A GEOGRAPHICAL ANALYSIS OF RESOURCE POTENTIALITIES AND ITS DEVELOPMENT IN MEGHALAYA

By

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MASTER OF PHILOSOPHY

Department of Geography

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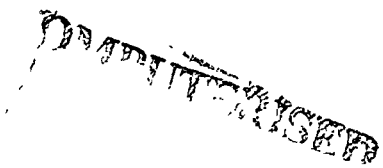
SHILLONG, MEGHALAYA

1988



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Dt. 3rd August 1988

C E R T I F I C A T E

This is to certify that the dissertation entitled 'A Geographical Analysis of resource potentialities and its development in Meghalaya' submitted by Mr. Sansingh Kharkongor in partial fulfilment for the degree of Master of Philosophy is a bonafied study to the best of my knowledge. All the quotations, extracts and ideas of other studies have been duly referred.

This dissertation may be sent to the examiners for necessary formalities and evaluation.

This dissertation has not been submitted to any other diploma or degree

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CONTENTS

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The Lord Almighty have through invisible ways provide me with a healthy and sound body. This has enabled me to complete my work unhampered. I thank Him for this. Though words are inadequte to thank Him, He knows our innermost feelings.

In conclusion, though inspiration and guidance have been given by many and sundry, I solely take the responsibility for all that appears in this thesis. My desire is that this humble attempt should not serve only as a means for acquiring an additional tag to my name, but more importantly that it should contribute something to society. If this goal is attained, however, meagre it may be, I would feel I have done something in life, if otherwise, then I should consider myself still indebted to my fellow human being.

(SANSING KHARKONGOR)

SHILLONG
THE 3rd Aug 1988.

INTRODUCTION

INTRODUCTION

Meghalaya is next only to Assam with regards to the availability of minerals. But this state lack an important industry. Over 90% of the nation's silimanite deposit is found in Meghalaya, but a major industry based on this mineral is yet to be set up. The State has a workable amount of clay and limestone which till date have not been properly utilise. Further uranium — an important source of energy discovered in different parts of the State, could have been used in the making of certain industries, but was not done so. The large hydel power potentiality of the state could have encouraged the setting up of different small scale industries but in vain. Further, there is much scope for setting up of Agro-based and forest-based industries in the State.

Objectives

In keeping with the above facts it was felt necessary to search for the causes of industrial stagnation or backwardness of the State. This can be achieved only by having a thorough knowledge of the resource potential of the State. Thus, the main objective of this study is to analyse the known resource potential of the State and suggest ways and means for its further development. Keeping this in view, the objective of this study has been identified as:

I. Major Objectives

(i) To identify the number and quantity of commercially exploitable resources of the State, their distribution and quality.

(ii) To analyze the spatial distribution of existing industries of the State.

(iii) To point out whether topography, climate, geology and transport have any role to play in retarding or accelerating industrial activity.

II. Secondary Objectives

(i) To correlate the growth of population and urban centres with industrial activities and examine whether there is any relationship between the two.

(ii) To analyse the various programmes and policies of the State Government relating to industries.

(iii) To spell out the industrial backwardness of Meghalaya in the light of the above relationship.

Methodology

Most of the attempted study on the problem of the hilly region of N.E. India suffers from lack of reliable data. This study is no exception. Its analysis is based entirely on secondary data obtained from the Census of India publication. This has been collaborated by field observation and the author's

knowledge of the State. Some of the published papers and journals of different agencies like the North Eastern Council, the Meghalaya Science Society, the Industries Department, Government of Meghalaya, have helped substantially in the study. Apart from the above agencies numerous literature have been consulted before this study takes its final shape.

The method used in this study is rather direct and straight forward. On the basis of the published data and information obtained regarding the minerals present in the State, maps and chart are being made. These maps and charts helped explained vividly the distribution of minerals in the State. Further, statistical findings based on published data also helped in analysing the result.

Chapterisation

In the first chapter, a thorough study is being made about the area under study, viz. its location, geology, climate, soil and vegetation. This was felt necessary as it has a direct bearing on the industrialization of a region.

The second chapter deals with the population distribution in the State. The doubling of urban centres within a decade — as found out — have an indirect role to play on industrialization.

The third chapter explains the existing road network in the State which as everyone understands is the backbone of all major industrial activity.

The fourth chapter touches on the agricultural sides, to see if it can in any way influence the pace of industrialization in the State.

