CHAPTER - II

ENVIRONMENTAL SETTING
Biophysical environmental conditions of an area actually constitute the environmental endowment of that area. In other words, it represents the over-all natural condition of the area in situ. The environmental endowment or biophysical environment may be understood as the integrated study of relief features, drainage, climatic condition, etc. Therefore before the study of the degradation of forests in Lunglei district, it is necessary to highlight the environmental condition of the study area because all the biotic and abiotic factors of the environment are related to each other at a particular place. Obviously, the forest types of Lunglei district are also influenced by different factors of the physical environment. The natural factors that influence the geographical distribution of forest in the study area are latitude, elevation, rainfall and nature of soil. There is a marked difference between vegetation of the western and eastern parts of the district and also between uplands and low lands. Along with biophysical environment the human environment has also been mentioned here as the later interacts and modifies the former in course of its utilisation.

2.1 RELIEF FEATURES

Lunglei district is the largest district in Mizoram. It comprises predominantly of undulating terrain due to almost north-south running hill ranges interspersed by narrow valleys in between. These ranges tend to be higher in the east than in the west. The average height is about 900 metres above mean sea level. Lunglei district relief features and generalised contour map have clearly shown in Figure 2.1 and 2.2. As the terrain is very immature in response to recent tectonism, the topographical features show prominent relief. The major geomorphic elements observed in the area are both structural and topographic ‘high and depression’, ‘flat and slope’ sculptured in a linear fashion. In Lunglei district topographic depressions in all cases are in accordance with the normal structural elements, but the topographic high is recorded both in the structural high and depression.
GENERALISED CONTOUR MAP OF LUNGEI DISTRICT

Figure - 2.1
LUNGLEI DISTRICT RELIEF FEATURES

Legend:
- Above 1350
- 900 - 1350
- 600 - 900
- 300 - 600
- Below 300

Figure 2.2
The physiographic expression of the area is imparted by approximately north-south trending steep, mostly anticlinal, longitudinal parallel topographic high. In general, the western limbs of the anticlines are steeper than the eastern limbs mainly because of fault scarps, especially along the steep dipping fault plane. The other geomorphic features are highly dissected ridges with the formation of deep gorges, spurs, keels and cols, which developed due to intensive erosion during the isostatic adjustment. The difference of elevation between valley floors and hilltops greatly varies from west to east, the range being 200 metres to 600 metres. The harder formation of sandstones forms anticlinal ridges. Their location, shape and direction are determined by the distribution of sandstone, shale and their various interlaminations. Due to continuous erosion by various agents of erosion the softer rocks formation are eroded first, while the harder rocks formation putting resistance and thus forming strike ridges. It is believed that during the Miocene period a number of folds and faults were formed which gave rise to the present landforms in the study area (Pachuau 1994).

(i) Hills

As mentioned above there are a number of parallel hill ranges running from north to south separated each other by deep narrow valleys occupied by sedimentary rocks of conglomerates, sandstones, shales etc. and their various intermixtures. The highest elevation of these hills is 1,748 metres above mean sea level at Purun hill (23°3'N-93°2'E) in the north eastern corner of the area and the average altitude being 909 metres. The highest hill range is an extension of Phawngpui (Blue Mountain) from the southeast along the Myanmar border in the east and river Chhimiuitipui (Kolodyne) in the west as far as Purun hill in the northeast. The second high hill range starts from Mualthuam village at the river confluence of river Mat and Chimtuipui and extends towards north up to Bungtlang village in between river Mat and Tuichang. The third and the longest hill range runs from Mamte village in the southern corner to Zote village in the north, between the river Mat and Tlawng. The fourth hill range extends from Vaisam village in the north to Samang village in south. The fifth hill range begins from Ruallung village in...
the south, and extended upto Lungsen village in the north. The sixth hill range starts from Vuakmual village in the central part of the region at the confluence of rivers De and Kau and extended towards north upto Darngawn village. The seventh hill range extends from Hruizam village at the confluence of rivers Kau and Tuilianpui to Laisawral village in the north. The last hill range runs from Serte village in south along the Bangladesh border upto Mauzam in the north (Rinawma 1986).

