CHAPTER-3
ENVIRONMENTAL SETTING OF
THE STUDY AREA
CHAPTER 3
ENVIRONMENTAL SETTING OF THE STUDY AREA

The North East region of India lies between $20^\circ 81'$ and $29^\circ 30'$N latitude and $89^\circ 40'$ and $97^\circ 50'$E longitude constituting 7.75% of country’s land area (Fig 3.1). Hills, mountains and undulating plateaus accounts for 72% of the total geographic area of the region. The plains mainly consist of the Brahmaputra and the Barak valleys in Assam, Imphal valley in Manipur and some flat land scattered between the hills in Tripura (Bundela, D.S., 2007). Rocks that are exposed here are of different geological ages, from Archaean to Quaternary ages. The Achaean rocks exposed are gneisses, migmatites and metasedimentary bands. Petrozoic rocks mainly comprise quartzite with intercalated phyllites. Precambrian-Paleozoic rocks are found in Arunachal Pradesh which comprises quartz chlorite schist, sericite schist, quartzite and amphibiblite. In addition to these, rocks of Lower Gondwana group, Mesozoic volcanic rocks, Late Mesozoic Ophiolites, Cretaceous sediments, Tertiary rocks etc are found in different parts of the North East India (GSI, 2011).

3.1. ZIRO VALLEY

3.1.1 LOCATION

The Ziro valley is located in Lower Subansiri district of Arunachal Pradesh between $26^\circ 50'$N and $28^\circ 21'$N latitude and $92^\circ 40'$E and $94^\circ 21'$E longitude and at an altitude of 1500 to 2700 m above msl (Fig 3.2). Ziro is surrounded by the upper Subansiri...
district in the North Eastern side, East Kameng district in the Western side, Tibet and China in the North and Assam in the South East side.

3.1.2 HISTORICAL CONTEXT

Ziro valley is located in the Lower Subansiri district of Arunachal Pradesh which was bifurcated from Subansiri district in 1980. Ziro valley is inhabited by a tribe called Apatani. The Apatanis that belong to Tibeto Mongoloid stock, trace their origin from one legendary ancestor ‘Abottani’. They migrated to the magnificent Ziro valley following the path of Khru and Kime rivers which are now called Kamla river and Subansiri river respectively. They are well built, fair and medium to tall in body texture. Apatanis live in large villages with kinship, ritualistic and friendship ties.

3.1.3 GEOLOGY

Extensive area of Ziro valley is occupied by granite gneisses. The older biotite granite gneisses consist of several variants such as foliated gneiss with occasional megacrysts of feldspar and quartz-migmatic orthogneiss, feldspethic gneiss and augen gneiss. Mineralogically these gneisses comprise orthoclaseperthite, oligoclase, quartz, biotite, sericite, minor muscovite with epidote, apatite and zircon as accessories (GSI, 2010).

3.1.4 PHYSIOGRAPHY

This magnificent piece of land covers about 32 sq km of cultivable areas. About 1058 sq km areas of the valley are dotted with hills of Himalayan mountaneous system ranging from undulated small hillocks at an elevation of 1525 metres above mean sea level to tall mountains ranging from 1830 to 2900 metre in altitude. A high ridge with
some important peaks on the East side of the valley demarks it from the hills of the lower side of the valley. The forests are rich in various species of flora and fauna. Different types of wild animals like clouded leopards, black panthers, bears, barking deers etc are found in the Talle valley wildlife sanctuary. In my study area of the valley no distinct faunal species is seen. The river Kille flows through the heart of the valley. All the streams that originate in the hills and are diverted to irrigate the paddy field finally drain out to the river Kille. It flows towards the south of the valley to meet river Panior near Yazali.
3.1.5 FOREST

The forest in Ziro valley can be differentiated into the following types-

a. East Himalayan sub-tropical forest
b. East Himalayan wet temperate forest
c. East Himalayan mixed coniferous forest
d. Oak forest

Under subtropical forest species like *Quercus lineate*, *Castanopsis tribuloid*, *Prunus acuminate*, *Engelhardia spicata*, *Exbucklandia populnea*, *Acer acuminate*, *Acer pictum* etc are found.
The different genuses of plants of temperate forest are Quercus, Exbucklandia, Magnolia, Rhododendron, Betula, Acer, Michelia, Texus etc.

Conifer species are *Pinus wallichiana, Pinus roxburghii, Texus baccata* mixed with other species like *Tsuga dumosa, Flex dipyrena, Abies densa* etc.