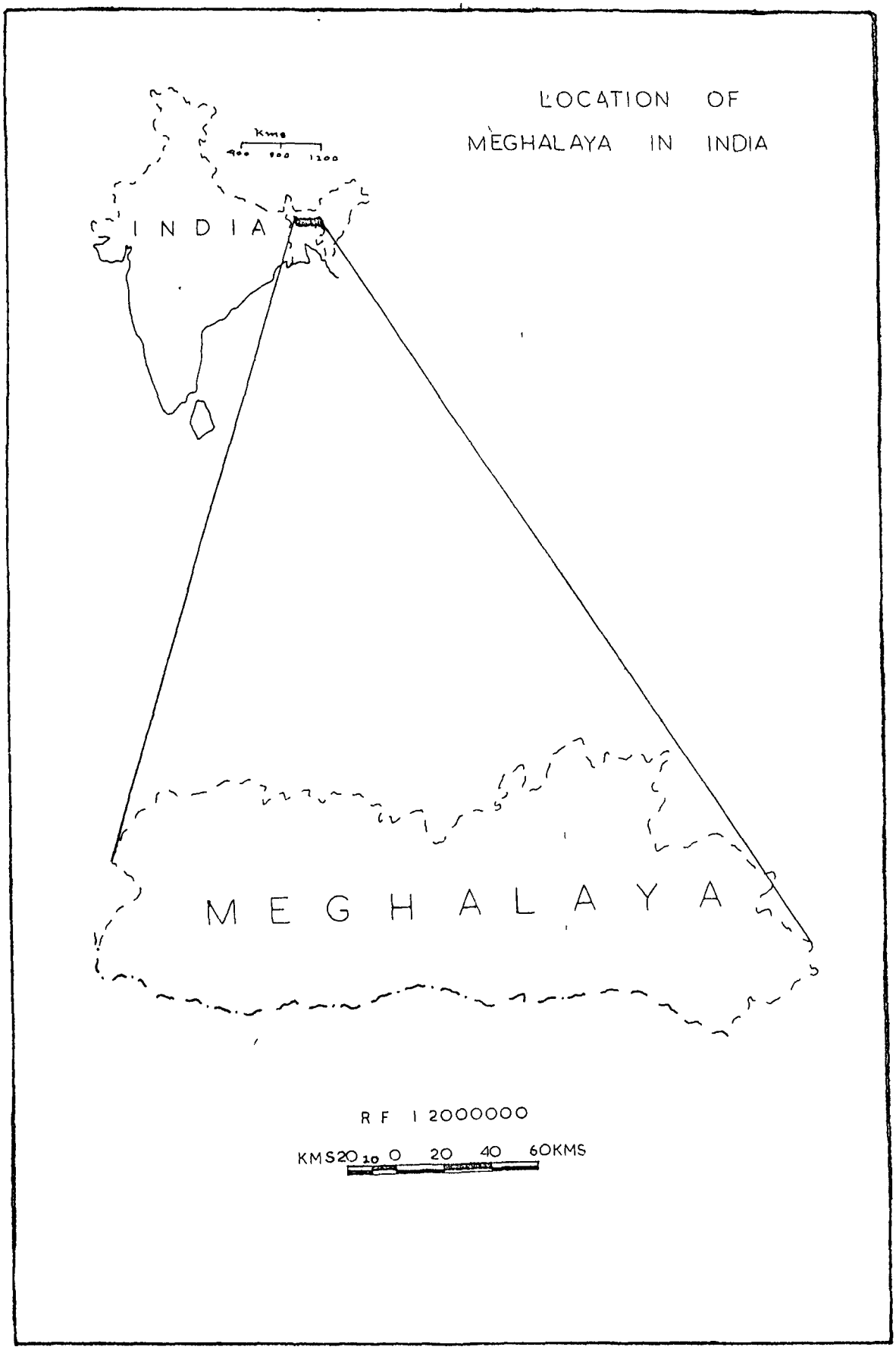
The fifth chapter analyses the distribution of minerals in the State, their known reserves and their quality.

The sixth chapter gives an idea about the existing industries in the State, their growth and the allocation of funds for giving an incentive to their development.

The seventh chapter broadly outlines the findings and suggestions for further improvement, and what steps to be taken to further enhance industrial development in the State based on existing resources.