(ii) Plains

In Lunglei district there is no single plain area with a considerable size. There are few intermountain flat valleys and river plains in small pockets lying here and there. The largest intermountain flat valley of mere one square kilometre is located at South Vanlaiphai village in the source region of Hnahchang stream at an elevation of 1,200 metres. Mention may also be made about an intermountain valley plain at the source area of Ngengrual stream near Thingfal village. In the south a small river plain is also observed near Lungsen village at the meeting point of three rivers like Kau, De and Phairuang (Rinawma 1986).

(iii) Rivers

The drainage system of the area is complicated one. The river Tlawng originating from Zobawk village near Lunglei town flows towards north. Parallel to it is the river Mat having its source near Baktawng village of Serchhip district and flows towards south in opposite direction of the river Tlawng. The rivers Tuipuilian, Kau and De have parallel courses for many kilometres but run in opposite direction of river Tlawng. The rivers Tuichawng and the Phairuang flow from the southern most part of Mizoram towards north till they meet the river De and then turns to the west and deliver their combined flow into the river Khawthlangtuipui which flows from southwest. The river Chimtuipui originates in Myanmar and enters in the south eastern part of Mizoram, flows towards north and turns to the west near Muallianpui village and curves towards south near Hnahthial town and flows towards south and enter Arakan hill tract. The rivers generally flow either towards north or south direction (Rinawma 1986).
2.2 CLIMATE

The climatic condition of Lunglei district is generally cool and wet with very mild summers as it enjoys a moderate climate owing to its tropical location. It is neither very hot in summer nor too cold in winter throughout the year. The western part is warmer than the eastern part due to altitudinal variation. The whole region falls under the direct influence of the south-west monsoon. As such the region receives an adequate amount of rainfall. The climate is humid tropical, characterised by short winter and long summer with heavy rainfall. During autumn, the temperature is usually between 18 degree Celsius to 25 degree Celsius, while winter temperature ranges normally between 11 degree Celsius and 23 degree Celsius. The summer temperature is usually between 21 degree Celsius and 31 degree Celsius. During the last 30 years or so, steady increase in temperature has been noticeable, and it may be seen in the global context of global warming, mainly due to the large scale degradation of forests and mismanagement of environment. Depending on the variation in temperature and general weather conditions, three different seasons are observed in the study area such as (i) Cold season or winter, (ii) Warm season or spring, and (iii) Rainy season or summer.

As the entire area is under the direct influences of monsoon, it rains heavily from May to September, and it continues till late October. Normally July and August are the wettest months, while December and January are the driest as well as coldest months. In Lunglei district more than 80 per cent of rainfall is received during the monsoon period. In the month of April and May violent storm and cyclones sweep over these hills. Lunglei district enjoys abundant rainfall and average rainfall at Lunglei is usually recorded as 327 cms annually. The average annual rainfall, recorded in 1984, 1986, 1988, 1990, 1992, 1994, 1996, 1998, and 1999 are 2,383 mm, 2,183.2 mm, 3,142.8 mm, 2,909.4 mm, 1,529.4 mm, 2,012.6 mm, 2,652.3 mm, 3,023 mm and 3,326 mm, respectively. Precipitation is heavy in summer, normally from May to September, and last till late October. Normally July and August are the rainiest months, while December and January are the driest months.
2.3 POPULATION

