CHAPTER-III: PROFILE OF THE STUDY AREA.

3.1. Area and Location: - Meghalaya was carved out from the then undivided Assam as a full-fledged State on the 21st January, 1972 comprising the two erstwhile districts viz. Khasi & Jaintia Hills and the Garo Hills. Besides history, constitutional and other institutional factors, political factors also greatly contributed for the formation of a State. It is thus an upshot of a political emergence on one side and the socio-historical evolution on the other. Statehood was conferred under the provisions of the North-Eastern Areas (Re-organization) Act, 1971. Etymologically, “Meghalaya” means “the abode of the clouds”. Shillong which was the capital of the then undivided Assam continued to remain as the capital of Meghalaya hitherto. Presently, the State has seven districts viz (1) Jaintia Hills, (2) Ri Bhoi, (3) East Khasi Hills, (4) West Khasi Hills, (5) East Garo Hills, (6) West Garo Hills and (7) South Garo Hills.

West Khasi Hills District was carved out from the erstwhile Khasi Hills District on the 28th October 1976 with Nongstoiñ as its district headquarters. Geographically, it is the biggest District in the State. It is bounded on the south by the Bangladesh, on the west by the East Garo Hills of Meghalaya, on the north by the Kamrup District of Assam and on the east by the East Khasi Hills District of Meghalaya. The district situates approximately between 25˚10΄ and 25˚51˚E latitudes and between 90˚44΄ and 91˚49΄E longitudes, covering an area of 5247 Square Kms with a population of 294115 persons as per the 2001 census. Nongtrai area is bounded on the north by the Kamrup District of Assam, on the east by Muliang area and upland Khasi area, on the south by the Lyngngam area and on the west by the East Garo Hills District of Meghalaya. Khasi is a generic term comprising the sub-tribes or septs viz., the Khynriams, the Pnars, the Bhois, the Wars, the Lyngngams, the Nongtrais and the Muliangs. Nongtrais are the native settlers of Meghalaya who live in the north-west of West Khasi Hills District bordering Kamrup, Assam. About the Nongtrais, Ñianglang (1998:24) writes “etymologically, the word ‘Nongtrai’ in a singular form is derived or coined from the two Khasi words, ‘nong’ or ‘shnong’ means ‘village and ‘trai’ means ‘native’ or ‘possessor’. Thus
‘Nongtrais’ in plural form means “the indigenous possessors or the native villagers or native settlers of the soil who inhabit the north-West of Khasi Hills”. Nongtrai area falls under the administrative control and territorial jurisdiction of the Mawshynrut Administrative Unit and as well as under Mawshynrut Community & Rural Development Block, West Khasi Hills District, Meghalaya. It is mainly inhabited by the Khasis and few Garos. Nongtrais belonging to one of the Khasi septs are the autochthons of the area. Mawshynrut is the headquarter of the Nongtrai area. The offices of C & RD Block and Administrative Unit situate at Mawshynruut. A map showing the geographical location of the Nongtrai area is shown as an inset between the page 94 & 95.

3.2. Physical Setting: - Geomorphologically, the area consists of two tectonic formations viz (1) the foot-hills and the (2) uplands. The foot hill section of the Malangkona, Athiabari and Misei areas are plain areas of more or less the same level with that of Kamrup District Assam. The hill section ranging from 170 metres to 820 metres above sea level (ASL) constitutes the major portion of this area. The area rises abruptly from the foot-hills towards Mawshynrut and then to Blei and Tyrsung rivers on the eastern side. The prominent peaks of this area are the Thibir, the Agriang, the Aswit, the Riangkew, the Mawjut and the Nongkyna. Hills with converging ranges are intersected by streams, rivers, valleys and sections. Hills and ranges spreading over the vast portion of the area constitute a prominently dominating feature of its topography. Steep banks of Kiang, Tyrsung, Blei, Baïü, Rdiak and other rivers together with gorges constitute the waste lands. However, the total area under waste lands is small as compared to the total culturable area. The geological structure of mainly composes of a rock group known as Achaean gneissic complex. The rocks found in this formation are generally quartzite, gneiss, iron ore and schist. Towards the slope of Tyrsung River it is composed of a rock group known as granites. With the applications of the RS technologies, experts infer that satellite imageries, aerial photographs and topographic sheets of Meghalaya reveal long and persistent lineaments segmenting the plateau
which are the manifestations of deep-seated fracture system having repeated reactivation. Such findings cover the study area too.