Bamboo species are *Arundinaria spp., Cepholostachyum capitatum, Chimonobambusa callosa, Phyllostachys bambusoides and Pleiboblastus simonii*.

*Castanopsis. indica, C. hystrix, C. tribuoides, Alnus. nepalensis, Myrica esculenta* are found among Castanopsis trees.

### 3.1.6 CLIMATE

The Ziro valley enjoys a temperate climate. The average weather and climatic condition of Ziro valley is presented by composite line graphs in Fig 3.3

![Graph showing climatic condition of Ziro valley](image-url)
In the last six years the minimum temperature was -9°C and maximum temperature was 36°C, both in the year 2013. Maximum rainfall occurs in the months of July-August and minimum in December-January. The average annual rainfall is almost same in the last five years. It is in between 60-70mm. The average humidity of the Ziro valley in the last five years is about 70-80%.

3.2 KIKRUMA

3.2.1 LOCATION

Village Kikruma is located in the Phek district of Nagaland in Kikruma block at an elevation of 1606m. Kikruma is located in between 25°34' N and 25°36' N latitude and 94°12' E and 94°13' E longitude. Village Kikruma is situated in the Phek district which is bordered by Myanmar in the East, Kohima district in the West, Zunheboto and Tuensang district in the North and Manipur in the Southern side (Fig 3.4).

3.2.2 GEOLOGY

Geologically the village is covered by tertiary rocks of sandstone and shale. Ground water is restricted to weathered mantle and fractures and the infiltration to ground water is controlled by the development of secondary porosity in rocks caused due to tectonic movements. Hydrogeologically, the village is underlain by unconsolidated and semiconsolidated formations ranging in age from Upper Cretaceous to Recent. At places ground water oozes out as springs. (Central Ground Water Board, 2009).
3.2.3 HISTORICAL CONTEXT

Phek District was bifurcated in 1973 from Kohima district. It lies in the South-Eastern part of Nagaland. The village kikruma is inhabited by the tribe called Chakhesang. The word "Chakhesang" is an incorporation of the names of three sub-tribes - "cha" from "Chokri", "khe" from "Chesham (Kuzha)" and "Sang" from "Sangtam (Pochury)". Chakhesangs belong to Tibeto-Burman language group of the Sino-Tibetan family. Formerly they were eastern Angami and are now basically divided into ‘Chokri’ and ‘Kheza’ groups. They speak the dialect Chakhru, Kheza and Sangtam (ICAR, 2009).
3.2.4 PHYSIOGRAPHY

The village is covered with moderate hills with gentle and steep slopes. The hills of the village are standing in NW-SE direction. Soil is mostly clayey but black, red and alluvial soils are also found in Kikruma. The village is situated on a ridge surrounded by the river Seidzu on the southern side and Khuzha on the northern side. The village is located on the hill top and above the levels of streams. So water from these streams cannot be used for irrigation purposes. There are some perennial springs in some locations which supply water to the people. The highest elevated point is located at 1614m. Forests are rich in various faunal species like Mithun, cats, fishes, birds and bees. Plants like bamboo, wild banana, Oak, Ginseng, Alder, Fig, ornamental ferns, orchids and various mushrooms are found in the village.

3.2.5 FOREST

The forests here are of Subtropical broad leaved wet hill forest. The forest is both wet evergreen and semi deciduous forest. Three reserve forests are located in Kikruma. These are-

a. Phuzutou covering an area of 100 ha.
b. Rhazapillu covering an area of 50 ha.
c. Thikapii covering an area of 400 ha.

Plant species of Oak, Neem, Pine, Alder, Bossom, Betuli, Gooseberry, Fig, Hollock, Michelia, Albizia, Bauhinia, Sisoo, Ficus, *Mesua ferra*, *Alseodaphne petiolaris*, ...
Artocarps chama, Cinnamomum bejolghata, Cryptocarya amygdalina, Altingia excelsa etc are predominantly found here.

3.2.6 CLIMATE

Kikruma falls under sub Alpine temperate zone. The nearest rain gauge is located in District Head Quarter, Phek. The average rainfall is between 150- 170cm per annum. Lowest rainfall in the last five years occurred in 2014 which was 102.2mm. Average relative humidity is about 70- 75%. Average minimum temperature is about 15°c and maximum temperature is about 25°c. Maximum rainfall takes place in the months of July-August. The winter is cold. The lowest average annual temperature of the last five years was 12.7 in the year 2014. December- January are the coldest months. The climatic condition of Phek district is presented by composite line graphs in Fig 3.5.