Among the eight districts of Mizoram, Lunglei district is the biggest in terms of geographical area, but it is the second largest in terms of population. The population of Lunglei district has increased rapidly during the last three decades. The population of Lunglei district was 62,136 persons in 1971, 86,511 persons in 1981, 1,11,415 persons in 1991 and 1,37,155 persons in 2001 (Census of India). In the last Census, i.e., 2001 Census, the population of Lunglei district constituted 15.39 per cent of the total population of Mizoram. The percentage decadal variation in the population of Lunglei district for the periods of 1971-1981, 1981-1991 and 1991-2001 are 39.23 (as against 48.55 for All-Mizoram), 28.79 (as against 39.69 for All-Mizoram) and 23.10 (as against 29.18 for All-Mizoram.), respectively. The corresponding national figures are 24.66, 23.85 and 21.3. The growth rate of population experienced by Lunglei district was lower than the growth rate of population experienced in the whole state of Mizoram, while it was higher than the growth rate of population experienced at the national level.

(i) Density of Population

The density of population per square kilometre in the last four successive Censuses has been 14, 19, 25 and 30, which imply that there was a fast increase in the density of population in the district and it has doubled during 1971 to 2001. However, it can be said that the density of population in the district is pretty lower than the All-Mizoram average, which stands as 41 per square kilometres in 2001 Census. Again, comparing these figures with the national average which were 178 per sq.km in 1971, 216 per sq.km in 1981, 267 per sq.km in 1991 and 324 per sq.km in 2001, one can say that the density of population per square kilometre in the district is very much lower than the All-India average. Among the eight districts of Mizoram, Lunglei district ranked fourth in terms of density of population in accordance with the 2001 Census (Census of India).
(ii) Sex Ratio

The sex ratio in Lunglei District has also increased rapidly and steadily during the last three decades. The numbers of females per 1,000 males in Lunglei district were 842, 881, 910 and 922 in 1971, 1981, 1991 and 2001, respectively. As against these figures, the number of females per 1000 males in Mizoram in 1971, 1981, 1991 and 2001 were 945, 919, 921 and 938, respectively, and the corresponding national figures were 930 in 1971, 934 in 1981, 927 in 1991 and 933 in 2001 (Census of India). The sex ratio in Lunglei district had steadily increasing trend during the entire period of 1971-2001, while it was fluctuating at the state and national levels. It is interesting to note that though the state of Mizoram was having higher sex ratio than the national level in most of the Census, yet, Lunglei district has never had higher sex ratio than the national level. At per with this fact, the sex ratio of Lunglei district has always stood below the sex ratio of Mizoram as a whole. Among the eight districts of Mizoram, Lunglei district ranked fourth from the bottom in terms of sex ratio, the only districts that have lower sex ratio than Lunglei district in 2001 Census are Kolasib district, Lawngtlai district and Mamit district, which stands as 913, 902 and 901 in 2001 Census, respectively.

2.4 ECONOMY OF THE PEOPLE

The economy is the ultimate portrait of its geographical environment. The knowledge of a geographical condition and its economic condition is always pertinent to planners and policy makers to devise appropriate schemes for the development of a region. It is indeed, the economic level which depicts the standard of living of the people of the area. The economic study reveals the capacity of growth and man power of the region, their major activities, strength and sustenance. While India's economy stood below average at global context, Lunglei district is one of the least regions of the Indian Union. The people of the district have been practising agriculture (Jhum) for their sustenance for centuries in the region. Agriculture is the primary means of livelihood of the indigenous settlers. Due to lack of knowledge about detail geological information and
investigation of mineral deposits, mineral base industry is yet to be established. It is not an easy task to achieve development in the field of industry at present, because of absence of mineral based industry, major trade and commerce and also because of lack of technical skills, deficiency in raw materials, power and other infrastructural facilities. The district economy is based mainly on agriculture along with *jhumming* and forests. In other words, majority of the people are depends on agriculture, mainly shifting cultivation. Forest sector contributes quite high revenue per year in the district. However, actual contribution of forests sector to the economy of the district is many times more if value of fuel wood, timber and bamboos and other non timber forests products removed and used free of charge by the entire tribal population is also taken into account. Revenue mainly comes from sale of bamboos, sand and timber. This section tries to expose the economic characteristics of Lunglei district under the following heads such as occupational structure, agriculture activities, livestock and animal husbandry, development of forest economy and transport and communication network.

