61	21	24	88	42
Very Big	350-400	53	4.33	Av	14	407	12	47	88	2	34
				Cv	6	66	88	28	17	67	42
Very Very Big	400-450	29	2.37	Av	14	368	13	43	80	2	36
				Cv	8	70	83	27	30	88	39
Extremely Big	450-500	20	1.63	Av	15	347	11	41	81	2	41
				Cv	5	64	63	17	21	68	38
Extremely Very Big	500 & above	14	1.14	Av	14	478	19	41	74	1	45
				Cv	7	104	102	19	38	62	58
The State Average		1224	100		15	369.81	12.36	45	80.52	3	34

N.B- (i). Av refers to Average value and Cv refers to Co-efficient of variation in %.
(ii). State average figures are calculated by considering village as individual unit.

Labour productivity and Food availability variables of the villages have the maximum variation within the categories of Extremely Very Small and Very Small village sizes. The coefficient of variability is observed at 291% in the labour productivity and Food availability 148% in the category of extremely smaller size of villages (Table-6.9). It means that owing to the more variation in population size in the villages of this category, labour variations become more fluctuating and labour productivity attributes also seems more fluctuating in the category of very small villages.

(b) Distributional Characteristics of Land Productivity:

Land Productivity indicates how the production processes are being accelerated within the specific limits imposed by physiographic conditions of land. Suitable land conditions (specially the soils and climate) increase productivity by way of providing soil nutrients to the plant growth.

Classifying villages into ten categories of land productivity such as the areas of (i) Extremely Low level of productivity (below 10.99 qu/ha), (ii) Very Very Low (11.00-11.99), (iii) Very Low (12.00-12.99), (iv) Low (13.00-13.99), (v) Medium Low (14.00-14.99), (vi) High Medium (15.00-15.99), (vii) High (16.00-16.99), (viii) Very High (17.00-17.99), (ix) Very Very High (18.00-18.99) and (x) Extremely High land productivity (19.00 qu/ha and above), the following features of the distribution of land productivity emerge.

(a) There is a normal distribution of villages for the various categories of land productivity. The highest frequency of villages lays in its medium-low category. It shows that the concentration of villages lies in the medium categories of distribution. For example, the 572 villages out of the total 1224 (i.e., 46.73%) are enumerated in such categories of medium values of land productivity. However, the villages would be located in different agro-ecological conditions.

(b) Physiographic factors like relief, drainage and soil conditions are major determining factors for the areal variations of land productivity. Most of the pockets of high productivity are located in the foothill zones of Dimapur and Medziphema valleys, while the areas of low land productivity are situated in the eastern high hills and mountain areas (Fig-6.2).

(c) Obviously, the areas of high productivity have more food availability (359 to 453 kg/person) with higher degree of labour productivity, marginally larger share of the workforce in the population composition and of the agricultural workforce also. It shows that land productivity, which is controlled by the physical factors of land as interpreted earlier, concentrates population and provides more opportunities to engage more workforces in agricultural activities in the state. There is sufficient local food available in these areas of high productivity.

(d) The attributes of food availability and labour productivity have significant variations within each category of land productivity, because both the attributes are related to population, which is more mobile and creates areal imbalances within the class. The coefficients of variability are found very high of the attributes related to population, namely, the food availability, labour productivity, labour intensity, within the category of high land productivity (16-17qu/ha) in the state (Table-6.10). It means that the villages of high productivity have a tendency of more fluctuations in the attributes related to population and workforce.

Table-6.10: Distributional Characteristics of Land Productivity.

Category	Class Land productivity (qu/ha)	Village			Land product-ivity (qu/ha)/ villages	Food available (kg/per son) /villages	Labour producti-vity (qu/ persons)	% share of total workers to total population	% of Agricul tural workf-orce	Intensity of agri. Workf-orce	Literacy rate (%)	Irrigated area (%)
		Total	%	Av/Cv								
Extremely Low	0-10.99	8	0.65	Av	10	106	3	42	84	5	55	36
				Cv	5	68	74	24	22	64	25	63
Very Very Low	11.00-11.99	9	0.74	Av	12	257	8	41	89	3	40	29
				Cv	3	63	69	29	17	108	60	51
Very Low	12.00-12.99	68	5.56	Av	13	304	8	45	92	2	50	24
				Cv	2	58	80	27	12	59	37	50
Low	13.00-13.99	129	10.54	Av	14	391	18	38	75	2	48	30
				Cv	2	171	148	34	34	83	39	42
Medium Low	14.00-14.99	308	25.16	Av	15	336	10	46	83	3	50	37
				Cv	2	83	110	38	22	117	31	47
Medium High	15.00-15.99	264	21.57	Av	15	282	11	45	84	3	52	32
				Cv	2	48	221	24	19	137	30	45
High	16.00-16.99	182	14.87	Av	16	367	19	46	80	4	56	33
				Cv	2	103	336	41	28	164	32	48
Very High	17.00-17.99	88	7.19	Av	17	359	10	52	87	3	29	26
				Cv	1	61	146	39	19	72	52	48
Very Very High	18.00-18.99	103	8.41	Av	18	453	12	50	90	3	32	31
				Cv	1	7	118	24	20	82	49	36
Extremely High	19.00 & above	65	5.31	Av	20	376	10	49	91	4	29	25
				Cv	5	137	139	22	19	86	49	32
State Average		**1224**	**100**		**15**	**355.2**	**18.86**	**45**	**80.52**	**3.5**	**49.77**	**32.35**

N.B: (i). Av refers to Average Value and Cv refers to Co-efficient of Variation in %.

(ii). State average figures are calculated by considering village as individual ~~limit~~ unit.

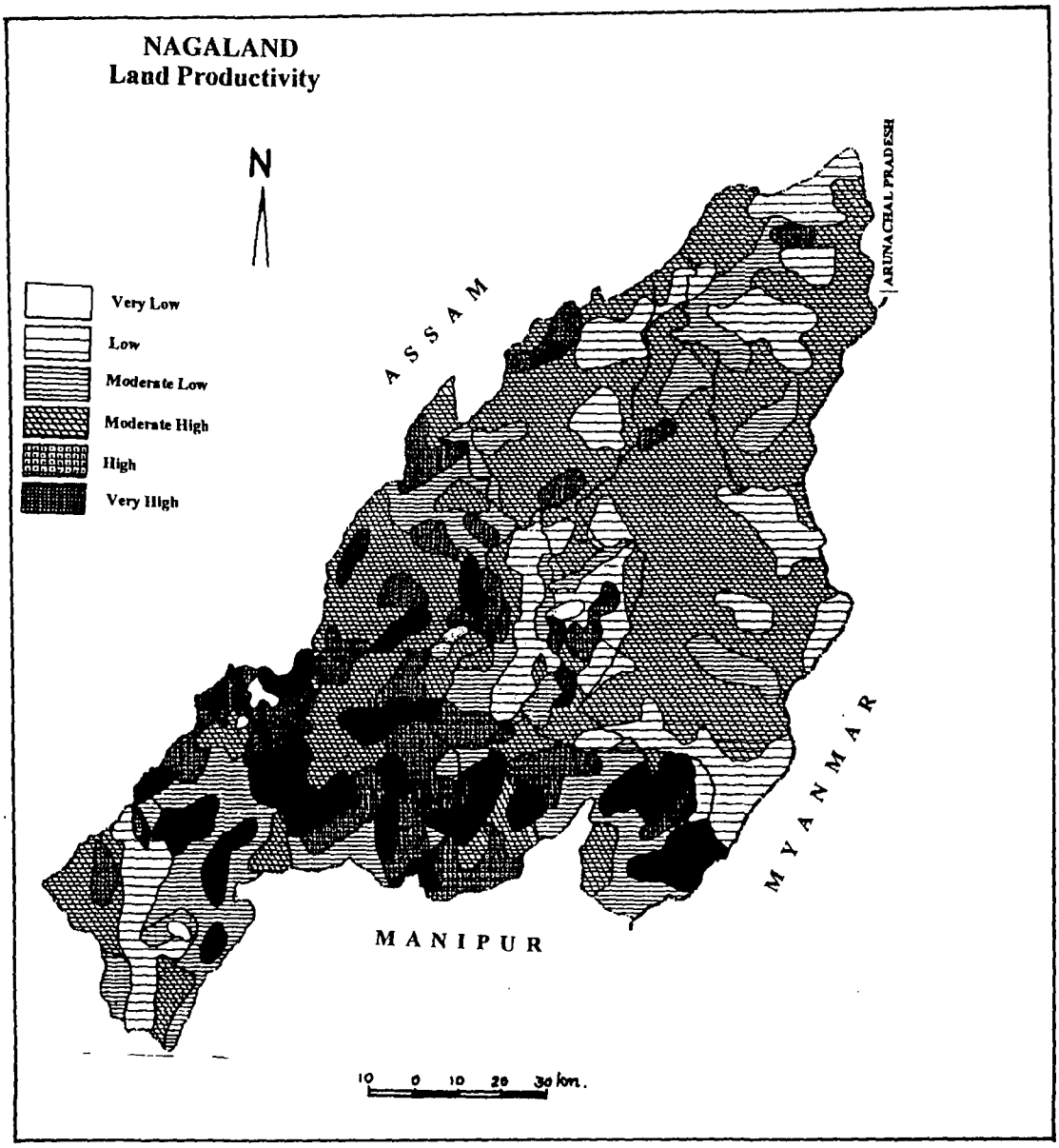
NAGALAND
Land Productivity
N
Very Low
Low
Moderate Low
Moderate High
High
Very High
ASSAM
ARUNACHAL PRADESH
MYANMAR
MANIPUR
10 0 10 20 30 km.