Spatially, the area is comprised of agricultural lands, forest lands, fallow lands and waste lands. Soils are formed under varied conditions of geology, relief, climate and vegetation. Of the four types of soils found in the State, two of them viz., (1) the laterite soils and (2) the alluvial soils are found in this area. The belt comprising Umsohpieng, Mawsmai, Myndo and other settlements including Mallangkona and Athiabari belts sloping downwards to the Jara, Kiang, and Tyrsung rivers (Singra Nadi); facing towards the Brahmaputra River is composed of alluvial soils. Rice, maize, ginger, betel leaf, betel nut, banana, fruits, brinjal, chillis, sesameum etc are grown in this part. The upper belts forming the major portion of this area viz., the Nongjri belt, the Mawshynrut belt, the Porla belt, the Nonglang belt and the Nongkrong belt are composed of a laterite soil. Rice, broomsticks, ginger, etc are grown in these belts. Blei River is the longest river flowing down to Bangladesh. At the banks of Ble River, there are plain strips of cultivable lands where people undertake wet farming system. Around this belt and the Mawshynrut belt, corundum and silimanite deposits are found.

3.3. Settlements and Culture: - The uneven diffusion of functions in various settlements needs the intervention of planners, engineers, policy makers and development strategists. Nongtrai area is a classic example of a depressed area. The popular Indian adage runs “Roti, kapada aur makaan”. Shelter is the basic necessity of life. Even birds and animals build their nests and habitats for rest, sleep and protection. Though the present research work does not aim at applying the Christaller’s central place theory, however, the hierarchy of human settlements and the centre-periphery relations are included so as to meet the objectives. The area being inhabited mainly by tribal people as such casual factors primarily historic and institutional like family and kinship, social and political cohesion, social security and defense, religious ideological considerations, hilly terrains, land tenure system etc jointly influence the settlement patterns. In ancient times, Nongtrais were the forest dwellers.
Micro-level planning studies aim at developing a particular area or region, human beings through the optimum use of resources that are available in and around the settlements. Literature on the morphology of settlement abounds and reveals that hilly topography is a physical determinant that strongly influences the location of houses, farmlands and other human activities. The community as a whole used to build houses on the mild slopes with diverse forms of orientation. Technically speaking, orientation of house means the placing of a house with respect to the geographical direction so as to harvest maximum benefits from the gifts of the nature like sunshine, wind etc. In this connection, Dutta (1998:763-764) writes “the placing of the building with respect to the geographical direction (East, West, North and South) the direction of the wind and the altitude and azimuth of sun is known as the orientation of building. The building should be placed in such a way that it derives maximum benefit from sun, air and nature and at the same time it is protected from their harmful effects.” Irrespective of geographical direction, to maintain the state of social cohesiveness and cultural bonding and for fear of tigers, wolves, evil spirits etc, the Nongtrais orient their houses towards the centre of settlement and settle in close vicinity to each other. Such nucleation is due to the gregarious instinct of human beings. Terrains with steeper slopes drive them away from constructing houses at such sites. Landlords, their kith and kin and prominent persons in the society used to construct their houses at the optimum sites of settlements. The space preference exhibits by the landlords corroborates the fact that they are the earliest settlers. Common people erect their houses in the remaining portion circumventing the hillock. However, if land is abundantly available, such space preference does not exist. In discussing the settlement pattern in Nongrai area, Ñianglang (2006:18) writes “Unlike the Garos and the Rabhas who usually inhabit in the low lands near the river banks, the Nongtrais used to build their villages on the hills and not of course on the extreme summits of hills, but on the little below the tops, generally in small depressions, in order to protect themselves from the impact of strong winds and cyclones that used to occur from the last part of March till the middle of May during a given calendar year and to be more closer to the source of drinking water.
Availability and proximity to the source of drinking water is thus the main criterion while selecting the location or site of their villages”. This speaks of the mode of settlement in olden days. They plant jackfruit, mango, tamarind, plantain, guava, papaya and other crops around their houses to shield them from storm and cyclone that uses to visit during the months of March and April. They never construct their houses near any drainage, canals, gorges, relief, rivulets etc. Thus, both physical and cultural factors jointly determine the settlement patterns. Therefore, traditionally, the housing culture of the Nongtrais is of clustered type. Now-a-days, due to rapid population growth, urbanisation and the advent of modern technology this culture is changing and one can find settlements with scattered houses. Moreover, people are taking more interests in irrigated farming, horticultural pursuits and other sustainable activities. Thus, replacement of jhum cultivation i.e their slash-and-burn method of cultivation by other activities is taking place though at a slower pace due to some limitations. Beside the above institutional factors, social structure and historical factors play vital roles in determining the spatial organization and dispersal or clustering of houses that finally evolve a typical layout of a settlement. Therefore, settlement forms and patterns are the good indicators of resources use and culture of a community. Provision of functions affects the settlement form. For instance, the construction of a new road by the side of the existing settlement results in the convergence or clustering of houses towards that road. This is due to the force of attraction induced by the law of place utility as soon as transport facility is created. Similarly, the setting up of new industrial units near the existing settlement drives away the settlers because of noise, smoke, smog, effluents and other pollutants. It is a universal fact that creation of the industrial units that produce negative externalities results in the dispersal of settlements. In short, lack of rural support systems demand the provision of the both policy and non-policy functions in this area. Ataikul, (1980:93) defines rural support systems as “the systems that are created to promote rural development by giving supportive services to rural population so that they can be more productive. Such system includes financial institutions, extension services, seed & fertilizer distribution, storage & marketing facilities, feeder roads,
centre of information, water supply, etc.” In view of this, fifty demand-driven functions are selected for the study. As per the 2001 census, the area consists of 140 settlements covering eight numbers of G.S Circles as shown in Annexure-I. The numbers of G.S. Circles under the study area is shown in Table 3.3.1. The C & RD Block officials informed us that the area of each settlement is calculated on guesstimate and hence we did not calculate the population density.