Fig 3.5 Climatic condition of Phek district, Nagaland

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3.3 BODOLAND TERRITORIAL COUNCIL

HISTORICAL CONTEXT

The study area covers parts of Kokrajhar and Baksa districts of BTC. Kokrajhar was a part of undivided Goalpara district which consisted of Kokrajhar, Bongagaigaon, Dhubri, and present Goalpara district. Earlier it was a part of Bijni kingdom ruled by Koch dynasty. Bijni and Biddapur Kingdom were part of the Koch and before that, Kamata kingdom. Baksa was notified as one of the districts of BTC in October 2003 while it started functioning from 1st June 2004. Baksa was carved out of a part of Nalbari, Barpeta, Kamrup and small portion of Darrang district. The word ‘Baksa’ derived from ‘Bangsa’, a Dzonkha word that means a corridor as it is known that Bhutanese king and subjects used this area for trade and passage to the plains. It was one of the important ‘Doors’ of Bhutan. In 2003 Bodoland Territorial Council was established according to the Memorandum of Settlement. The area under BTC jurisdiction is called the Bodoland Territorial Area District (BTAD) consist of four contiguous districts Kokrajhar, Baksa, Udalguri, and Chirang. The BTAD is created under the sixth schedule of Constitution of India. The main inhabitants are Bodo, Koch, Nepali, Assamese, Bengalis, Garo and Adivasis. The Bodos represent the largest ethnic sub groups within the Kachari group. In ancient times they were known as Kiratas, Danavas and Mlecchas. The Bodo language is a member of the Tibeto- Burmese family. Recently Bodos adopted the Devanagiri script (Census of India, 2011).
3.3.1 DOTOMA DEVELOPMENT BLOCK

3.3.1.1 LOCATION

Dotoma development block is located in Kokrajhar district in between $90^05'/E$ to $90^025'/E$ longitude and $26^020'/N$ to $26^050'/N$ latitude. It is located in the middle of the district surrounded by Kokrajhar C.D Block, Kachugaon C.D Block and Gossaingaon C.D Block. The average elevation of the area is 120-140m above msl.

3.3.1.2 GEOLOGY

The entire area is occupied by alluvial sediments of Quaternary age. The alluvium forms unconsolidated sediments of clay, silt, sand, gravel, cobbles and boulders of quartzes, feldspars, etc. Ground water occurs under unconfined condition and lies in a mono aquifer system. The quality of ground water is neutral to slightly alkaline in nature with soft to moderate hardness. The upper layer of alluvial formation forms clayey/sandy soil followed by coarse sand gravel beds at depth which is a very potential zone for ground water extraction (Central Ground Water Board, 2012).

3.3.1.3 PHYSIOGRAPHY

Physiographically the area falls under alluvial region with an elevation of 120-140m above msl. It has southerly slope towards the river Brahmaputra. The alluvial plain is broadly of two types- piedmont plain and terraced plain. The piedmont plain forms the highest terrace of Quaternary landscape with high relief and dense forest. This area is thinly populated. The terraced plain covers the major part occupying a large portion of cultivable land and is moderately populated. Most of the rivers and streams emerge from the Himalayan foothills and with high discharge and perennial in nature. People of
this area divert water from these rivers that flow generally in north-south direction and streams and use for irrigation purposes. Streams like Laudonga, Sahjarang, Kungreb etc are perennial and water from these streams are used for irrigation purposes. The soil types are Dystric Eutrochrepts and Aeric Haplaquepts.

3.3.1.4 FOREST

Forest cover is Deciduous. The northern side of the block is covered by very dense to moderately dense forest which is very thinly populated. The forest is moist Deciduous forest where species like Shorea robusta, Artocarpous sama, Careya arborea, Derris indica, Dillenia pentagyna, Ficus courtipes, Lannea coromondelica, Rhus semialata are found here. Some of the epiphytes found in the Sal forest are Acampe papillosa, Aerides odorata, Coelogyne ovalis, C. Schultesii, C. Suaveolens, Dendrobium anceps etc.