CHAPTER - I

THE AREA UNDER STUDY : ITS HISTORY, LOCATION AND AREA


LOCATION OF
MEGHALAYA IN INDIA
Kms
400 800 1200
INDIA
MEGHALAYA
R F 1 2000000
KMS 20 10 0 20 40 60KMS

MAP 1

THE AREA UNDER STUDY : ITS HISTORY, LOCATION AND AREA

Before attaining its present status, Meghalaya had witnessed multifarious changes in the form of Government, total geographical area and administrative organisations, considering the short span of 40 years of our country attainment of independence. The first step to the acquisition of a full state began on 11th September, 1968, when the Government of India gave its approval regarding the reorganisation of Assam state and conceded a self-governing sub-state within Assam.[1] 'Meghalaya' a name coined by Dr. S.P. Chatterjee was proposed and accepted for the newly formed sub-state. The 2nd of April 1970, was another important date for its people as it was on this day, the Union Government upgraded the sub-state to an Autonomous State. Consequently on the 21st of January, 1972, the State finally attained its full fledged statehood.

The post-independence period saw the region having only two districts which was raised to three after the attainment of statehood and now accounts to a total of five altogether. There are at present a total of 10 (ten) Subdivisions, 30 (thirty) Community Development Blocks and 7 (seven) Urban Centres including Shillong Urban Agglomeration (Map 2, Table I). Over 80% of the State's population lived in its 4874 villages.

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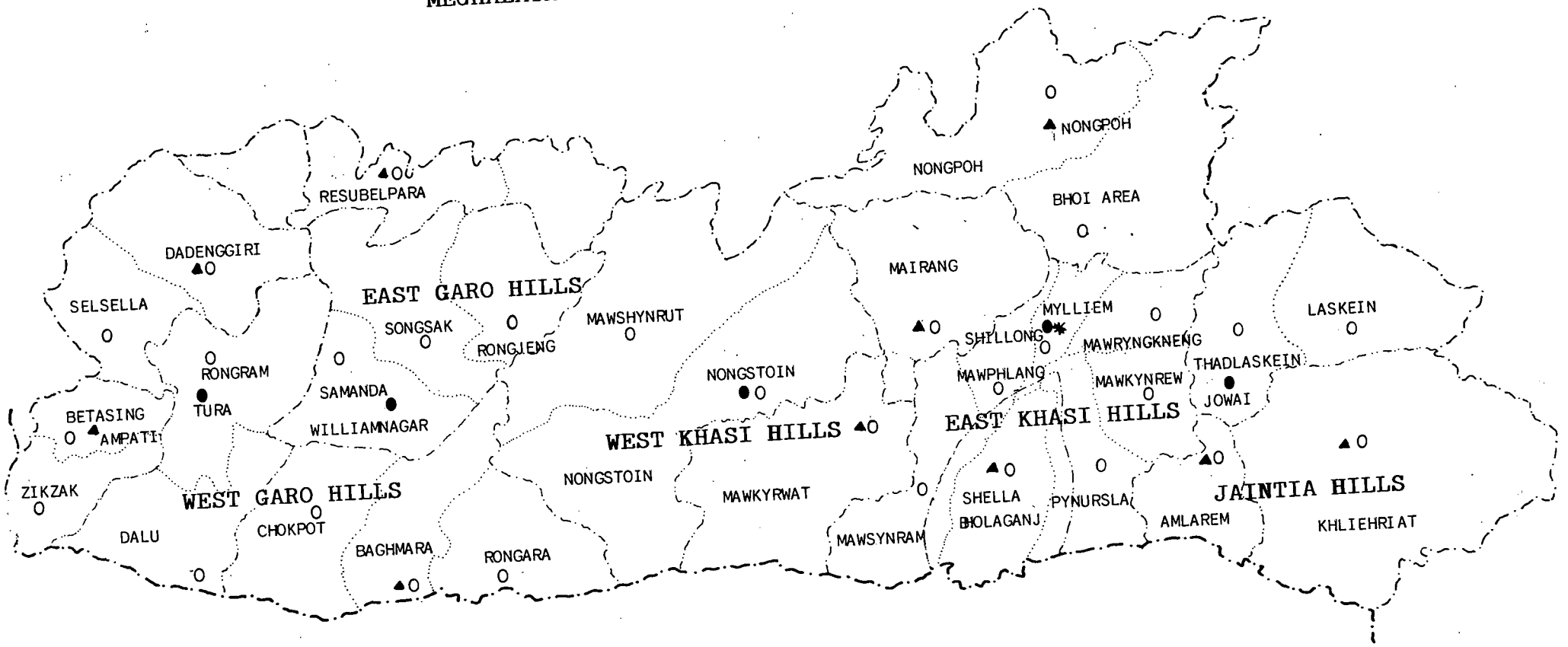
1. Das, H.P. 'Eastern Himalaya and Meghalaya Plateau' (Presidential Address). Proc. 21st International Geographical Congress India (Gauhati, 1968).