(i) Occupational Structure

The occupational structure represents the economic activities of the people. Occupation is perhaps the most important characteristics influencing man’s life. It gives the degree of employment and unemployment and exhibits its influence as one of the major determinants of several social, economic and demographic characteristics of the population. The Census of India classified the population into workers and non workers. Though, it is seen the definition of ‘work’ kept on changing at every Census until 1981. The main workers have classified into four groups such as cultivators, agricultural labourers, workers in house hold industry and other workers. The details occupational structure of Lunglei district from 1971 to 2001 is presented in Table 2.1. Under this classification, the occupational structure of the people in the study area has been analysed in the following lines.
Lunglei district is an agricultural region and majority of the people are engaged in agriculture activities. The bulk of the working population is cultivators which constitute 64.38 per cent of the total main workers in 2001, while 29.97 per cent of the total main workers are engaged in non-agriculture activities or tertiary occupation. Agricultural labourers accounted for 3.87 per cent of the working population, whereas household industry workers constituted the least population of only 1.78 per cent of the total workers in 2001 (Figure 2.3).

The proportion of cultivators among the main workers in Lunglei district has declined significantly since 1971. Whereas in 1971, as much as 82.67 per cent of the total workers were cultivators, while in 1981 the corresponding figure has declined to 78.23 per cent. In 1991 the percentage of cultivators again declined to 67.28 per cent of the total main workers. Interestingly, the proportions of workers in other categories of occupation other than agriculture have shown definite upward trends. The rising trend of working population generally in non-agricultural sector seems to reflect the diversification of economic activity in the district. The non-agricultural working population increased from 16.73 per cent in 1971 to 30.72 per cent in 2001. This rate of diversification is much faster than the country as a whole.

Table 2.1 Occupational Structure in Lunglei District

<table>
<thead>
<tr>
<th>Occupations</th>
<th>Percentage of workers to total main workers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cultivators</td>
<td>82.67</td>
</tr>
<tr>
<td>Agricultural Labourers</td>
<td>0.37</td>
</tr>
<tr>
<td>Household Industry</td>
<td>0.29</td>
</tr>
<tr>
<td>Other Workers</td>
<td>16.73</td>
</tr>
</tbody>
</table>

Source: District Research Officer, Lunglei 1971 – 2000
2.5 LAND UTILISATION

Land is perhaps the most basic resource of rural society and the foundation of agricultural economy. Regional land use pattern are after all the geographical expression of a large number of society decision made at different times and seasons, which are responsible for the expansion of any category of land use at the cost of other. The patterns of land use also reflect physical control arising out of landform diversities, rainfall differences, divergences, etc. (Sing 1974) (Ref)

The land utilisation of Lunglei district is greatly influenced by the relief features, soil condition and climate. The drainage system also influences the land use pattern. The rivers are mostly streams in nature and volume i.e., very short in length and small as well.
as dry for long period in a year. On the basis of the identification of the satellite imagery the major land use/land cover categories in Lunglei district are built-up-land, agricultural land, forest, water bodies and others (current shifting cultivation). The details different land utilisation of Lunglei district in 2000 has shown in Table 2.2 and Figure 2.4.

(i) Built-up Land

Lunglei district consists of three townships such as Lunglei, Hnahthial and Tlabung. Lunglei is the largest settlement followed by Hnahthial, Tlabung and Lungsen. The area under built up land, in 2000 is of 4,974.30 hectares or 1.09 per cent of the total geographical area of the study area.

(ii) Water Bodies

The major rivers within the district are Tuipui, Mat, Tuichang, Tlawng, Khawhlangtuipui, De, Kau, Phairuang and Tuichawng. The total area under this category is estimated to be of the order of 4,974.30 hectares. In other words, it constitutes 0.80 per cent of the total geographical area.