Fig-6.2

(c) Distributional Characteristics of Labour Productivity:

Labour productivity is important as it determines the socio-economic set up of agricultural population, besides, rural migration problems, wage rates of rural landless agricultural labourers, income earning and purchasing capacity of rural families, trends of labour absorbing capacity in agriculture sector, which are directly or indirectly determined by the effects of labour on agricultural production.

In under-developed societies, there is unlimited supply of labour. When agriculture season comes, all walks of life involve in the activity. Therefore, it is necessary to have accountability and it is worthwhile to interpret the degree and pattern of labour productivity. It is also to be kept in mind that the agro-climatic conditions and broadly the physiographic conditions influence the productivity.

The total numbers of villages have been classified into eleven categories considering labour productivity as the basis of classification. In its physical terms, the categories of labour productivity are formed as: (i) Extremely Very Low level of labour productivity (0-1.99 qu/agricultural worker), (ii) Extremely Low (2.00-3.99), (iii) Very Very Low (4.00-5.99), (iv) Very Low (6.00-7.99), (v) Low (8.00-9.99), (vi) Medium (10.00-11.99), (vii) High (12.00-13.99), (viii) Very High (14.00-15.99), (ix) Very Very High (16.00-17.99), (x) Extremely High (18.00-19.99), and (xi) Extremely Very High labour productivity (20.00 and more than that qu/worker.). Accordingly, frequencies of villages and their average value of related attributes are found out for each category. The salient features of distribution are given below.

Table-6.11: Distributional Characteristics of Labour Productivity.

Category	Class Labour productivity (qu/person)	Village			Labour producti-vity (qu/person/villages	Food available (kg/person)/villages	% Share of total workers to total population	% of Agri. Work-force	Intensity of Agri. Workforce (person/ha)	Literacy Rate (%)	Irrigated Area (%)
		Total	%	Av/ Cv							
Extremely Very Low	0- 1.99	59	4.82	Av	1	50	50	83	16	52	44
				Cv	37	61	70	23	70	43	54
Extremely Low	2.00- 3.99	151	12.34	Av	3	151	51	91	5	40	33
				Cv	17	35	26	15	23	53	49
Very Very Low	4.00-5.99	264	21.57	Av	5	225	50	90	3	43	32
				Cv	12	26	22	12	17	41	43
Very Low	6.00-7.99	201	16.42	Av	7	290	48	88	2	45	31
				Cv	8	29	40	19	14	36	46
Low	8.00-9.99	147	12.01	Av	9	327	43	85	2	48	29
				Cv	6	27	19	17	13	33	41
Medium	10.00-11.99	91	7.43	Av	11	386	42	84	1	48	31
				Cv	5	30	22	18	12	38	44
High	12.00-13.99	76	6.21	Av	13	475	45	82	1	48	29
				Cv	4	31	22	19	11	35	45
Very High	14.00-15.99-	52	4.25	Av	15	523	43	82	1	50	32
				Cv	4	39	28	26	14	38	41
VeryVery High	16.00-17.99	35	2.86	Av	17	483	38	74	1	54	35
				Cv	3	36	20	27	11	28	45
Extremely High	18.00-19.99	29	2.37	Av	19	528	39	72	1	49	30
				Cv	3	36	23	31	12	40	62
Extremely VeryHigh	20.00 &above	119	9.72	Av	57	851	37	62	0	57	29
				Cv	155	113	44	53	47	30	46
The State Average		1224	100		18.86	355.2	45	80.52	3	49.77	32.35

N.B

(i). Av refers to Average value and Cv refers to Co-efficient Variation in %.

(ii). State average figures are calculated by considering village as individual unit.

(a) There is very low labour production (1-8 qu/worker) from the extremely very low category to very low categories (i.e., the first four categories), which account for a total of 675 villages (55.15%) where as on the other hand, about 19.2% of the total villages are enumerated in the categories of labour production (15- 57 qu/worker). However, remains 25.6% share of the villages falls under the categories of moderate labour productivity. This shows that more than half of the total villages are in low category of labour productivity in the state, which shows a poor performance in the food production (Table-6.10).

(b) The distribution shows that there is a negative relationship of the workers percentage share of total population, the percentage share and intensity of agricultural workforce with the labour productivity. It means increasing pressure of workers in agricultural practices and its unlimited supply diminishes labour productivity. As a result the areas of low productivity are characterized as the areas of high pressure of population and workforce in agricultural practices.

(c) The areas of low productivity are characterized as high and high elevations of undulating topography. These areas lie in the eastern part of the state of high hills namely, Zunheboto, Wokha and Mokokchung districts of the central part of the state including Peren sub-division of Kohima district, where low labour productivity prevails (Fig.-6.3). Undoubtedly, physiography is a constraint to labour productivity.

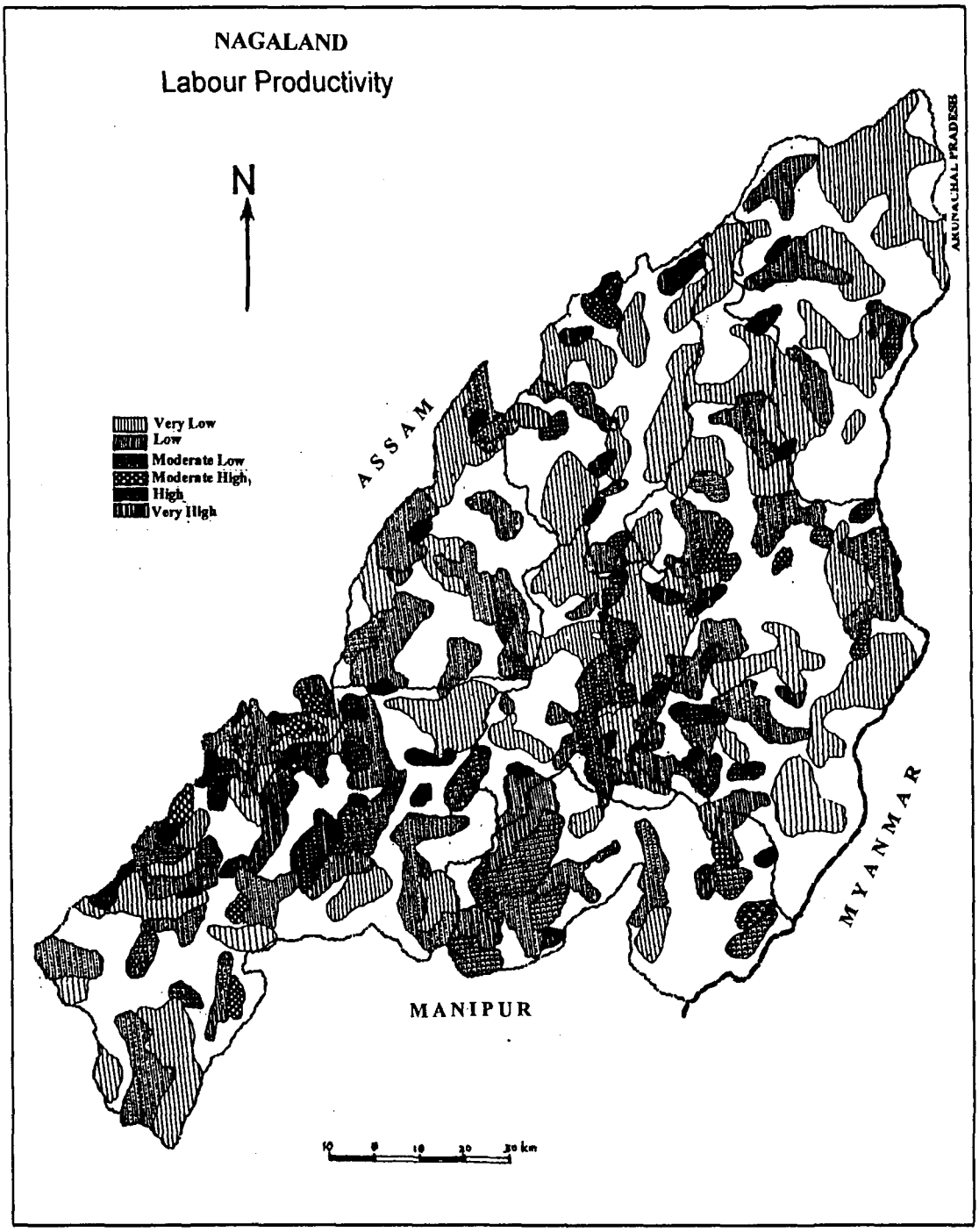
NAGALAND
Labour Productivity
N
Very Low
Low
Moderate Low
Moderate High
High
Very High
ASSAM
ARUNACHAL PRADESH
MYANMAR
MANIPUR
10 0 10 20 30 km