MEGHALAYA ADMINISTRATIVE DIVISIONS IN 1987



INTERNATIONAL BOUNDARY
STATE BOUNDARY
DISTRICT BOUNDARY
SUB-DIVISION BOUNDARY
COMMUNITY DEVELOPMENT BLOCK BOUNDARY

* STATE CAPITAL
● DISTRICT HEADQUARTERS
▲ SUB-DIVISIONAL HEADQUARTERS
O COMMUNITY DEVELOPMENT BLOCK HEADQUARTERS

10 5 0 10 20 30 40 Km
10 5 0 10 20 30 Miles

MAP 2 BASED UPON SURVEY OF INDIA MAP

Table - 1: Administrative Division of Meghalaya showing area, population, density and literacy rate as per 1981 Census

Sl. No.	States/Districts/Sub-Div/ C.D. Block	Area in Sq. Km.	Population	Density	Literacy (in percentage)
1.	MEGHALAYA STATE	22,429	13,35,819	60	34.08
A.	Jaintia Hills District	3,819	1,56,402	41	24.51
	i) Amlarem Sub-division	398	21,765	55	26.3
	ii) Khliehriat Sub-division	2,066	43,075	21	18.8
	i) Thadlaskein C.D. Block	639(I)	44,709	70	18.8
	ii) Laskein C.D. Block	716	46,853	65	18.8
	iii) Khliehriat C.D. Block	2,066	43,075	21	18.8
	iv) Amlarem C.D. Block	398	21,765	55	26.3
	Jowai Town	8	12,923	1,615	65.8
B.	East Khasi Hills District	5,196	5,11,414	98	43.73
	i) Ri Bhoi Sub-Division	2,378	99,933	42	
	ii) Sohra Sub-Division	838			
	iii) Nongpoh C.D. Block	1,153	39,555	34	28.4
	iv) Bhoi Area C.D. Block	1,225	60,378	49	28.5
	v) Mawryngkneng C.D. Block	293	27,132	93	29.6
	vi) Mylliem C.D. Block*	215	2,29,792	1,132	40.2
	vii) Mawphlang C.D. Block	249	29,455	118	25.8

*The area and population of Mylliem Community Development Block is inclusive of Shillong Urban Agglomeration.

Table - I (Contd.)

Sl. No.	States/Districts/Sub-Div/ C.D. Block	Area in Sq. Km.	Population	Density	Literacy (in percentage)
	vi) Pynursla C.D. Block	505	34,001	67	34.4
	vii) Shella Bholaganj C.D. Block	578	36,549	63	38.2
	viii) Mawsynram C.D. Block	623	34,137	55	34.4
	ix) Mawlynrew C.D. Block	355	20,415	58	18.9
1.	Shillong Urban Agglomeration	25.37	1,74,703	6,886.2	62.9
	a) Shillong Municipality	10.36	1,09,244	10,544.8	
	b) Mawlai Town	6.14	20,405	3,323.3	
	c) Madanryting Town	2.11	6,165	2,921.8	
	d) Nongthymmai Town	2.93	21,558	7,357.7	
	e) Pynthor Umkhrah Town	2.02	10,711	5,302.5	
	f) Cantonment Area	1.84	6,620	3,597.8	
2.	Sohra Town	7.80	6,097	781.7	
C.	<u>West Khasi Hills District</u>	5,247	1,61,576	31	30.9
	i) Mawkyrwat Sub-division	1,253	46,206	37	33.3
	ii) Mairang Sub-division	989	45,023	46	26.5
	i) Mawkyrwat C.D. Block	1,253	46,206	37	33.3
	ii) Mairang C.D. Block	989	45,023	46	26.5
	iii) Nongstoin C.D. Block	1,624	42,185	26	30.3
	iv) Mawkyrwat C.D. Block	1,381	28,162	20	31.9
	Nongstoin town	12.17	3,880	318.8	51.7

Table - I (Contd.)