**Table 3.3.1: List of G.S Circles under Nongtrai Area:**

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Name G.S Circle</th>
<th>Numbers of households (2001 Census)</th>
<th>Population (2001 Census)</th>
<th>G.S Circle Area in Sq. Kms</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Riangdo G.S Circle</td>
<td>1003</td>
<td>5560</td>
<td>95.40</td>
<td>Data relating to the size of each G.S.</td>
</tr>
<tr>
<td>2</td>
<td>Porla G.S. Circle</td>
<td>586</td>
<td>3501</td>
<td>68.00</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Kyrdum G.S Circle</td>
<td>574</td>
<td>1552</td>
<td>87.80</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Umsohpieng G.S Circle</td>
<td>575</td>
<td>3401</td>
<td>97.00</td>
<td>Circle are collected from the C &amp; R D Office,</td>
</tr>
<tr>
<td>5</td>
<td>Aradonga G.S. Circle</td>
<td>529</td>
<td>3171</td>
<td>72.80</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Mallangkona G.S Circle</td>
<td>629</td>
<td>3930</td>
<td>79.00</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Nongjri G.S Circle</td>
<td>662</td>
<td>4127</td>
<td>88.50</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Langdongdai G.S Circle</td>
<td>396</td>
<td>2296</td>
<td>89.94</td>
<td>Mawshynrut</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>4954</strong></td>
<td><strong>27538</strong></td>
<td><strong>678.44</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Source: Field Study)

The above table indicates that the population distribution in the G.S Circles is not uniform. Langdongdai G.S Circle has the lowest population size and Riangdo G.S Circle has the highest population level. The area reveals a remarkable variation in the spacing and dispersal of settlements over the surface. Physical factors like relief, landscape, terrains, slope, soil condition, water sources, drainage lines, irrigation facilities, sunshine etc.
determine the distribution and density of settlements. Among the cultural factors, land-use, occupational pattern, land tenure, size of holding (farm sizes) and its fragmentation, mean of transportation and transportation costs are a host of determinants.