Fig.- 6.3

However, the pockets of favourable ecological conditions and available resource niches have high productivity.

(d) Literacy rate and irrigated area, which are good indicators for the increase of labour productivity, are found constant in almost all the categories with their lesser degree of areal variations. Literacy rate is noticed 50% and area under irrigation is counted 32.35% in the state. Almost all areas of high as well as low productivity have average literacy rate with irrigation facilities. However, both attributes are essential fro raising the labour productivity.

6.5.4: Factors affecting Agricultural Production.

Agricultural production has been handicapped by many factors of varied nature in the state. All these can, however be conveniently classified under three broad heads, viz, (i) the physical and biological factors,(ii) socio-economic-cultural complexes and (iii) the use of agricultural technology.

(i) Physical and biological factors: The physical and biological factors affecting agricultural productivity in the state, related to the agro-climatic conditions of the region. The rough terrain and hilly conditions of the state, permanent type of agriculture is difficult; at the same time the dependence of rain fed agriculture make the people uncertainty, that whether it will be a bumper or a scanty harvest.

Soil erosion and landslide are other big problems faced by the farmers of the region. The practice of jhum cultivation on the slopes or on the hilltops led to severe soil erosion and landslide in the region. The whole hillock is cleared for cultivation and especially, during rainy seasons because of excessive rains, both the soil erosion and landslide took place. This resulted to the lost of fertile soil, crops and even the vegetation. On the other hand where there is no rain for longer period, drought is another calamity in the region.

(ii) The Socio-economic and Cultural Factors: There are many social aspects, which have direct bearing on agricultural development in particular region. As a developing state, there is an increasing population pressure on the agricultural sector of the region. The traditional bound people and the historically given old attitudes of apathy and neglect towards the present lives are big hurdles in the say of progressive agriculture. Due to the absence of industrial development, the unemployed people are engaged in the agricultural sector (disguised unemployment), which destabilizes the agricultural structure and diminishes labour productivity in the agricultural practices in the state.

(iii) The Technological Factor: It is a principal contributor to the development of agriculture. Full utilization of the potential of land in the region cannot be achieved only by human and animal power with traditional method of farming. Due to the lack of technological change, agriculture in the state is still at subsistence level and farmers are economically poor. The use of chemical fertilizers and HYV seeds in the state are very less. Mechanical techniques, of course, due to the hilly region may not

be advisable but small power tillers are in use by the farmers. Other infrastructure needs such as Irrigation, agricultural marketing, and agricultural credit facilities are all required for proper management of the agricultural operation in the state.

6.6: Concluding Remarks

In the present Chapter, agricultural practices, land use and ownership systems of the state are presented. The cottage industries and non-governmental rural activities are also part of rural economy. These are not included here as they form an insignificant share of the economy. Considering eleven attributes/variables of agricultural practices, the characteristics of rural development are highlighted. These five attributes, namely, land productivity, labour productivity, cultivated areal size, agricultural workers and literacy rate have contributed to the level of development, which varies areally in the state.

Some of the important features of agriculture in the state indicate that there are obliterated productivity pattern as productivity is highly influenced by the physical factors of landscape. The villagers are adopted the physical factors and altered agricultural practices accordingly. However, irrigation and way of cultivation are traditional. The farmers wish to alter the agricultural practices but they do not have the modern means of agriculture. A suitable agricultural infrastructure is required. The fallowing main conclusions are drawn from the present chapter.

(i) There is a dominance of population pressure and workforce on agricultural practices. There is relationship of percentage share of workforce engaged in agriculture and workers' intensity. On account of decrease in workforce percentage by the village-land size, the workers intensity (person/ha) also diminishes as land size of the village increases.

(ii) Land productivity, which is 'average yield', is controlled by the physical factors of land specially elevation, slope and drainage patterns. Therefore, there are pockets of high land productivity in the state.

(iii) Labour productivity is negatively related to labour intensity. However, labour is a complementary factor of increasing crop yield which influences labour productivity in the system of agricultural practices.

(iv) Irrigation, HYV and Chemical fertilizer are good booster of production and productivity but are being used at their limited level. Literacy also has positive relation with the productivity specially the labour productivity.

Notes:

*Some Village Councils in Medziphema areas have to impose ban for further plantation on village community forests land by individuals, fearing that after some years they may not able to get enough space for *jhum* cultivation as well as for collection of firewood.

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CHAPTER-VII

LEVELS OF DEVELOPMENT

CHAPTER - VII

LEVELS OF DEVELOPMENT

7.0: Introduction:

In the preceding chapter, the characteristic features of development in Nagaland have been interpreted by considering eleven main attributes of development taking into account, at the micro-areal level (i.e., village). It followed an analytical approach of the discussion towards the problems and prospects of rural development of the state. Spatial pattern of the major attributes of development, which has been analysed in the earlier chapter, would be helpful in identifying the areal pockets of low performance of these attributes. However, another aspect of rural development is related to understand the levels of development and composite picture of development attributes may be viewed in its totality. Such synthetic approach of development may provide a sound base of finding the areas of deficiencies of infrastructure in the state, which would be useful for planner in this connection. Generally, the economists and sociologists give the socio-economic planning views in totality. Being a hilly and mountainous state with vast variety in socio-cultural phenomena, the study of spatial processes of development for such state is equally important which would specify the areas of weak infrastructure and more problematic.

Following such view of rural development for the state of Nagaland, an aggregated or Composite picture of developmental attributes is studied in the present Chapter to identify the weak links of developmental activities and to delineate the areas of different levels of development.

7.1: Attributes Considered for Measuring Development Level.

In order to understand the level of development and their socio-economic prospects of the rural people in the state, some indicators/ attributes related to development are to be identified and, accordingly, the composite force are to be measured. An indicator, in this context, is a statistical measure designed to capture and reflect the content of certain characteristic features of development with reference to a given area at a given time.

As development is a multi-faceted process, it is felt that no single indicator/ attribute will be able to reflect the picture in totality. Rangacharyulu (1986) also supported this statement, that the multi-dimensional view of development is necessary to have a group of indicators to measure it. Thus, in this exercise, 16 different attributes are taken into account to carry out the composite picture of development of the state. Some attributes have direct view of development, while others may be the attributes influencing the development levels. The important six sets of attributes, which include 11 attributes, have been drawn from the previous Chapter-VI, where the importance of much attributes has been described. These sets of attributes are related to the village-size, the food

availability, the agricultural production and productivity, the available labour for participation in developmental activities, the social dimensions and the available infrastructure for agriculture (Chapter-VI.4).