Sl. No.	State/District/Sub-division/ C.D. Block	Area in Sq. Km.	Population	Density	Literacy (in percentage)
D.	East Garo Hills District	2,603	1,36,550	52	32.2
	i) Resubelpara Sub-division	879	-	-	-
	i) Dambo Rongjeng C.D. Block	885	44,329	50	37.5
	ii) Songsak C.D. Block	703	24,387	35	15.9
	iii) Samanda C.D. Block	547	19,619	36	19.4
	iv) Resubelpara East C.D. Block	468	-	-	38.7
	Williamnagar Town	4.54	4,290	944.9	43.4
E.	West Garo Hills District	5,564	3,69,877	66	25.4
	i) Baghmara Sub-division	1,857	62,354	34	-
	ii) Ampati Sub-division	659	75,498	115	-
	iii) Dadenggiri Sub-division	1,542	-	-	-
	i) Dadenggiri C.D. Block	788	49,351	63	18.2
	ii) Selsella C.D. Block	481	56,430	117	18.8
	iii) Rongram C.D. Block	842	65,937	78	18.2
	iv) Betasing C.D. Block	301	41,811	139	20.9
	v) Zikzak C.D. Block	358	40,395	113	23.5
	vi) Dalu C.D. Block	663	35,103	53	22.5

Table - I (Contd.)

Sl. No.	States/Districts/Sub-division/ C.D. Block	Area in Sq. Km.	Population	Density	Literacy (in percentage)
vii)	Chokpot C.D. Block	712	29,597	42	25.2
viii)	Baghmara C.D. Block	558	20,682	37	31.0
ix)	Rongara C.D. Block	587	12,075	21	28.2
x)	Resubelpara (W) C.D. Block*	273	-	-	20.0
	Tura Town	18.32	35,257	1,924.5	58.0
	Baghmara Town	8.78	4,183	476.4	59.6

Source: Compiled by the author from the Census of India 1981.

*The total figures for Resubelpara Community Development Block is given below as half of its area lies in East Garo Hills District and the other half in West Garo Hills District. See Map 2 for clarification.

Resubelpara (East & West)	741	66,711	90

Lying approximately between 25°5' to 26°10' North Latitudes and 89°47' to 92°47' East Longitudes with a total geographical area of 22,429 square kilometres (1981 Census), the state is bounded by Assam on the north east and a part of the western part and by Bangladesh on the south and south-western part.

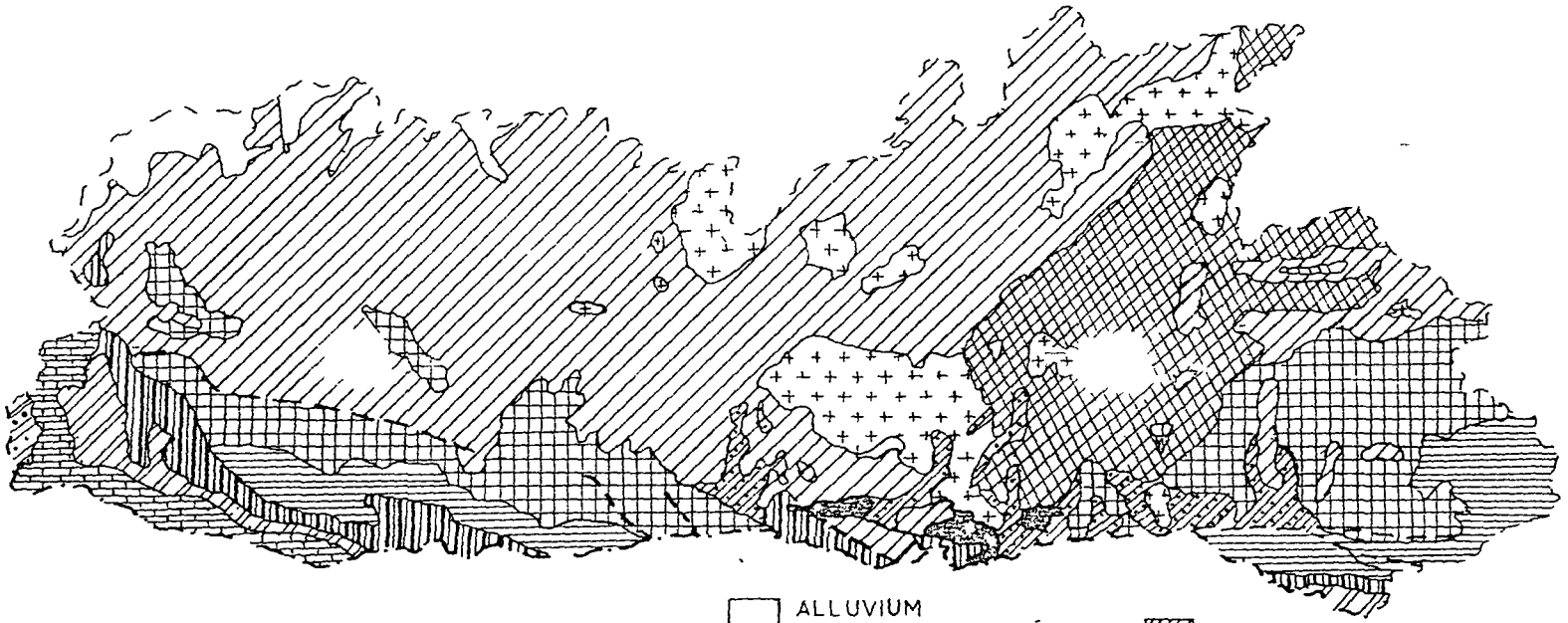
Meghalaya a part and parcel of North-Eastern Region possessed certain characteristic features which make it unique by itself.