3.3.1.5 CLIMATE

The area experiences Subtropical and humid climate. The rainfall starts from April with the onset of monsoon and continues till September. Highest rainfall occurs in the month of June- July. In December- January the rainfall is scanty. The average temperature ranges from a minimum of 10°c to a maximum of 35°c in the year. The nearby rain gauge is in Gosaigaon, Kokrajhar. The annual average rainfall of the last five years is presented in Fig 3.6
3.3.2 BAGANPARA, BAKSA AND NAGRIJULI DEVELOPMENT BLOCKS

3.3.2.1 LOCATION

These blocks are located in the Baksa district of Assam. Baksa is situated on the northern bank of the river Brahmaputra which is bounded by Bhutan on the North, Nalbari, Barpeta and Kamrup on the south, Chirang on the west and Udalguri on the east. Geographically Baganpara is situated in between 91°20' E – 91°28'E longitude and 26°40' N – 26° 50'N latitude. Nagrijuli is situated in between 91°34' E to 91°44' E longitude and 26° 42' N to 26° 48' N latitude. Villages like Uttar kuchi, Subankhata, Chaulkara, Simlaguri are located in Baganpara block, villages like Arampur, Baganpur, Bhutankhuti, Simlaguri, Dakhin Bhutan, Narayanpur, Palash guri, Bhogpara, Subansiri and ohopa are in Baksa Block. On the otherhand villages like Chandanpur, Bagarisuti, Guwabari, Bimala nagar, Mahendra nagar etc are located in Nagrijuli block.
3.3.2.2 GEOLOGY

These areas are part of alluvium plains of Brahmaputra river basin. The hillocks are covered by thick laterite mantle. The northern side is occupied by older alluvium bordering Bhutan comprises of sand, gravel and silt with higher proportion of clay. The area is mainly covered by the newer alluvium composed of sand, pebble with silt and clay. In some places at the Himalayan foothill springs ooze out. A very narrow belt of Upper Tertiary semi consolidated rock formation occupies the Northern area near Bhutan border which is composed of clay stone/sandstone/siltstone. The hills are standing in East-West direction. Springs develop in these areas. The sediments here are with low permeability and high retention capacity. Hence the surface flow of the streams is high. Bhabar formations are exposed at the foothill belt in the Northern side and central and southern part of the area which is composed of boulders, pebbles, cobbles with the interstices filled by sand and silt. As the sediments have high permeability with low retention capacity, the surface flow of the streams of this region is not significant. Here the depth of water level is quite high. The ground water level in the older alluvial region occurs under unconfined to confined conditions whereas in newer alluvial region ground water occurs under unconfined condition (GSI, 2008).

3.3.2.3 PHYSIOGRAPHY

Physiographically the blocks are characterised by denudated structural hills and alluvial plains. The hillocks are occupied by evergreen mixed forest with thick laterrite mantle. The northern side of Nagrijuli Block is occupied by older alluvium. The Bhabar zone at the Himalayan foothill contains dense forest. Parallel to Bhabar zone on the
southern side is located the Terai zone which contains tall grasses. The soil is sandy, silty loamy to clayey loamy. In Baganpara the soil types are Aeric fluvaquents and Typic hapludalfs. In Baksa the soil types are Aeric fluvaquents, Typic hapludalfs, Typic haplaquents and Typic udifluvaquents. Aeric fluvaquents and Aeric haplaquept types of soil are found in nagrijuli Block. The soil is acidic to slightly alkaline in nature with low organic carbon and low soluble salts. Permeability is moderate. Soils are suitable for all kinds of crops (GSI, 2008). The major drainages of the area are Pagladiya, Borolia, Nona, Puthimari and Diring which are the sources of various dongs that provide irrigation to the area.

3.3.2.4 FOREST

The forest is moist deciduous and mixed evergreen types. The forest in the Bhabar zone is dense. Besides *Shorea robusta* patches of *Tectona grandis* are found here and there. Other common trees are *Adina cordifolia*, *Artocarpous chama*, *A. Lacucha*, *Bauhinia acuminate*, *Bischofia javanica*, *Bridelia retusa*, *Careya arborea*, *Callicarpa arborea*, *Derris indica*, *Dillenia pentagyna*, *Ficus heteropleura*, *F. Variegate*, etc. Shrubs, woody climbers and twiners are scattered. Among the shrubs *Boehmeria glomerulifera*, *Callicarpa macrophylla*, *Clerodendrum serratum*, *Chromolaena odorata*, *Lantana camera* etc are common. Twinners and climbers like *Dalbergia stipulata*, *Ficus scandens*, *Mikania micrantha* etc. Bamboo clumps of *Dendrocalamus hamiltonii* in patches are found along the borders and forest clearings.
3.3.2.5 CLIMATE

The area enjoys subtropical humid climate with a hot summer and moderate winter. The winter temperature drops to average 10°C and summer temperature rises to average 35°C. Heavy rainfall occurs in the month of July – August and rainfall is scanty in the months of December- January. The average annual rainfall of the district is 2900mm.