In addition, six more attributes, which are related to a set of social and physical infrastructure characteristics, have been included to show the complete holistic picture of the development. They are namely:

xii) Accessibility of road: It is a multi-purpose infrastructure for development of an area. The villages connected with road may have high profile of development and *vice-versa.*

xiii) Available electricity in the village: It is useful for domestic, agricultural as well as industrial purposes. It influences all the activities of development. The electrified village would be much more advanced than the non-electrified villages. The larger electrified villages may be the growth centers of the area in future and develop non-agricultural activities to concentrate rural labour force.

xiv) Educational facilities: It is kind of infrastructure for the development of human resource of the area. The villages having educational facilities are ranked according to their availability.

xv) Medical facilities: These are also a kind of infrastructure for the maintenance and development of health of the people in the area. The villages are ranked according to the available medical facilities.

xvi) Drinking water: It is an essential component for the life and safe-drinking water (sanitation) is an important indicator so far rural development is concerned. It directly or indirectly shows the level of development, health status of the people etc, because most of the working force spent a significant part of its time to carry water for the domestic purpose.

xvii) Market facilities: In the modern scenario of development, market plays an important role in development because market forces influence the economy of the surrounding villages.

According to the importance of a location of market, the market villages are ranked and assigned weightage. For the measurement of level of rural development, the village-wise data of the above cited 16 attributes have been calculated and the weightage of each facility/function performed by the village have been assigned (Table-7.1).

Table-7.1: Name and Units of different attributes of Rural Development.

Sl. No.	Name of Attributes	Units	Year of Statistics
1	Cultivated land size of the village	Hectare (ha)	1997
2	Population size of the village	Persons	1991
3	Amount of production	Quintals	1997
4	Food availability	Kilograms/person	1991
5	Total Workers/workforce	Persons	1991
6	Land productivity	Quintals/hectare	1991, 1997
7	Labour productivity	Quintals/worker	1991, 1997
8	Agricultural workforce (Cultivators + Agricultural labourers)	Percentage	1991
9	Literacy rate	Percentage	1991
10	Irrigated area	Percentage	1997
11	Accessibility to road	Kilometers	1997
12	Educational facility	0=No 1=Primary 2=Middle school 3=High school 4= 10+2+3	1997
13	Medical facility	0=No 1=Dispensary, 2=Sub-Centre 3=PHC 4=Hospital	1997
14	Drinking water	1=Yes & No=0	1997
15	Electricity facility	1=Yes & No=0	1997
16	Market facility	1=Yes & No=0	1997

7.2: Aggregation of Attributes.

There are various methods of aggregation the strength of these attributes like 'factor analytic method', arbitrary weightage method, Z-score technique of eliminating the effects of different units. In order to put all attributes of different type on its 'free scale', the method of 'proportional weightage' have been assigned dividing the individual value of a particular attribute by its mean to convert it into a scale of uniform value (Details of the mathematical procedure of this method is given in Chapter-I, Methodology pp-12). Later on, the transformed weights/ scores of each

attribute for each village are added to arrive at finally aggregated score of that village which shows the level of development and is called 'Composite Index'.

The limitation of village-wise data is that the information on all these sixteenth variables does not pertain to a single year, but most of the data are based on 1991 Census Reports. In the case of total agricultural production, it is represented by the total production of paddy in the state as paddy being the main food crops of the people in these areas. Other crops are not included in the study. So also food availability refers to only rice production in kilogram per person. Total population, as it is used in the study, is only taken from rural population, because the study is concerned with the rural areas in village-wise.

There are many more attributes related to rural development, which would have been included in the present work. For example, the productivity changes, production growth, changes in food availability and so on are important attributes but could not be included here due to non-availability of its data at village level.

7.3: Categorization of Villages.

According to the Composite Index of development, villages are grouped into six categories of development. The isopleths technique of distribution map is used to delineate the areas of each category. The nomenclature of areas of different categories and its range of Composite Index are shown in Table-7.2.

Table-7.2: Nomenclature of the Areas of Development Categories.

Sl. No.	Categories	Composite Index	No. of Villages (%)	Cultivated Area in ha (%)
1	Very Low Level of Development	Below-15	468 (38.24)	26,114 (16.30)
2	Low Level of Development	15 - 20	393 (32.10)	51,027 (31.85)
3	Moderately Low Level of Development	20 - 25	181 (14.79)	38,951 (24.31)
4	Moderately High Level of Development	25 - 30	76 (6.21)	22,361 (13.96)
5	High Level of Development	30 - 35	51 (4.17)	7,165 (4.47)
6	Very High Level of Development	35 & above	55 (4.49)	14,597 (9.11)
Total			**1,224 (100)**	**160,215 (100)**

A general distribution of villages based on their development level shows that there is a concentration of the villages as well as the cultivated area towards the categories of low and very low levels of development. More than 70% number of villages and about 48% to total cultivated area of the state have been accounted for under the categories of Low Level of Development (Table-7.2). On the other hand, High and Very High Level of Development is confined only to 106 villages, which accounts for only 10% villages and 13.58% cultivated area of the total state figure. More details about the characteristic features and pattern would be described separately in the proceeding parts of the present discussion. The distribution of villages under the different levels of development is shown in Fig-7.1.

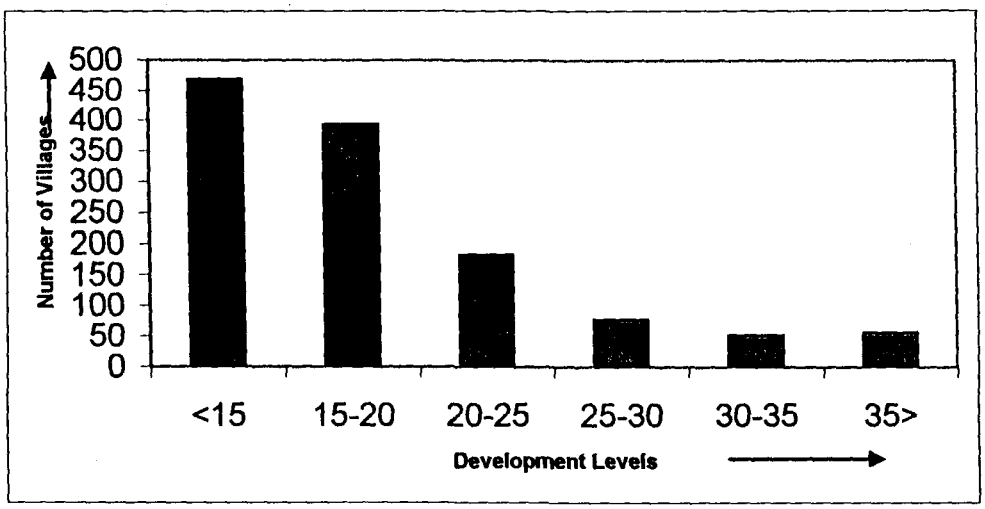

Fig.-7.1: Distribution of Villages under different Levels of Development.

7.4: Characteristic Features of Development.

A. The Areas of Very Low Development:

The areas of very low development constitute a percentage share of 38.24 of the total villages. These villages are generally small in size (i.e., average cultivated area is 55.8ha), scattered on the hill ranges and also newly established villages in the foothills, where road connectivity is poor. There is indication that the people in these very low development villages are facing the problems of poverty and malnutrition (that in these villages only 311.42kg of food grains per person is available annually). Infrastructural facilities are obviously poor with the poor living conditions of the people directly affecting the production level and, thus, both the land and labour productivities are recorded very low in these areas. The location of these villages of low development is controlled by the physiographic factors. Generally the location of such village is noticed in the barren lands with steep slopes and poor soil in which the crop-yield is very low.

The areas of very low development are found especially in (a) the eastern part of the state- Kiphere, Noklak, Longkhim and Mon, (b) the south-eastern part is Meluri, (c) the south west, Peren of Jalukie, (d) the central part of the state, Zunheboto, Akuluto, Ghathashi and (e) Baghty on the bordering west area and also (e) small pockets in Niuland under Kuhoboto. These low development areas are directly controlled by its physiographic factors, except, Baghty and Niuland that these two areas are in low lying areas (bordering with Assam), where land dispute used to be present.

B. The Areas of Low Development: Low development areas in the state of Nagaland occupies 32.10% share. They are scattered in the vast areas of the state, these areas are characterized by poor infrastructural facilities, low literacy rate, low production of agricultural commodities and poor conditions of labour production. These low development areas are found in different pockets of the state in Mon block, Chen, Noklak, Longleng, Longkhim, Kiphire, Akuluto, Zunheboto, Baghty, Kuhuboto, Medziphema, Jalukie and Peek block.

Generally, these moderate level development villages are comparatively larger in size with strong workforce and so they have higher production in food grains (i.e., 3383 to 4732 qu/village), there is sufficient food available with the people for their living (i.e., 383 to 405 kg/person). Population density in these areas is fairly high with 6 persons/ha. The yield of agricultural commodities and labour productivity are on the increasing side. However, land productivity is noticed constant at 15.75 qu/ha.