Physiographically, the major portion of Meghalaya is the East-ward extension of the Deccan plateau of India, separated by the Malda gap of Bengal and Raj Mahal Hills. Ethnologically, the Khasis are believed to be one among the few living Mon-Khmer groups of Austro-Asiatic family living in India. The Garos, however, are part of the Great Bodo race, a branch of the Tibeto-Burman family to which most other tribals of the North Eastern Region belong. However, these inhabitants of the state have one thing in common; in that, they practice matrilineal social relations, which distinguishes them from other people of the North Eastern Region and the country as a whole.

The state is endowed with the largest reserves of the nation's Silimanite deposits. It also has the largest reserves of Limestone depotists besides other minerals like coal,

MEGHALAYA

GEOLOGY



KM 10 0 10 20 30 40KM

ALLUVIUM
DUPITILA SERIES
CHENGAPARA FORMATION
BAGHMARA ,,
SIMSANG ,,
JAINTIA SERIES
KHASI GROUP
SYLHET TRAPS
GRANITES
SHILLONG GROUP
GNIESS
FAULTS

MAP 3

BASED ON GEOLOGICAL MAP, GEOLOGICAL SURVEY OF INDIA MISC PUBLICATION NO 30, 1974

dolomite, natural phosphate and others. Further, the state has the highest installed hydel power capacity among states of the region. The Gomaghat-Shella region are also being identified as one amongst the nine provinces in the country that have a workable amount of raw uranium. In fact, large scale explorations was conducted by the Atomic Mineral Divisions of the Government of India, which indicated that the amount of workable atomic mineral in the state is substantial.

Geology

The Geology of Meghalaya is unique in that it has rocks formation ranging from the oldest to the very recent geological age. These rocks formation may be broadly classified as follows:

1. The Archaean Gneissis Complex, the oldest among all other rocks formation.
2. The Shillong Group.
3. The Sylhet Trap.
4. The Khasi Group.
5. The Jaintia Group.
6. The Garo Group.
7. The Dupitila Group.
8. The Alluvium.

Table 2 and Map 3 give a detailed information about the above rocks formation and their sub-groups as given in the Geological Survey of India Publication No. 30.

Table - 2: Geological Formations and Rock Types of Meghalaya

Geological Age	Gropp	Formation	Rock Types
Recent	Newer Alluvium (Thickness not known)	Unclassified	Sand, silt, clays.
		Unconformity	
Pleistocene	Older Alluvium (Thickness not known)	Unclassified	Sand, clay, pebble, gravel and boulder deposits.
		Unconformity	
Mio-Pliocene	Dupitila Group (1050 m)	Unclassified	Mottled clays, felspathic, sandstone, conglomerates.
		Unconformity	
Oligo-Miocene	Garo Group	Chengapara formation (700 m)	Sand, siltstone, clay, marl.
		Baghmara formation (530 m)	Felspathic sandstone, pebble, conglomerate, clay.
		Simsang formation (1150 m)	Silstone - sandstone alternations sand.
Eocene	Jaintia Group	Kopili formation (500 m)	Shale, sandstone, marl.
		Shella formation (600 m)	Alternation of sandstone - limestone.
		Langpar formation (100 m)	Calcareous shale, sandstone, limestone.

Table - 2 (Contd.)