3.3.3 BARBHAG, BARIGOG BANBHAG, BARKHETRI AND PUB NALBARI DEVELOPMENT BLOCKS OF NALBARI DISTRICT

3.3.3.1 LOCATION

Barbhag block is located in between 91°27' - 91°31’ E longitude and 26°19’ N-26°22’ N latitude, Barigog Banbhag between 91°30’ E to 91°34’ E longitude and 26°22’ N to 26°30’ N latitude, Barkhetri between 91°18’ E to 91°23’ E and 26°19’ N to 26°22’ N and Pub Nalbari is located in between 91°22’ E to 91°30’ E longitude and 26°18’ N to 26°26’ N latitude. Nalbari district is bounded by Indo Bhutan boundary in the northern side and by mighty Brahmaputra in the southern side, Darrang and Kamrup district in the East and Barpeta district in the West.

3.3.3.2 GEOLOGY

Soil condition of the areas is heterogeneous. The area is covered by alluvial deposits. The soil of the northern side is clayey and loamy while that of middle part is loamy and sandy. The soil of the southern part is sandy. Aeric fluvaquents type of soil is found in
all the Blocks. Typic Haplaquents is found in all the selected Blocks except in Barbhag.
In Pub Nalbari block, Typic udifluvaquents type of soil is also found.

3.3.3.3 PHYSIOGRAPHY

The entire area is situated at the plains of Brahmaputra river. The tributaries of Brahmaputra like the Pagladiya, Borolia and Nona which originate in the Bhutan Hills flow through the heart of the whole area which are the source of a large numbers of jans/ dongs that have great contribution to the agriculture of the area. A no. of inland wetlands are found in the area which are formed by the change of the path of these rivers. The nature of these rivers is unpredictable and cause flood in the monsoon season.

3.3.3.4 FOREST

The forest is moist deciduous forest categorised into Sal and mixed forest. In the moist sal forest in addition to Shorea robusta species like Artocarpous chama, Careya arborea, Derris indica, Dillenia pentagyna, Ficus courtipes, Lannea coromandelica, Rhus semialata, are also found. Perennials with underground perennating systems are Crotolaria pallid, Curculigo orchioidees, Desmodium heterophyllum, Leea indica, Nelsonia canescens, Raufia serpentine, Typhonium typhoides. Grasses like Hemarthia protensa, Micristegium ciliatum, oplismenus burmanii, Setaria palmifolia etc are found here.

3.3.3.5 CLIMATE AND RAINFALL

The area enjoys sub tropical climate with semi dry hot summer and cold winter. Heavy rainfall occurs in the month s of June, July and August for which the area experiences
flood. The average annual rainfall is 1500 mm and average relative humidity is about 80%. The average annual rainfall of the last five years is presented in Fig 3.7.

![Fig 3.7 Average annual rainfall in Nalbari district, Assam](image)

3.4 SOCIO CULTURAL AND SOCIO ECONOMIC SETTING

3.4.1 POPULATION

The Ziro valley is inhabited mainly by the Apatani tribe. According to Census 2011, the population of Apatanis in the Ziro valley is 26,000 (approx.). Literacy percentage in Ziro (Sadar) is 74.33 and that of Old Ziro is 72.21. The Apatani population in the Lower Subansiri district and Arunachal Pradesh excluding the population of 0-6 years is presented in table 3.1
Table 3.1 Apatani population, in the Lower Subansiri, of Arunachal Pradesh

<table>
<thead>
<tr>
<th>Population</th>
<th>Lower Subansiri</th>
<th>Arunachal Pradesh</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Rural</td>
</tr>
<tr>
<td>Persons</td>
<td>33636</td>
<td>26942</td>
</tr>
<tr>
<td>Male</td>
<td>16409</td>
<td>13360</td>
</tr>
<tr>
<td>Female</td>
<td>17227</td>
<td>13582</td>
</tr>
</tbody>
</table>

Source- Census, 2011

The Kikruma village of Nagaland is inhabited by the Chakhesang tribe. The population in 2001 was 3,251. In 2011 the population increased to 7,298. Census 2011 data including total no of houses, population, Child population and ST population is shown in table 3.2 The average sex ratio of Kikruma is 964 which is higher than Nagaland state average of 931.