Agricultural workforce share is noticed moderate (78-81%) with moderate high intensity of workers engaged in agriculture (3 person/ha), higher degree of road connectivity, educational status and literacy rate of these villages are noticed.

Literacy plays an important role in development process and also on the work participation as well as productivity of the state. In the present study, it is found that literacy rate is increasing with the increase on the level of development. On infrastructural facilities, basic requirement is available with the people, but market facility does not find a place in these areas of the state.

Such areas of moderately low development are located in the pockets of Wakching block, Chen, Longleng, Sitimi, Mangkolemba, Chantongya, Wokha, Tokiye, Tseminyu, Kohima and Kikruma. Where as moderate high areas are found in Kohima, Kikruma, Phek, Wokha, Mangkolemba and Ongpangkong (Fig-7.1).

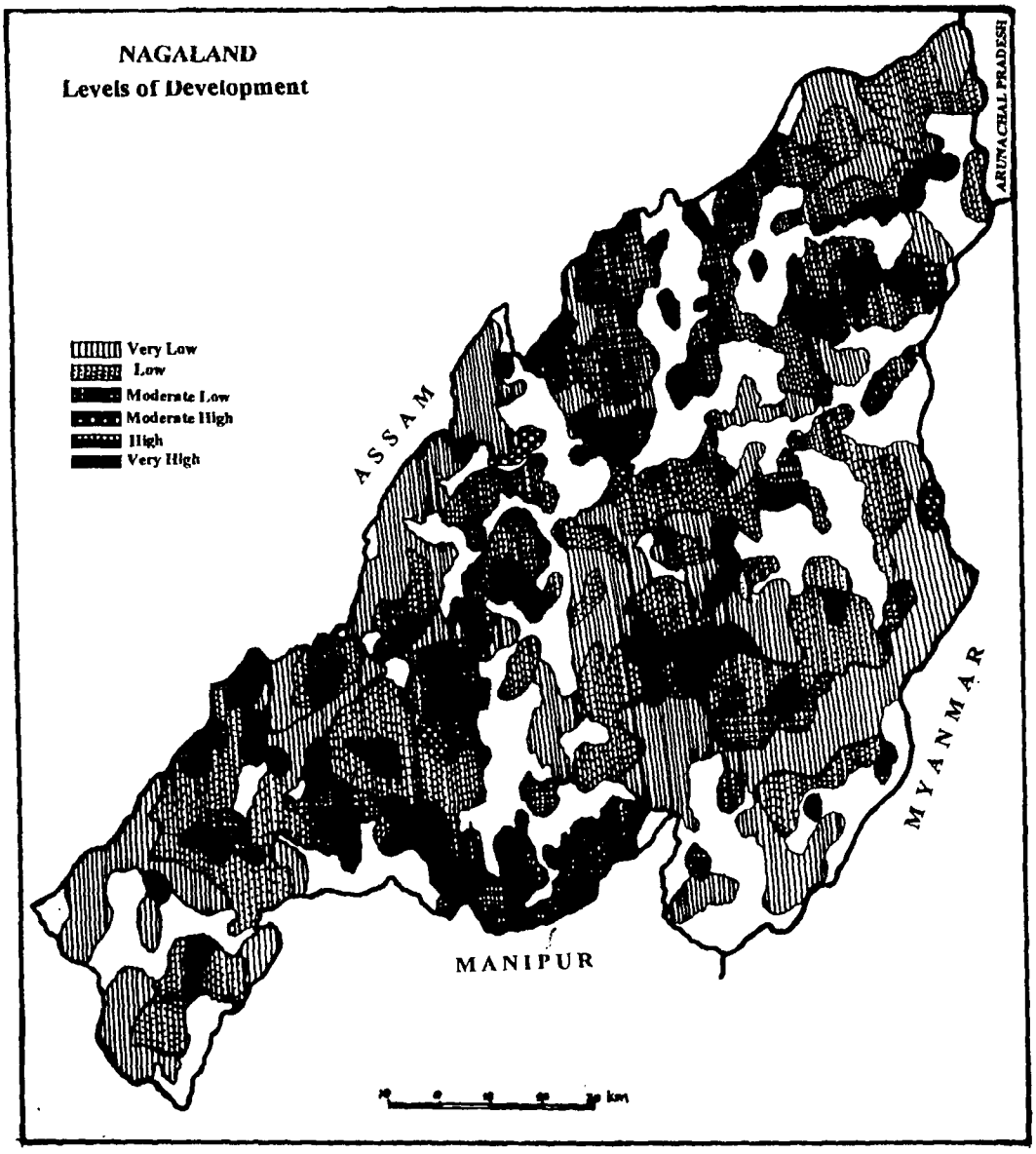
NAGALAND
Levels of Development
Very Low
Low
Moderate Low
Moderate High
High
Very High
ASSAM
ARUNACHAL PRADESH
MYANMAR
MANIPUR
km

Fig-7.1

D. The Areas of High Level of Development.

High-level development areas constitute only 4.17% of the total area of the state. These areas of high development are located only in a few centres mostly sub-divisional centres and some larger villages adjacent to town areas. Infrastructural facilities are comparatively sufficient to develop fast including market facility.

There is a striking feature that the population concentration in such villages of high development is recorded high with the limited land size. It means that the population density is high (10 person/ha). Labour is used efficiently in these villages. Labour productivity is also recorded high (30.45 qu/labour), which is comparatively double to its level of moderate development areas. On the other hand, workers intensity also found to be 4.31 person/ha, which is comparatively higher than any other areas of the state. There is a concentration of labour force.

Sufficient available infrastructural facilities, including agricultural infrastructure such as irrigation, the use of fertilizers and pests technologies and HYV seeds, are being enjoyed by the people of these villages of high develops. The higher percentage share of irrigated area is also another good indication for progress. Higher literacy rate shows a direct impact on higher rate of labour productivity in the area.

Areas of high development are located in a few pockets of the state in Medziphema, Jalukie, Kohima, Wokha, Ongpangkong, Sangsangnyu, Mon, Changtongya, Meluri, Tseminyu and Kuhoboto. These areas are close to the vicinity

of towns and directly linked with them. The impact of market/towns may be visualized on the development of these areas.

E. The Areas of Very High Development.

The category of very high development areas includes only the 5.0% villages of the state. More than half of the number of these villages are developed as town-ship, mostly sub-divisional centers & block headquarters, where all the basic amenities are available with the people, especially educational institutions, commercial facilities, banking institution, health centres, postal service, police station, recreation centres etc. Generally these areas are under the control of an Additional Deputy Commissioner or S.D.O. (civil) for both administration as well as development works. Sub-divisional Officers from different departments are also posted in these areas for various departmental activities in these localities.

The activities of these township/larger villages are found to be more or less in urban style. At the same time, agricultural activities are also going smoothly with the urban taste of lifestyle. Infect, agriculture is more intensive in these areas. Both the land as well as labour productivities are noticed very high in these parts of the state. Especially labour productivity is recorded almost 5 times higher than the areas of very low development. High population concentration with very high population density (9 person/ha) is a striking feature of these areas. Since educational facilities for both lower and 10+2 or even up to graduate level institutions are available in some of these areas. Literacy rate is very high (59.89%) for rural areas.

The areas of very high-level development are located in different pockets of Kohima (Chiephobozhu, Jakhama,), Medziphema (Medziphema, Purana Bazaar, Diphupar, Dhansiripar, Nagarjan), Jalukie (Jalukie, Peren), Phek (Pfutsero), Wokha, Shamator, Ongpangkong, Changtongya (Tuli) and Sangsangyu. They are distributed here and there and growing in isolation because of administrative thrust.

7.5: Concluding Remarks:

The present Chapter discussed the levels of development in the state by taking various attributes of development at micro-level (i.e., village level). The various social, economical and infrastructural attributes of development from the village level data's are analyzed and identified high and low performance of development. With the high and low performance of development of the villages in the state; the levels of development and its composite picture of each village in the state is understand, and classified them into different categories of level of development. The fallowing features are drawn from the above discussion.

(i) One/third of the total villages are under Very low-level development category, they are small in size and mostly found in isolation on the hill slopes and newly established village near the roadside where agriculture development or setting up of township may not very favorable. This category of villages is occupying a large percentage share of the state, government as well as NGOs intervention is an immediate needs for providing infrastructures and other economic development.