3.4. Mode of Production and Subsistence Farming: - Agriculture is the main occupation of the Nongtrais and is briefly discussed here. Hilly terrains and soil structure are, inter alia, the major facets of the physical environment that shape and influence the Nongtrai culture since the bygone days. In the olden days, as population sizes of settlements were small and the resources were amply available, jhumming was the prospective mean of farming. This method of cultivation still continues even today but to a lesser degree. The jhum lands are usually located within the distance of 2 Kms from settlements. One of the objectives of the present study is to prove the farmland-residence spatial relationship in case of irrigated farms and not for jhum lands. This is also observed by Kulshrestha in Chapter-I. Steep slopes hinder the spatial mobility of factor inputs, labour and agricultural produce. Nongtrais sow two kinds of hill rice locally call Barit which is white in colour and Babah which is brown in colour on their jhum lands in the month of April immediately after the vagary of monsoon. When the process of cleaning the jungles and felling off the trees and bamboos is over in the months of December and January, they are dried to sunshine for a period of about two months and the same are usually burnt in the month of March. They clear their jhum lands by burning off the debris viz bamboo stumps, branches of trees, logs, unburnt shrubs etc. This process is called Thwat. When Thwat is over, they sow their paddy by a method calls Drilling. In this method, men, with the help of two wooden sticks, laboriously and skillfully use both hands and drill holes on the ground whereas women follow after the holes to put their paddy seeds inside. The spacing of these holes ranges from 30 to 60 centimetres depending on the soil structure and the variety of seed they sow. They also cultivate millet, jobs-tears, chilies, arum, ginger, castor, sweet potatoes etc in the same jhumland. Thus inter-cropping system exists. The factor inputs and tools of husbandry used for jhum cultivation are simple comprising the
bamboo baskets, wooden sticks, small-sized hoe, seeds and human labour. The above factor inputs are light and portable. There is no transportation cost involves for transporting them to the fields. They are transported to the fields by family labourers or any daily labourers. Thus, transport inputs are embodied with family labourers or daily labourers. To prevent animals from eating and destroying the crops they make trapping devices. Such devices are locally known as Spar, Ynsham, Tyrbat, Yntaap, Khyrdop, Tdor, etc. Extra labour and efforts are involved for making such devices. Barit is normally harvested in the month of September and Babah in the month of November. Due to similar topography, the method of jhum cultivation of the Nongtrais is akin to that of the Muliangs and the Lyngngams. About the jhum cultivation of the Lyngngams Gurdon (1906:193-194) observes, “They are by occupation cultivators. They sow two kinds of hill rice, red and white, on the hill-sides. They have no wet paddy cultivation, and they do not cultivate in terraces like the Nagas. They burn the jungle about February, after cutting down some of the trees and clearing away some of the debris, and then sow the paddy broadcast, without cultivating the ground in any way. They also cultivate millet and Jobs-tears in the same way. With the paddy chilies are sown the first year. The egg plant, arum, ginger, turmeric, and sweet potato of several varieties are grown by them in a similar manner. Those that rear the lac insect plan landoo trees (Hindi arhal dal) in the forest clearings, and rear the insect thereon. Some of these people, however, are prohibited by a custom of their own from cultivating the landoo, in which case they plant certain other trees favourable to the growth of the lac insect”. With the advent of civilization and the frequent interactions with the plainsmen from Kamrup District of Assam, there witnessed a lot of change in respect of farming operations, muga rearing, trade and other activities. Acculturation either in unilateral or bilateral form exists among various tribes and peoples of the world. Acculturation means the process or result of assimilating through continuous contact of traditions, customs, beliefs, etc of another culture. E.B. Tylor (1988:3) defines acculturation as “the process by which culture is transmitted through continuous firsthand contact of groups with different cultures, one often having a more highly developed civilization”. For
instance, about 1000 years ago, Japan largely received its culture from China in some aspects of life viz., the art of writing, use of coined money and religious belief in Buddhism whereas Chinese accepted only the folding fan from Japan. Due to acculturation during the early part of the 20th century, the Nongtrais learnt the use of bullocks, yoke and other capitals for irrigated farming operations from the Assamese. Thus, besides human labour, the Nongtrais who live in the settlements that are contiguous to the Kamrup District, Assam used to engage bullock labour whenever they carry out their wet farming operations while those who are living in the upland they employ only human labour. Now-a-days few households started mechanized farming. From the information we collected it can be safely inferred that two methods of cultivation exist viz (i) the Transplantation Method and (ii) the Sowing Method.