Table 3.2 Population of Kikruma village of Nagaland

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Total</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total no of houses</td>
<td>1,664</td>
<td>3,716</td>
<td>3,582</td>
</tr>
<tr>
<td>Population</td>
<td>7,298</td>
<td>736</td>
<td>595</td>
</tr>
<tr>
<td>Child (0-6)</td>
<td>1,331</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Schedule caste</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Schedule tribe</td>
<td>7,238</td>
<td>3,680</td>
<td>3,558</td>
</tr>
</tbody>
</table>

Source- Census 2011

The population of different blocks of study areas of Assam according to 2011 census are shown in table 3.3. Both the adult and child population are highest in Barkhetri Block of Nalbari district. Population of both adult and child are lowest in Barbhag Block of Nalbari district.
Table 3.3 Population of different blocks of Study area

<table>
<thead>
<tr>
<th>Blocks</th>
<th>No of household</th>
<th>Total population</th>
<th>Male</th>
<th>Female</th>
<th>Total population 0-6 years</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baksa</td>
<td>24308</td>
<td>118,572</td>
<td>59835</td>
<td>58737</td>
<td>14062</td>
<td>7156</td>
<td>6906</td>
</tr>
<tr>
<td>Baganpara</td>
<td>16073</td>
<td>81441</td>
<td>41324</td>
<td>40117</td>
<td>9838</td>
<td>5057</td>
<td>4841</td>
</tr>
<tr>
<td>Nagrijuli</td>
<td>18866</td>
<td>94137</td>
<td>47823</td>
<td>47314</td>
<td>13445</td>
<td>6730</td>
<td>6715</td>
</tr>
<tr>
<td>Dotoma</td>
<td>29562</td>
<td>144393</td>
<td>73451</td>
<td>70942</td>
<td>21160</td>
<td>10826</td>
<td>10334</td>
</tr>
<tr>
<td>Borkhetri</td>
<td>38037</td>
<td>202196</td>
<td>103949</td>
<td>98247</td>
<td>35801</td>
<td>18168</td>
<td>17633</td>
</tr>
<tr>
<td>Borbhag</td>
<td>11925</td>
<td>59707</td>
<td>30593</td>
<td>29114</td>
<td>5820</td>
<td>2958</td>
<td>2812</td>
</tr>
<tr>
<td>Borigog</td>
<td>21410</td>
<td>105801</td>
<td>54106</td>
<td>51695</td>
<td>13275</td>
<td>6746</td>
<td>6529</td>
</tr>
<tr>
<td>Pub Nalbari</td>
<td>26170</td>
<td>126987</td>
<td>65410</td>
<td>61577</td>
<td>12920</td>
<td>6653</td>
<td>6267</td>
</tr>
</tbody>
</table>

Source- Census 2011

The schedule caste, schedule tribe and literacy of population of different blocks of Baksa and Nalbari districts of Assam are shown in table 3.4. The ST population is highest in Dotoma Block of Kokrajhar and lowest in Borbhag Block of Nalbari district. SC population is highest in Nagrijuli Block of Baksa and lowest in Barigog Banbhag Block of Nalbari. Literacy is highest in Pub Nalbari Block and lowest in Barbhag Block of Nalbari district.
Table 3.4 SC, ST and literacy of populations of different blocks of study area