(ii) The poor development and low production on agricultural commodities is directly controlled by the physiographic factors that the Very low-level development villages are in this category. Problems such as poverty, malnutrition and shortage of infrastructural facilities both in agriculture as well as public amenities are immediate requirement in these areas of low-level development.

(iii) The moderate level of development villages are of moderate size with strong workforce and thus, sufficient food grains are available with them. Infrastructural facility is found to be higher degree of road connectivity, educational status and literacy rate in the villages. However, market facility is not found a place in these villages.

(iv) Where as High-level development villages are very less in number as compared to low level development villages. However these villages are enjoying all facilities including agricultural infrastructures like Irrigation, Fertilizers, HYV seeds, Pests control etc.

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CHAPTER-VIII

MAIN FINDINGS AND CONCLUSION

CHAPTER - VIII

MAIN FINDINGS AND CONCLUSION

8.0 Introduction:

In a specific physiographic and socio-economic situations prevailing in the state of Nagaland, which is located close to the Tropic of Cancer (25°6' and 27°4' North latitudes and 93°20' and 95°15' East longitudes) with an area of about 16,579 sq. km. accommodating 19,88,636 persons (Census 2001) especially belong to various Naga tribes such as *Angami, Ao, Chakhesang, Chang, Konyak, Khiemmungan, Lotha, Phom, Rengma, Sangtam, Sema, Yimchungre, Zealiang* and other sub-tribes, the problems of planning and decision-making are different from other parts of the country. The uniqueness of geomorphic landscape, the significantly vast topographic variations though the areal extent of the state is not too large to get such variations, the specific resource-niches in the few pockets of landscape, the most primary stage of economic development with a variety of ethnicity and the location of the state on the international border in the east are the specificities of the state, which have created an urgent need of development. In spite of available workforce, good health of the people and courage to work, the people of Nagaland are lagging behind and then participating seems much lesser in the process of development because of specificities of planning problems, which are not related to the 'real world situation' rather more related to the 'imposed and generalized' guidelines of development issued by the central /state governments from time to time. The problems of

development lie somewhere else, which are tried to highlight in the present piece of research through adopting the approach of 'area specific' rather than 'sector-specific'. The area specific approach is based on holistic view of development and would provide the solution of local resource use with the need of the people.

The problems and prospects have been viewed by considering the deficiencies of infrastructure (physical, social as well as economic) for the development and the basic needs of the people to be self-sufficiency and sustainable development, and agricultural productivities (land and labour). The characteristic features of development have been interpreted in connection with the use of available resources (natural as well as human) by specifying the areas of various categories of development.

In the present Chapter, by correlating and comparing the facts and figures highlighted in different chapters, the main findings are synthesized. Some more detail findings related to production and productivity are included in this chapter because productivity is a spine of the development structure, which is made up of many characteristic features.

8.1 The Findings:

There are some general findings and features about the background and available resource base, which are equally important to highlight the problems and prospects of development in the state. They are as,

A. The Demographic transition: The fast growth rate of population is a burden and is concerned by everybody in Nagaland; population growth rate was recorded 64.41% in the last census report (1999-2001), which is the highest growth rate in the country. Urbanization process in the state is very slow, which means the occupational structure solely depends on primary sector. The population density has been increasing fast with the fast growth of population. The density rose from 22-persons/sq. km (1961) to 120 persons/sq. km in (2001) during the last four decades.

B. The Available Resources: Whole area of the state is hilly and mountainous and thus, forest cover is wide, but due to logging operation and the practice of jhum cultivation by the people, many areas of the forest cover are destroyed. However, about 55.5% of the total forest area is considered as virgin forest, and about 12% is under Government protected forest. Forest products are in abundance for the local people. Agriculture is the main activity, besides hunting and gathering. Soil is rich and fertile, use of chemical fertilizers for cultivation is not encouraged and intensive agriculture is also not favourable due to physiographic conditions of the land. Production both in agricultural crops as well as livestock is in increasing manner, even though; intensive practice is not favourable, due to its physiographic factors.

C. The Economy: The State Net Domestic Product (SNDP) was recorded double during the 10 years period of time and Agriculture (including livestock) is the highest contribution towards SNDP. Constructions as well as public administration are major sources of income contributing good percentage share

towards SNDP, but lately, transport is coming up fast to contribute a significant percentage share towards NDP. Increasing infrastructure especially road network may increase fast the NDP of the state.

D. The Occupational Structure: In spite of the engagement of fairly high share of population in the work participation (i.e., 45.22% in 1991, which is significantly higher than the national average), the dependency ratio is recorded high with continuously increasing burden of non-workers. The distribution of workforce in different sectors is also taking into account. It is found that there is a concentration of workforce in primary activities. The percentage share of workforce in tertiary sector is increased gradually. It means there is gradual shift in economy. However, heavy or medium industries are negligible in the state.

Further, the main findings are basically forwarded here by considering the following major aspects of development related parameters.

(A) Agricultural Production and Productivity:

The study area is endowed with more or less diversified physiography, which provides possibilities and embodied with potentiality for agricultural as well as horticultural development. The nature of slopes in the area is steep to very steep in some cases and the agro-climatic conditions are not much favourable for intensive agriculture. The people have responded to the difficult environment by adjusting themselves to the situation through shifting cultivation on the slopes or terrace

cultivation wherever topography permits. However, agricultural practices are oriented towards subsistence food production; cropping pattern is monoculture towards paddy crop, which is grown in the patches of permanent cultivable valley areas and on the hill slopes. The agrarian products are inadequate to meet the demand of the population. However, the people are traditionally depending on other natural resources to meet their requirements. The abundance of forest resources too has been an important source of livelihood and work for most people.

(a) Land Productivity: It is considered as average yield of the principal crops, which has been recorded very low (16 qu/ha) in the state; it is recorded even lower than the other hilly states of the north-eastern region. Low productivity indicates less availability of food and the state does not have sufficient food to feed the local people. Lack of application of modern technology in agriculture, less expansion of land share under permanent cultivation and traditional means of irrigation are main reasons behind low land productivity (Table-8.1). However, there are noticeable areal variations in the land productivity. Out of a total 1224 village, 459 villages (38%) are accounted for in the moderately high category of land productivity. These villages are located in the areas of Kohima, Kikruma, Mangkolemba, also small pockets in Wokha and Medziphema blocks.

Table-8.1: Land Productivity Classes and their Contributing Factors.

Category	Class Land Productivity (qu/ha)	Average Land Productivity (qu/ha)	Total Village (%)	Food available (kg/person/village	% of Agricultural workforce	Literacy Rate (%)	Irrigated area (%)
Very Low	12.0>	10.73	1	771.86	78.19	49.29	29.10
Low	12.0-13.5	12.69	7.5	271.25	88.99	42.15	28.93
Moderately low	13.5-15.0	14.09	24	285.72	85.34	45.87	30.60
Moderately high	15.0-16.5	15.34	38	343.55	84.00	44.52	31.95
High	16.5-18.0	16.85	16	355.84	82.61	52.33	33.75
Very High	18.0<	18.99	14	456.01	80.18	51.24	32.88
State average		**15.00**	**100**	**355.2**	**80.52**	**49.77**	**32.35**

N.B: State average figures are calculated by considering village as individual unit.

The villages having low and very low land productivity (below 13.5 qu/ha) are located in a few pockets in the state especially in the high hills and most remote mountains areas like Kiphire, Noklak, Shamator, Tobu Chen, Mon, Meluri, Zunheboto, Akuluto, Ghathashi, Peren areas of Jalukie block.

Increasing percentage area under irrigation (which is considered as agricultural infrastructure) and fairly high level of literacy rate increase the level of land productivity. It means crop yield is positively influenced by these two factors (Table-8.1).

(b) Labour Productivity: The labour productivity, which is calculated as agricultural production produced per person of agricultural labour force (in present case, qu/person), has a significant variation in the state. More than three-fourth area of the state falls under low and very low categories of labour productivity. The following areas are noticeable under these categories.

(i) Almost whole of the eastern parts of the state is found to be low labour productivity, except very small pockets in Meluri, Noklak and Chen blocks. Low labour productivity is also seen in pockets of Tseminyu, Ghathashi, Wokha, Akuluto, Mokokchung, Changtongya, Longleng and Peren areas of Jalukie block.

(ii) There is only 16% of the total number of villages in moderate category of labour productivity; this is noticed in pockets of Medziphema, Kohima, Kikruma, Zunheboto, Akuluto, Sitimi, Longkhim, Baghty, Mangkolemba and Ongpangkong blocks of the state.