(iii) Forests

The primary forests of the western part of the district are mainly dominated by Tropical wet evergreen forests, whereas semi – evergreen forests consisting of evergreen species associated with deciduous are mostly found in the central part of the district. The montane sub-tropical broad leaves hill forests are found in the eastern parts of the district. The primary forests of all types are classed as evergreen/semi-evergreen forests. The secondary forests or old abandoned jhums in the lower altitude are mostly dominated by bamboo forests and are moist deciduous in nature. However, in some areas old abandoned jhums are dominated by miscellaneous species. Forest plantations are also found in small pockets and are predominantly of Teak species. The abandoned jhums of approximate upto 3 years old and scrub land are put under the category of young abandoned jhum. Depending on the vegetation type of the area before shifting cultivation
the young abandoned *jhums* are dominated by young abandoned *jhums* are dominated by young bamboo shoot or tree seedling and saplings. The total forest cover area in 2000 is of 3,95,621.06 hectares or 87.21 per cent of the total geographical area.

**(iv) Agricultural Land**

Wet-land rice cultivation is practiced in the flood plains of some rivers viz. *De, Phairuang, Kau* and *Khawthlangtuipui*, etc. It is also practiced in *South Vanlaiphai*, rice is the only crop cultivated during the Kharif season. During Rabi season some vegetables like mustards, cauliflower, etc. are cultivated in small area of the valley fields in a scattered manner, and could not be delineated due to scale factor. In general, double cropping is not practiced due to lack of irrigation facility and insufficient water supply during the dry season. Agricultural/horticultural plantation like Orange, Banana, Pineapple, etc. have been observed near the villages such as *Hauruang, Pachang, Phairuangkai, Chhumkhum, Lungsen, Hnahtial, Thiltlang, Lunglei*, etc. but in small scale. *Betelnut* plantation has also been observed in the western parts of the district. The total area under agricultural land, excluding shifting cultivation was 5,369.20 hectares i.e. 1.21 per cent of the total geographical area.

**(v) Other**

Though, the current shifting cultivation comes under the categories of others, it is the main agricultural system on the hill slopes of the district. In shifting cultivation, *Rice* is the main crop. Besides, *Maize*, vegetables like *cucurbita, Cucumber, Cowpea, Brinjals, Tobacco, Ginger* are also grown. In the western part of the study area oil seeds like *Sesamum* are grown in shifting cultivation, and harvested during winters. The area under current shifting cultivation in 2000 is estimated to be of 44,000 hectares i.e. 9.69 per cent of the total geographical area. Small patches of scrubby vegetation with grasses are found on the very steep slopes and escarpment area where the soil layer is very thin.
In Mizo society land is owned by the community rather than the individual. The basis of land allotment happens to be the family size. So, family size and holding size are likely to be highly correlated. There are two types of land which are Community lands and Private lands. This community land is mainly used for shifting cultivation. The proportion of this community land to the total geographical area of the region is much more than that of the private lands. Usually the private lands are used for the cultivation of cash crops and horticulture plants. The land of Lunglei district except the area covered by settlements, roads and government-reserved forest belongs to community and the power of allotment of this land for housing, gardening and jhumming purposes is vested on the respective village council within their jurisdiction.

Table 2.2 Land Utilisation in Lunglei District

<table>
<thead>
<tr>
<th>Category</th>
<th>Area in Hectares</th>
<th>Percentage to Total Geographical Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Build – up – Land</td>
<td>4,974.30</td>
<td>1.09</td>
</tr>
<tr>
<td>Water Bodies</td>
<td>3,635.44</td>
<td>0.80</td>
</tr>
<tr>
<td>Forest</td>
<td>3,95,621.06</td>
<td>87.21</td>
</tr>
<tr>
<td>Agricultural Land</td>
<td>5,369.20</td>
<td>1.21</td>
</tr>
<tr>
<td>Others</td>
<td>44,000</td>
<td>9.63</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>4,53,600.00</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Source: *Remote Sensing Application Centre, Aizawl 2000*
2.6 AGRICULTURAL ACTIVITIES

Agriculture is the chief occupation of the Southeast Asian countries. It is regarded as the mainstay and basic means of occupation of the people of the monsoon region. It also serves as the main method of occupation in the study area with traditional shifting cultivation method. It is, however, seen that the proportion of workers involved in agricultural activities have come down sharply at present.