<table>
<thead>
<tr>
<th>Blocks</th>
<th>SC</th>
<th></th>
<th></th>
<th>ST</th>
<th></th>
<th></th>
<th>Literacy</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Person</td>
<td>Male</td>
<td>Female</td>
<td>Person</td>
<td>Male</td>
<td>Female</td>
<td>Person</td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Baksa</td>
<td>5213</td>
<td>2622</td>
<td>2551</td>
<td>47680</td>
<td>23852</td>
<td>23828</td>
<td>74536</td>
<td>41710</td>
<td>32826</td>
</tr>
<tr>
<td>Baganpara</td>
<td>3314</td>
<td>1663</td>
<td>1651</td>
<td>32271</td>
<td>16261</td>
<td>16010</td>
<td>49421</td>
<td>28009</td>
<td>21412</td>
</tr>
<tr>
<td>Nagrijuli</td>
<td>22227</td>
<td>11299</td>
<td>10928</td>
<td>20503</td>
<td>10367</td>
<td>10136</td>
<td>50833</td>
<td>29423</td>
<td>21410</td>
</tr>
<tr>
<td>Dotoma</td>
<td>5435</td>
<td>2824</td>
<td>2611</td>
<td>54238</td>
<td>26979</td>
<td>27259</td>
<td>88073</td>
<td>49489</td>
<td>38584</td>
</tr>
<tr>
<td>Borkhetri</td>
<td>9101</td>
<td>4619</td>
<td>4482</td>
<td>5551</td>
<td>2746</td>
<td>2805</td>
<td>97807</td>
<td>56276</td>
<td>41531</td>
</tr>
<tr>
<td>Borbhag</td>
<td>4810</td>
<td>2478</td>
<td>3332</td>
<td>230</td>
<td>127</td>
<td>103</td>
<td>47248</td>
<td>25715</td>
<td>21533</td>
</tr>
<tr>
<td>Borigog</td>
<td>3303</td>
<td>1700</td>
<td>1603</td>
<td>8256</td>
<td>4135</td>
<td>4121</td>
<td>72729</td>
<td>40239</td>
<td>32490</td>
</tr>
<tr>
<td>Pub Nalbari</td>
<td>7941</td>
<td>4122</td>
<td>3819</td>
<td>2027</td>
<td>1010</td>
<td>1017</td>
<td>98773</td>
<td>53929</td>
<td>44844</td>
</tr>
</tbody>
</table>

Source – Census 2011

3.4.2 ETHNICITY AND CULTURE

3.4.2.1 ZIRO VALLEY

The Ziro valley is inhabited by the Apatanis of Tibeto-Mangoloid stock. The Apatanis are divided into two main classes- the Gyuchi and Gyutii. Earlier and even today the aged persons have distinct tattoo marks designed by piercing different herbs in their noses and other parts. But the younger generations discourage this practice and has been abolishing gradually. The Apatanis have several clans all are originated from the same ancestors among whom endogamy and clan exogamy is practiced. Apatanis rear Mithuns which play important role in their society. The owners with large no of Mithuns are recognised as with high status. The Apatani women are very skilled in weaving. The women are very hard working. In addition to weaving they also practice Basketry mainly by the men.
There is a village council in each Apatani village and the council consist of one or two Bulliyang representatives from each clan. The position of Bulliyang is hereditary who are the arbiters of tribal law. Individually they are the representative of one clan or groups of clans. Formerly the council of Bulliyang settled all the cases reported to them.

The Apatanis are agrarian community and all their festivals are based on agriculture. Among the dances of Apatanis, the Daminda and Pakhu-ettu are very famous. Dree, Yapung, Myoko and Murung are the major festivals of Apatanis. Dree festival is celebrated in the month of July and Myoko festival is celebrated in September/October. Every year one particular village takes the responsibility to organize the festivals. All religious activities are done in sacred forest part called Ranthill which is not disturbed and conserved.

3.4.2.2 CHAKHESANGS OF KIKRUMA

Basically the Chakhesangs belong to the Mongoloid race that migrated from the Manipur side. Chakhesangs are agrarian community who are very skilled in terrace cultivation. After harvesting feast and festivals are organised to celebrate the harvesting. They are skilled weavers, craftmen, and expert in basketry, sculpture and furniture. Melodious folk songs and dances are the part of their culture. Their homes are decorated with horns of buffaloes which is the symbol of prestige. Funey festival is celebrated after harvesting generally in November fifteenth. Funye is a fish festival where people exchange various dishes and traditional drinks. Fish is regarded as clean and holy as it lives in water and it signifies money, wealth, fortune and richness. So taking fish with the first grain of new harvesting is believed to bring good fortune to life.
3.4.23 BODO PEOPLE OF ASSAM

Bodos are inhabitants of the Kokrajhar, Baksa, Chirang and Udalguri districts of Bodoland territorial council. Bodos are agrarian community for whom agriculture and allied sectors are the main source of livelihood. Bodos practice Hindu religion and Bathou is their main festival. In Bathou festival, Lord Shiva is worshipped with animal sacrifices. Bodo women are excellent weavers who weave their traditional dresses called dokhona and shawls. They rear silk worms, the cocoons of which are spun into silk. They perform a dance called Bagrumba which is generally performed in a festival celebrated after harvesting. The new harvesting is celebrated with feast and festivals.