Geological Age	Group	Formation	Rock Types
Upper Cretaceous	Khasi Group	Mahadek formation (150 m)	Arkose (glauconitic)
		Bottom conglomerate formation	Conglomerate, Arkose.
		Jadukata formation (140 m)	Sandstone - Conglomerate alternation.
		Unconformity	
Jurassic (?)	Sylhet Trap (600 m)	-	Basalt, rhyolits, acid tuff.
		Unconformity	
Pre-Cambrian	-	Intrusives (acid & basic)	Porphyritic and coarse granite, pigmatite, aphite, quartzvein, epidiorite, dolerite, basalt.
		Shillong group	Quartzite, phyllite, conglomerate.
		Unconformity	
Archaean	-	Gneissic Complex	Biotite gneiss, biotite, horublende gneiss, granitic gneiss, migmatite, mica schist, silimanite-quartz schists, biotite granulite, amphibolite, pyroxene granulite etc.

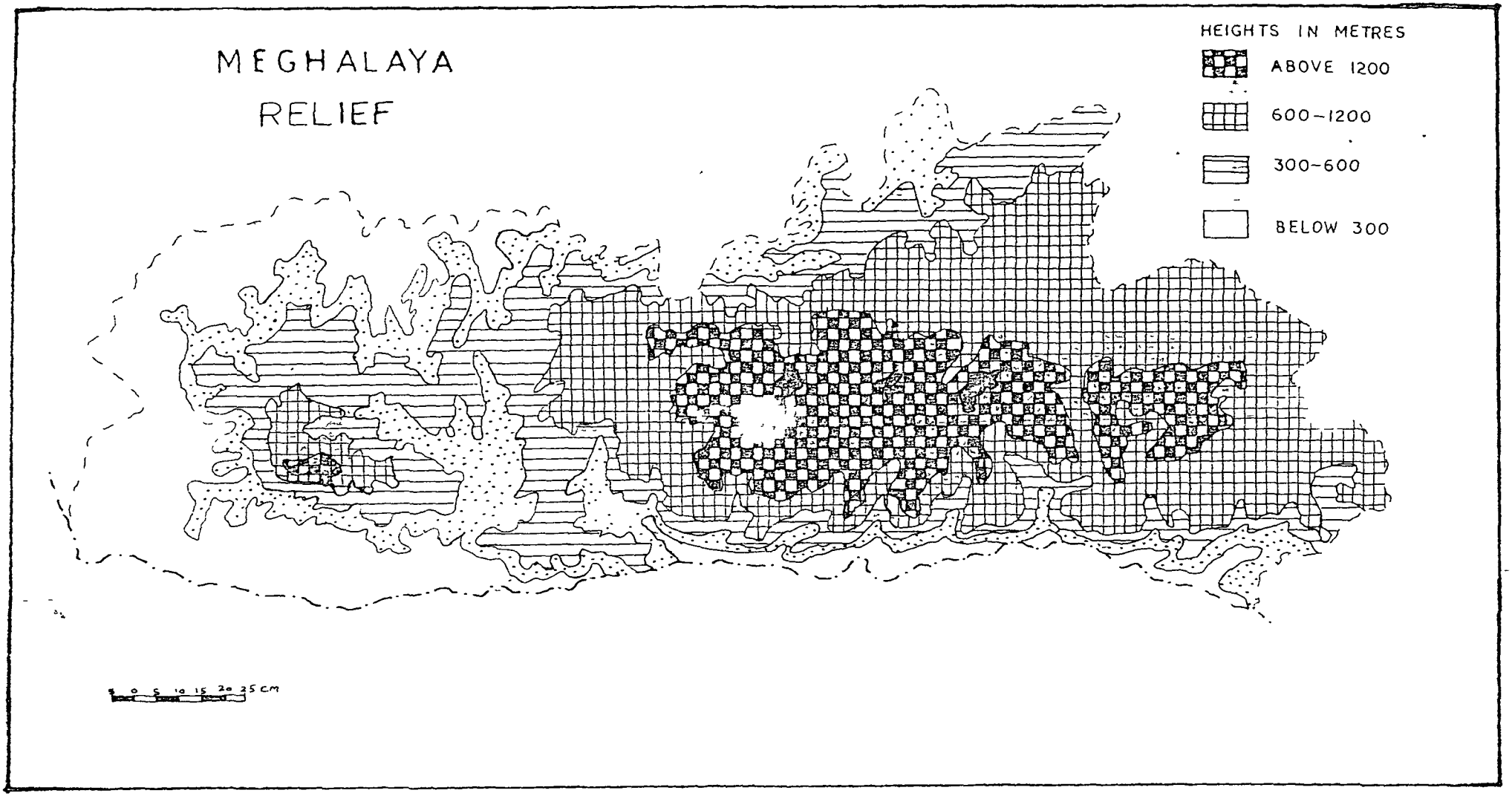
Source: Geological Survey of India Misc. Publication No. 30 (1974), Part IV, p. 73.