(i) Jhum or Shifting Cultivation

Jhum or shifting cultivation is the principal method of cultivation in the study area and its neighbouring hilly tracts. About 44,000 hectares of land or 9.69 per cent of the total geographical area is under jhum cultivation in the study area in 2000. The yield in jhum system is very low, although, heavy and constant labour input is required. It is estimated that average jhum cultivation in the study area is about 12 quintals per hectares.
In most of the agricultural system, the same piece of land is cropped continuously with occasional fallows. The farmers choose a patch of vegetated forest, cut down some of the trees by an axe, leaving only the larger and economically useful trees, they also clear the undergrowth with a knife (Chempui) and exposed the debris to be dried on the sun. The debris is burnt after they are dried enough. The ashes enrich the soil fertility as long as they are not washed away through erosion. Crops are sown on the clearing land with a minimum preparation and received any cursory attention during the growth. In jhum system, variety of crops are grown together, paddy as the staple crop, vegetables and other cash crops as supplementary. Weed-out work is done twice or thrice till harvest, depending on the necessity. The application of fertilizers is normally absent in jhum system. Jhumming is a wasteful means of cultivation in terms of the vegetation annihilated in the process and in terms of yields. The value of forests destroyed by jhumming is estimated to be over 50 cores annually in the study area. Moreover, input of heavy manual labour is necessary, whose workforce could have been much more production if utilised in other economic activities other than jhum system.

It has been long realised that the age-old tradition of jhumming should be abandoned and the cultivators should switch to permanent land management to get more reliable agricultural products. In this connection, the government has given financial assistance to jhumia families for their permanent settlement and economic uplift to abandon the present practices of shifting cultivation under New Land Use Policy (NLUP), Government of Mizoram. The New Land-Use Policy started from the year 1985 onwards. This scheme is implemented by Rural Development Department which aims at complete eradication of unproductive and traditional method of shifting cultivation by giving jhumia families viable scheme for permanent occupation. Under this scheme, large numbers of families are financed, encouraging them to adopt orchards, piggery, dairy farming, horticulture, teak plantation, pisciculture and other activities in a way to discard jhum practices. This scheme has been able to reduce the rapid increase of shifting cultivation in the study area.
(ii) Horticulture

Development of horticulture, perhaps the most feasible project to boost agriculture products in the study area is considered from a geographical point of view. Horticulture has been introduced to reduce jhumming and the development of agricultural production. But, only a small area of about 294 hectares was put under horticulture in the year 1991. With the growing importance of horticulture crops, the state government placed a considerable emphasis for the development of horticulture crops. The horticulture crops occupied only 294 hectares in the year 1991, while in 2002 it has increased to 2,754 hectares. Looking to the importance and utility of horticulture crops, the government is placing a considerable emphasis on the development of horticulture crops mainly fruits, vegetables and spices. The government has undertaken a programme to promote horticulture development by giving top priority on construction of link roads in rural areas to connect the orchard/gardens as well as the potential areas with the main roads and villages through direct participation of the villagers.

(iii) Wet - Rice Cultivation

To curtail the practice of devastating jhum cultivation and to increase agricultural productivity the government has introduced wet rice cultivation in the district. Yet the scope of medium irrigation in the study area is very limited due to the hilly nature of the region, all irrigation project are confined to minor irrigation scheme. Flat land for such cultivation is possible only along the river valleys where water facility is available normally these areas are fertile lands. In the study area only few areas are used for Wet-Rice Cultivation due to lack of water resources. Out of the total area in the study area only about 1.4 per cent has brought under Wet Rice Cultivation till today.