(iii) High labour productivity villages are few in number in the state (i.e., 7.84%); they produce 56.87 qu/person and the availability of food grains is 880 kg/person. These high labour productivity areas are found in very small pockets of Medziphema, Kohima, Kikruma, Kiphire, Sangsangyu, Ongpangkong, Changtongya, Baghty and Wakching blocks.

Undoubtedly, the demographic features influence labour productivity, employment of workforce in agriculture and the level of education/literacy, which provides the mental efficiency to work. In the state, workers intensity and percentage of agricultural workforce influence labour productivity in negative manner, while literacy rate is positively related with labour productivity (Table-8.2).

Table-8.2: Labour Productivity Classes and their Contribute factors.

Category	Class Labour productivity (qu/person)	Average Labour productivity (qu/person)	Total village (%)	Total population/village	Food Available (kg/person)	% of Agricultural workforce	Workers intensity (person/ha)	Literacy rate %
Very Low	5.0>	3.95	40.28	1073	178.38	89.66	5.00	42.55
Low	5.0-12.0	8.77	35.29	692	336.14	86.22	2.22	47.17
Moderately low	12.0-18.0	15.03	12.25	671	484.40	77.76	1.57	51.47
Moderately high	18.0-24.0	21.39	3.92	545	561.06	75.03	1.04	51.69
High	24.0-30.0	27.70	2.94	524	728.40	68.94	1.03	55.48
Very High	30<	86.04	4.90	410	1030.81	51.88	0.91	59.62
State average		**18.86**	**100**	**989**	**553.2**	**80.52**	**2.32**	**49.77**

N.B.: State average figures are calculated by considering village as individual unit

(B) Level of Development and its Parametric Relation with Agricultural (land as well as labour) Productivity:

Level of development is conceived in the present case as aggregated index of multi-dimensional attributes of the village-economy, which is measured by calculating composite index of 16 variables and is compared with the productivity parameters statistically. The main findings are given below.

(i) Preparing scatter diagram of development levels versus land productivity for the entire state where number of observations (i.e., village) are 1224, it is obvious that the degree of scatterness of the distribution is significantly higher rather than expectation (Fig-8.1) and, consequently, the degree of determinant of the distribution is calculated very low (R^2<1.42%) even for all expected cases of 'best-fit' distribution (Table-8.3).

Table-8.3: Development Levels (y) versus Land Productivity (x) for number of observation (n) 1224.

Types	Functional Forms.
Linear	$y = 0.3953(x) + 12.648$ $R^2=0.0103$
Logarithmic	$y = 5.835Ln(x) + 2.826$ $R^2 = 0.009$
Polynomial	$y = 0.0753(x)2 - 2.0398(x) + 32.03$ $R^2 = 0.0139$
Power	$y = 7.7534(x)^{0.3021}$ $R^2 = 0.0128$
Exponential	$y = 12.963(e)^{0.0201 x}$ $R^2 = 0.0142$

(ii) The development level follows exponentially in the best-fit distribution with respect to land productivity (i.e., crop yield). It means that the development pattern is not perfectly in consonance with the pattern of land productivity in the state. The areas of very high levels of land productivity, which is determined by two attributes of yield: the percentage share of irrigated areas and literacy rate as described earlier, are likely to influence the over all development of the state because the land productivity is placed in 'power function' with very small value of its coefficient in the exponential distribution. However, it is inferred from regression analysis that land productivity is a significant attribute of development in the blocks of high level of development, namely, Kohima, Medziphema, Jalukie, Phek, Wokha, Ongpangkong, Changtongya and Sangsangyu.

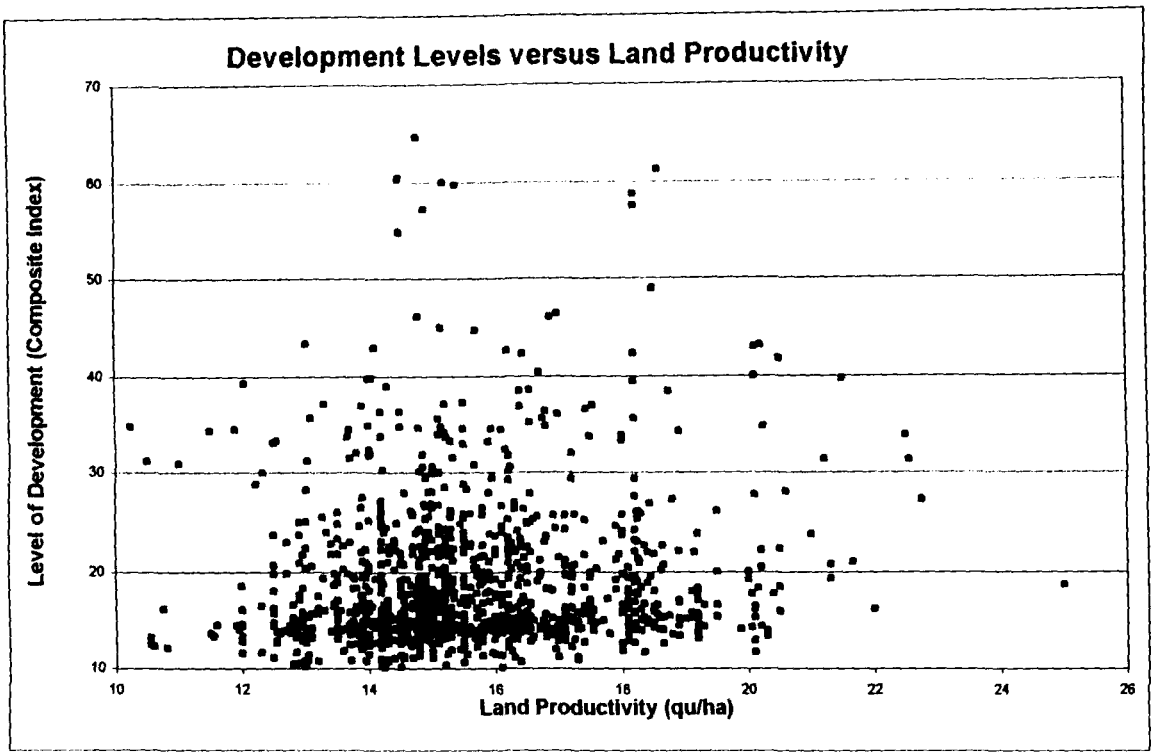
Development Levels versus Land Productivity
Level of Development (Composite Index)
70
60
50
40
30
20
10
10
12
14
16
18
20
22
24
26
Land Productivity (qu/ha)

Fig.-8.1

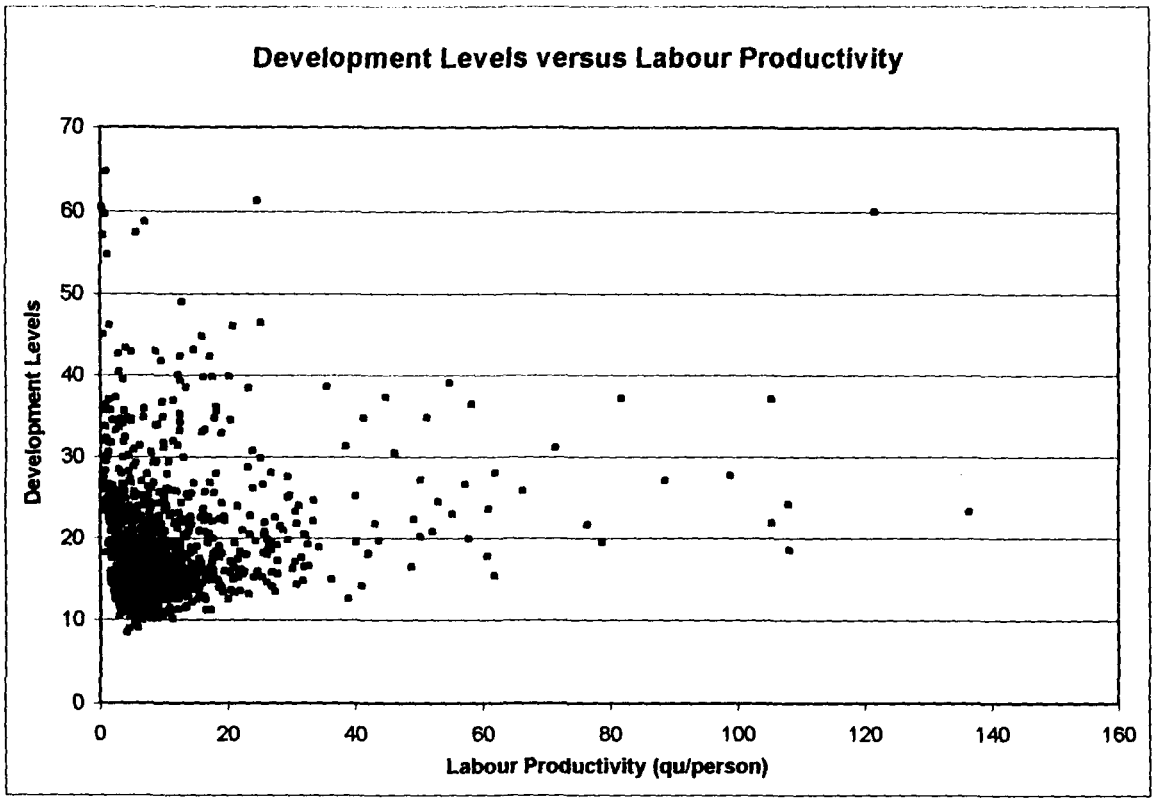
Development Levels versus Labour Productivity
Development Levels
70
60
50
40
30
20
10
0
0
20
40
60
80
100
120
140
160
Labour Productivity (qu/person)