3.4.3 OCCUPATION

The Apatanis are mainly agrarian community. But now days in addition to agriculture they are engaged in other works also. According to Census 2011, the total workers are 11,237. of which 6,357 are male and 4,880 are female. Of these, main workers are about 7,549. Of the main workers 4632 are male and 2917 are female. Cultivators are about 2735. Among the cultivators 1276 are male and 1459 are female. Agricultural labours are 611. Household workers are about 85. The other workers are about 4,118.

The work profile of Kikruma village is presented in Table 3.5. Agriculture is the main occupation of Chakhesangs. Among the main workers male and female workers are almost equal in no. No agricultural labours are found in Kikruma.
Table 3.5 Agricultural workers of Kikruma village of Nagaland

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Total</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total workers</td>
<td>3,477</td>
<td>1,768</td>
<td>1,709</td>
</tr>
<tr>
<td>Main workers</td>
<td>2,246</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Marginal workers</td>
<td>1,231</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Source- Census 2011

The agricultural work profile of different blocks of Assam is shown in Table 3.6

According to Census 2011, the highest no of main workers are found in Barkhetri Block of Nalbari and the lowest in Baganpara Block. Among the main workers, the highest cultivators are in Barkhetri Block and the lowest are in Dotoma Block. Agricultural labours are highest in Barkhetri abd lowest in Baganpara of Baksa district.

Table 3.6 Work profile of Blocks of study area

<table>
<thead>
<tr>
<th>Blocks</th>
<th>Main Workers</th>
<th>Cultivators</th>
<th>Agricultural Labours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baksa</td>
<td>1636</td>
<td>561</td>
<td>268</td>
</tr>
<tr>
<td>Baganpara</td>
<td>867</td>
<td>279</td>
<td>104</td>
</tr>
<tr>
<td>Nagrijuli</td>
<td>6242</td>
<td>2824</td>
<td>1384</td>
</tr>
<tr>
<td>Dotoma</td>
<td>1440</td>
<td>245</td>
<td>267</td>
</tr>
<tr>
<td>Borkhetri</td>
<td>50257</td>
<td>24118</td>
<td>5994</td>
</tr>
<tr>
<td>Borbhaq</td>
<td>13946</td>
<td>2352</td>
<td>1308</td>
</tr>
<tr>
<td>Borigog</td>
<td>26784</td>
<td>8250</td>
<td>4252</td>
</tr>
<tr>
<td>Pub Nalbari</td>
<td>33910</td>
<td>4150</td>
<td>2924</td>
</tr>
</tbody>
</table>

Source- Census 2011

3.4.4 COMMUNICATION

ZIRO VALLEY OF ARUNACHAL PRADESH

The Ziro valley is the District Head Quarter of Lower Subansiri district. Distance of Ziro from state capital Itanagar is 168.7 km via NH 229. It takes about 4.
hours 11 minutes while travelling from Itanagar to Ziro. Nearest airport is Itanagar and nearest rail station is Naharlagun. The distance between Naharlagun and Ziro via NH 229 is 162.9 km. Travelling time between Naharlagun and Ziro is 3 hours 57 minutes. At present there is a sub-post office at Ziro. There are seven telephone exchanges with at Ziro. The official language for communication is English.

KIKRUMA VILLAGE OF NAGALAND

The village is rural and under developed due to poor road condition. It takes about 1 hour 19 minutes from Kohima to Kikruma via NH 150. The distance between Kohima and Kikruma is 53.2 km. It takes about 1 hour 24 minutes via NH 39 from Kohima to Kikruma. Bus and taxi services are available. Village post office is located at Khezhakeno..

BAKSA AND NALBARI DISTRICTS OF ASSAM

The distance between Baksa and Guwahati is about 93.1 km. It takes almost one and half hour while travelling from Guwahati to Baganpara and Nagrijuli Blocks via NH 31. Nearby rail stations are Nalbari and Rangia. All the selected blocks of Nalbari district together cover a large area of Nalbari district. So the communication status of Nalbari as a whole is explained. The distance between Nalbari and Guwahati via NH 31 is 64 km and the distance by rail is 58km. The total length of rail line in Nalbari is 38km. Total length of NH 31 in nalbari is 37 km while that of State Highways is about 119 km.