(iv) Livestock and Animal Husbandry

Among the allied activities related to agriculture, Animal husbandry is another important sector. In an agrarian economy the importance of livestock can not be denied, therefore, various departmental schemes and programme like breeding, feeding, dairy
development have been undertaken by the state government in the successive five years plan programmes visualising self-sufficiency in the production of food of animal origin to uplift the economic status. The development of livestock is important for economic development of the region of the rural areas. In fact, livestock and animals husbandry has been given importance by the state government as an alternate to jhumming.

2.7 DEVELOPMENT OF FOREST ECONOMY

Traditional shifting cultivation, widespread lumbering and mismanagement of forestry have been the main drawbacks in keeping the forests wealth intact. Therefore, the state government has made various efforts to regenerate the forests either naturally wherever there occur good seed bearers in particular area, or artificially through plantation. Till today the Forest Department has brought an area of 216.24 square kilometres under different plantations. About 33 per cent is under economic plantation, 34 per cent under fuel wood and 30 per cent under social forestry.

The importance of forestry also lies with its capacity to prevent soil erosion and maintenance of ecological balance. The government have therefore, imposed ban on illegal felling of trees in the district and also been undertaking massive afforestation programmes through plantation of utility tree species in wasteland and degraded areas. The state Forest Department is executing the afforestation programmes through centrally sponsored schemes. The destruction of habitat of plants and animals by various detrimental factors has rendered many species of rare plants and animals to the extent of becoming endangered and extinct. Preservation and management of wildlife has therefore assumed great importance in view of the dwindling habitat of wildlife. The state government is aware and active to the needs of the conservation of wildlife. Government of Mizoram introduced Joint Forest Management (JFM) scheme in the year 1991 for rehabilitation of degraded forest. This scheme mainly aims at conservation, improvement and increasing the production of non-timber forests products and medicinal plants, it also
aims at providing additional income to the tribal and rural poor living in and around forest. Under the JFM a long standing requirement is fulfilled in which the involvement of forest dwellers is considered necessary for the sustainable conservation of forests in any part of the earth, more so in the tribal areas like the northeast India.

2.8 TRANSPORT AND COMMUNICATION NETWORK

Development of transport and communication network is very essential for proper and speedy development. Transport and communication lines are the basic necessity, an indispensable infrastructure and essential perquisite for any form of development. In fact, transport routes are integral part of nation economy and these are the index of prosperity. The northeast region of India is still very backward in transport and communication system. A geographical factor, especially physiography is a major constraint of the region. In hilly area of the study area, all other means of transport such as railways, airways and waterways are insignificantly developed or almost absent. The only means of transport available is road transport which is also beset with numerous problems like landslides. Due to precipitous physiography and undulating terrain, development of roads in the study area is of great difficulty. As a result of the north - south running ranges, there is a wider scope in construction of roads in the same direction, while construction in the east to west direction is not only difficult but also costly affair as it entails to overcome the construction of blind curves, steep gradients and bridges at most places. The Border Road Development Organisation and the State Public Works Department are the main agencies involved in the development of road network in the study area. The roads in Lunglei district can be broadly classified into three types such as (i) National highway, (ii) State highway and (iii) District road. Lunglei district is connected only with one national highway i.e. National Highway No.54.
2.9 INDUSTRY

In Lunglei district the traditional industries were cloth weaving and black smithy, the first was a home industry for respective home consumption only and the second was for making weapons and implements for war, hunts, agriculture and domestic use. None of the industries came up for marketable products. Lunglei district has plenty of raw materials for industry mostly from forest, agriculture and horticulture.