Draught animals comprising a pair of bullocks or cows are used for drawing the plough. In some families, buffaloes are also used. Buffaloes are used for fields which are marshy and swampy where immersion of yoke sinks deeper due to soft soil conditions and where, in such cases, bullocks or cows can not pull the plough. The capital inputs are small traditional implements. The yoke or plough viz., Ka Lyngkor is used for tillage and puddling of soil. The bamboo ladder viz., Ka Mui is used for leveling and breaking of clods. The hoe viz., U Mohkhiew or locally called u Khudar is another implement used for making contour bunds called Ki Pali in paddy fields and tilling the corner lands wherever application of yoke is not possible. Besides these, the Dao viz., Ka Wait is used for clearing of bushes, vegetations, etc, the spade viz., U Khupoh for tillage of hard and stony soils, the sickle viz., Ka Rashi for cutting the paddy stalk during harvest, the Jamphor for breaking stones and other hard substances, the bamboo tray viz., Ka Liehkyrsein for separating soils, silts and paddy, the winnowing tray viz., Ka Pdung for separating paddy and chaff and other associated implements. Historically, irrigated farming through the use of bullocks, yoke, bamboo ladder etc was introduced in the lower portion of the Nongtrai area sometimes during the 1920s by the two brothers viz., Mr. Suton Roy Nongbri of the erstwhile Mawdong village, Nonglang Sirdarship and Mr. Suwon Nongbri of the erstwhile Nongkharai village, Riangsih
Sirdarship. By acculturation, they learnt this method of cultivation and found it successful. It then diffused to other settlements and with the passage of time, the method gained popularity in irrigated farming. Similar method of cultivation is being practiced in Assam even hitherto. Phukan (1990: 43-44) while narrating the agricultural implements being used in Assam thus writes, “Small implements used by farmers can be classified as (i) traditional and (ii) improved. The farmers use small number of such traditional implements. The Desi plough (Nangal) is used for tillage operations including puddling for transplantation and the Bamboo ladder (Moi) are used for leveling and breaking clods. Both these are bullock driven. The Hoe (Kor or Kodali) is another important associated tillage implement used invariably in small scale cultivation of vegetables etc., and also for bunding the paddy fields. In some places a bullock driven bamboo rack (Bindha) is used (in light soil) as interculture implement. No other bullock driven implements of the traditional type exist in Assam. Among hand implements, Dolimari the clod breaker, Khonti or Khurpi; the sickle (Kachi) and the Dao are the main. Besides these, spade (Siprang) for digging, Jaboca, the hand rack and the Lahoni or Sleheti for spreading water are found. Each farming units has a set of such necessary implements which can be made by the farmer himself at a very low cost. Only the iron share for the plough and the iron hoe and the small iron implements are purchased. The main tillage implement in the hills is the hand hoe”. Thus the capital inputs used in the agricultural production process by the farmers of Nongtrai area in both the upland and low land areas are simple implements and are of low-cost types.

3.5. Economic Linkages and Spatial Linkages: - The present study relates to micro-level planning in a micro-region of Nongtrai area. Of the four hierarchical levels of growth foci viz., service centres, growth points, growth centres and growth poles abound in the literature of regional planning studies; the two hierarchical levels viz., peripheral settlements and central settlements found in the literature on micro-level studies are cognised in the present study. The findings reveal that the hierarchy of settlements under the study area is of three levels viz., (1) peripheral
settlements, (2) central settlements and (3) service centres. The office of the Mawshynrut C & RD Block was set up in the year 1980 with its office at Mawshynrut, one of the hamlets of Riangdo. The 140 numbers of settlements considered for the present study are spatially linked on the northern side by markets viz Hahim Bazar and Gamurimura Bazar, on the western side by Langdongdai, Rongjeng and Nengkhram Bazars, on the southern side by Umdang Bazar and on the eastern side by Nonglang, Rwiang and Nongstoin Bazars. Except Langdongdai and Nonglang, the study excluded the above markets as they fall outside the study area. Altogether only three markets viz., Nonglang, Riangdo and Langdongdai are included in the study area. This enabled us to gather information on space preference, accessibility and propensity of the people in availing the demand-driven functions. Many settlements are not connected to these markets by modern roads like district roads, other district roads and village roads but merely by trails. Good roads only aid spatial mobility of people and functions in overcoming the problem of friction. Varying magnitudes of friction hinder farmers, businessmen and industrialists from intensifying investments in this area due to high transport cost. Regular floods are the seasonal frictions that obstruct producers and consumers of some settlements in transporting goods and produce to markets and other consumers’ centres. For example, seasonal flood of Kiang River hinder the people of settlements viz., Hahwei, Dyrbot, Rangsiang etc. for their spatial mobility to Hahim market. Even in micro-level or integrated area development planning, spatial dimension plays its significant role in hilly terrains in the absence of modern roads. For instance, as spatial distance increases, transport cost also increases rationally. In many settlements, one can still find that horses, buffaloes and persons constitute the mode of transportation. However, in settlements which are connected by modern roads, one can find modern carriers like vehicles, trucks, cars, vans, buses, jeeps, taxis, auto-rickshaws, bicycles, scooters, bikes, motor cycles etc. In some settlements people still use boats and rafts for crossing the rivers during inundations.

Spatial linkages and rural connectivity are the focal points of attention in attempting to overcome the frictional forces so as to ensure
accessibility and spatial mobility persons and objects. Lack of modern means of transport, inadequacy of market centres, existence of friction, etc contribute to economic backwardness of this area. As a result farmers still continue with their primitive mode of agriculture as their economic avocations. Augmentation of non-farm activities as alternative sources of employment in settlements where resources are available thus becomes indispensable. As population sizes of settlements are unevenly distributed and will not meet the threshold population criterion, clustering of settlements for the provision of functions in central settlement, service centres is carried out in the present study. Therefore provision of economic and spatial linkages in the study area is of prime importance.
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