Fig.-8.2

(iii) Similarly, the level of development follows the same best-fit statistics subject to labour productivity, which is more influenced by the labour attributes like percentage share of agricultural labour force and labour intensity (Table-8.4). However, its distributional pattern is more concentrated toward the origin of the graph (Fig-8.2). It shows more scatterness at lower level of labour productivity.

Table-8.4: Development Levels versus Labour Productivity.

Types	Functional Forms
Linear	$y = 0.1056\ (x) + 17.582$ $R^2 = 0.033$
Logarithmic	$y = 0.2258 Ln\ (x) + 19.179$ $R^2 = 0.0006$
Polynomial	$0.0008(x)\ 2 + 0.0416(x) + 18.051$ $R^2 = 0.0361$
Power	$y = 17.651(x)^{0.0006}$ $R^2 = 2E\text{-}06$
Exponential	$y = 16.74(e)^{0.005\ x}$ $R^2 = 0.0392$

(iv) If the attributes related to agricultural labour are more influential for the development level in the state, the density of population, which provides labour force, is likely to be a suitable attribute for influencing the development. After analyzing the result of regression statistics of development versus population density of the state, it is found that the linear (or its advanced form, the polynomial with degree two) is the best-fit function. However, its degree of determinant is recorded only $R^2 = 9.58\%$ for the state (Table-8.5). It means that the higher degree of scatterness of the

distribution is owing to the variations in topographic features and tribal communities living in the different areas of the state (Fig-8.3). Such facts may be forwarded in another form saying that the areas of high population density have higher degree of development because population needs basically food and shelter and provides cheap labour force accelerating development processes in the state. As a result, the population density influences the labour and land productivities and, ultimately, it determines the level of development in the state. However, infrastructural attributes may contribute more to the development level.

Table-8.5: Development Levels versus Density of Population.

Types	Functional Forms
Linear	$y = 0.2541(x) + 16.715$ $R^2 = 0.0958$
Logarithmic	$y = 1.8907L\ n\ (x) + 15.352$ $R^2 = 0.0352$
Polynomial	$y = -9E\text{-}05(x)\ 2 + 0.2589(x) + 16.69$ $R^2 = 0.0958$
Power	$y = 15.35(x)^{0.0113\ x}$ $R^2 = 0.0933$
Exponential	$Y = 16.198(e)^{0.0113\ x}$ $R^2 = 0.0933$

(C) Road network as basic attribute of infrastructure for the development is noticed weak with less connectivity of points in the state. It concentrates the other infrastructural facilities/amenities like postal and bank services, educational and medical facilities. Infact, infrastructural development is

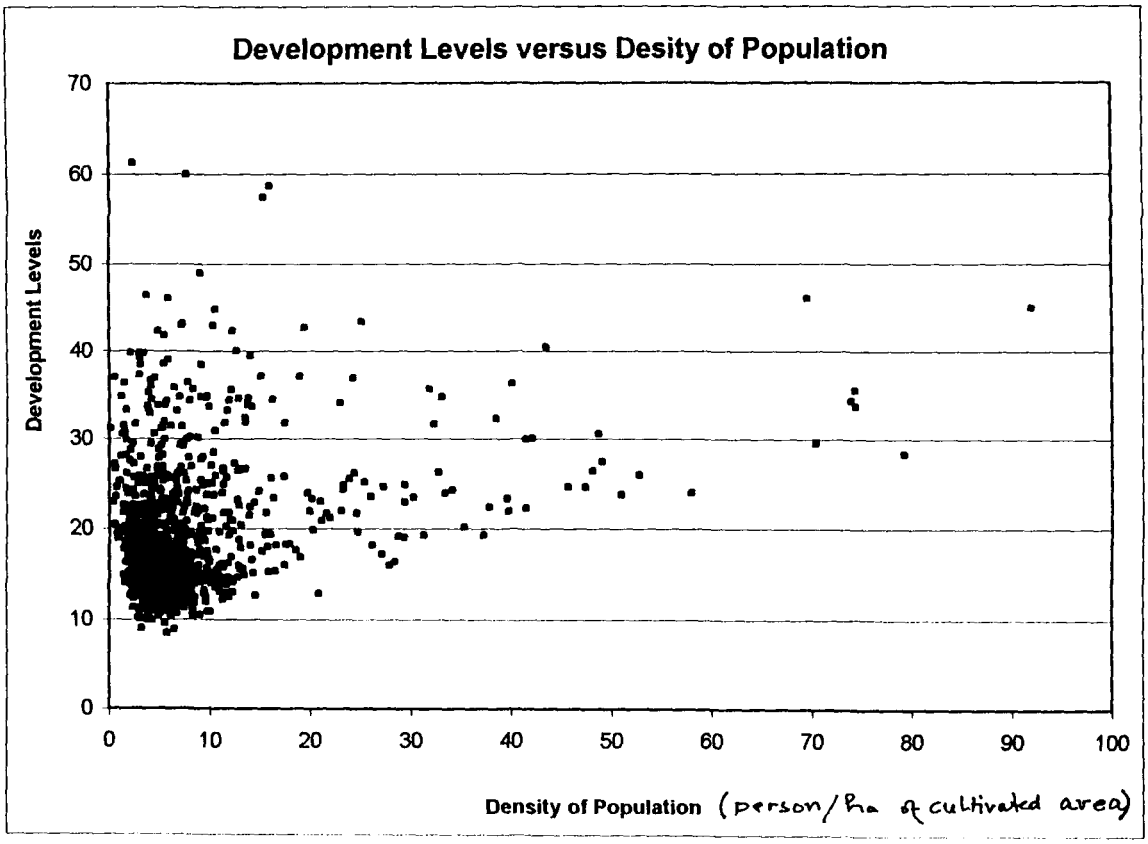
Development Levels versus Desity of Population
Development Levels
70
60
50
40
30
20
10
0
0
10
20
30
40
50
60
70
80
90
100
Density of Population (person/ha of cultivated area)

Fig.-8.3

'road-based'. Since road accessibility is poor in the state, a few pockets developing along the road and on the main towns of the state is marked as the areas of high development. It means road network has positive impact of development and influence socio-economic attributes in the state.

(D) Most of socio-economic facilities like medical, banking and postal are concentrated in the urban areas. The developmental patterns are, thus, confined and are concentrated in a few pockets because of urbanization. The emergence of 'concentrated' pattern of development may only be allotted by adopting 'decentralized planning' through the expansion of road network and increasing the connectivity of road centers in the state.

8.2 Concluding Remarks:

The processes of development have not been accelerated fast in the state of Nagaland, even after 40 years of attaining its own statehood, because of many reasons like physiographic constrains, community isolation, weak infrastructure for development and political factors. The developmental patterns are concentrated and confined only in a few pockets where the effects of urban centers have been visualized. The land productivity does not have significant influence on the level of development. It contributes less and evolves the patterns, which are not in consonance with the level of development. The problems of 'space-organization' and proper 'coordination' of the processes of development still exist in the state, which must be the part of development

strategy and planning processes. Eco-tourism may also be another aspect of development through which state may generate its own resources. Location specific resource based industrial development strategy will also be considered in its holistic manner to increase the GDP of the state. On the other hand, high population growth has negative impact negatively on the developmental processes which also to be kept in mind while preparing development plan of the state.

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