Attempts at promotion and development of small and household industries were made through the community development Blocks in the district. But progress was not much in the industrial sector. There was lack of trained manpower and absence of adequate policy direction. In 1989, the state Government formulated an industrial policy for the state. Under the policy priority will be given to agro and forest based industries followed by handloom, electronic and consumer industries. Lunglei district is an industrially backwards area and the whole district has been declared no-industry district. This attracts various facilities for promotion of industry. Some ginger and fruit processing plants have come up in the district. A state government undertaking Mizoram Food and Allied Industries Corporation, has been set up to develop industries based on agro-horticultural products. Apart from the ginger maize and fruit juice plants have already set up or under construction, there is potential for setting up different industrial projects based on locally products fruits, tea, coffee, chillies, oilseeds, sugarcane, meat, milk etc.

2.10 RURAL DEVELOPMENT BLOCK

Lunglei district is divided into four Rural Development Blocks (RDB) viz. Lungsen Rural Development Block, Hnahthial Rural Development Block, Bungmun Rural Development Block and Lunglei Rural Development Block. Lunglei district covers an area of 4,538 square kilometres. Out of the total area Lungsen Block covers the largest
area of 1,36,029 hectares, followed by Bunghmun having 1,13,949.93 hectares. Lunglei Block and Hnahthial Block cover an area of 1,07,951.36 hectares and 95,669.71 hectares, respectively. The demarcation of boundary of these four Rural Development Blocks is more or less guided by the natural courses of the rivers and the hills. The descriptions of the boundary of the Block justify the role of geographical features in shaping the boundary.

Among the four Blocks Lunglei Block has the highest population concentration as per the 2001 Census, it has 64,863 persons followed by Lungsen Block which has 30,704 persons, Hnahthial Block 24,146 persons and Bunghmun Block 16,508 persons, respectively (Table 2.3, Figure 2.5). There are 67 inhabited and 13 un-inhabited villages in Lungsen Block, 39 inhabited and 9 un-inhabited villages in Lunglei Block, Bunghmun Block constituted 34 inhabited and 6 un-inhabited villages and Hnahthial Block has 25 inhabited and 1 un-inhabited villages (Table 2.4). Map of Lunglei district rural development Blocks clearly shows in Figure 2.6.

### Table 2.3 Block Wise Houses, Households and Population

<table>
<thead>
<tr>
<th>Name of Blocks</th>
<th>No. of Houses</th>
<th>No. of Households</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Male</td>
</tr>
<tr>
<td>Bungmun</td>
<td>3,106</td>
<td>2,763</td>
<td>8,366</td>
</tr>
<tr>
<td>Hnahthial</td>
<td>4,883</td>
<td>4,524</td>
<td>12,046</td>
</tr>
<tr>
<td>Lungsen</td>
<td>6,000</td>
<td>5,689</td>
<td>15,821</td>
</tr>
<tr>
<td>Lunglei</td>
<td>14,320</td>
<td>12,448</td>
<td>32,856</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>28,309</strong></td>
<td><strong>25,424</strong></td>
<td><strong>69,092</strong></td>
</tr>
</tbody>
</table>

Source: District Research Officer, Lunglei 2001.
Block Wise Number of Population - 2001

![Bar graph showing population distribution by block]

Figure 2.5

Table 2.4 Block Wise Number of Villages

<table>
<thead>
<tr>
<th>Name of Block</th>
<th>Inhabited</th>
<th>Uninhabited</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bungmun</td>
<td>34</td>
<td>6</td>
<td>40</td>
</tr>
<tr>
<td>Lungsen</td>
<td>67</td>
<td>13</td>
<td>80</td>
</tr>
<tr>
<td>Lungkei</td>
<td>39</td>
<td>9</td>
<td>48</td>
</tr>
<tr>
<td>Hnahthial</td>
<td>25</td>
<td>1</td>
<td>26</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>165</strong></td>
<td><strong>29</strong></td>
<td><strong>194</strong></td>
</tr>
</tbody>
</table>

Source: District Research Officer, Lunglei 2001
Figure - 2.6