It is evident from the map that the major portion of the State are composed of the Archaean rocks. These type of rocks are noticed in the northern region approximately west of Shillong region. In certain pockets they are overlain by the granites and the Shillong group of rocks. In the south, they occupy the major tracts of the Mawsynram-Sohra region.

The Shillong group of rocks cover mostly the area in and around Shillong city region. Nevertheless, granitic rocks are exposed, in isolated patches in their midst. These rocks are significantly exposed in a narrow elongated belt from north to south rather than east to west which is the general arrangement of other rocks formation in the State.

The Sylhet Trap are found in a narrow belt in the south central part of the Khasi Hills close to the Bangladesh border. The Dawki Tear fault marks the southern limit of this formation.

Next in the geological age comes the Cretaceous-Tertiary sediments constituting the Khasi, the Jaintias and the Garo groups. The Khasi group are found in few isolated pockets of the south central part of the Khasi Hills. The Jaintia group, besides occupying the major portion of Jaintia Hills district, are also found in a narrow belt stretching from Mawkyrwat in the West Khasi Hills district to Tura region in the West Garo Hills district.


MEGHALAYA
RELIEF
HEIGHTS IN METRES
ABOVE 1200
600–1200
300–600
BELOW 300
0 5 10 15 20 25 CM

MAP 4

South of the Jaintia series lies the Garo group which consists of three formations viz. the Simsang, the Baghmara and the Chengapara formations. They lie in tan elongated belt, in the above order from north to south, especially in the Garo Hills. However, the above order is slightly disturbed in the Jaintia Hills District, where intrusion of one formation over another occurs.

The Dupitila series are found only in the south west extremity of Garo Hills lying next to the Chengapara series. They extend in a narrow belt, from north-west to south-west.

The Old Alluvium are found in the northern and western part of Garo Hills District. They are also noticed in the southern and northern extremity of the Central Khasi Hills region. The New Alluvium occupy the riverian areas of the State. They however, constitute an insignificant percentage of the state geological area.

Physiography

Almost the whole southern part of Meghalaya has a regular topography which falls abruptly to the Surma Valley. This is evident through a faulted line stretching from the Amlarem in the east to Tura range in the west. However, in the northern and western part the relief is a discontinuous one, making it difficult to demarcate the boundary of the plateau from that

of the Brahmaputra plain. The western fringes of the state is even more irregular than other parts of the state. It has an average altitude of less than 150 metres above sea level.

In the Garo Hills, two significant relief features are evident viz. the Tura Range and the Simsang Valley. The rest of the region is formed of smaller tumbled hills and plain especially in the western part.

The Tura range runs from Tura Town in the central part of Garo Hills towards south west for about 50 Km to Siju Songmen. Further eastward the range is better known as the Kylas Range with Kylas (1026 metres) as the highest point of the Range. In the Tura Range Nokrek (1412 metres) is its highest point.

A little less than 10 Km north of the Tura Range lies the Arabella Range running almost parallel to the Tura Range. It is of lower elevation with Arabelle (1092 metres) as its highest point.

The Tura and the Arabella Ranges act as a water divide for the rivers flowing north, south and west. It is in between these two ranges that the Simsang river flows, first towards the east then at Siju it takes a southernly direction, till it reaches the Bangladesh plain when it is known as the Someswari.

The region through which the river flows is a plain area, particularly south of the Kylas gorge.

The rest of Garo Hills which accounts for about 8167 square kilometres or 45 percent of the state's total geographical area is a mosaic of Hills radiating roughly from the centre towards the northern and southern part, with altitude varying between 300 to 600 metres above sea level. The western extremity of the west Garo Hills District is almost a plain area with elevation below 150 metres above sea level.

The Khasi and Jaintia Hills (14,262 square kilometres) forming the central and eastern part of the state has within it all the characteristics features of a true table land. The area between Shillong to Sohra in the south; upto Nongstoin in the west has elevation above 1500 metres. The highest point of this region is Shillong Peak (1,961 metres). Beyond this the altitude varies between 900 to 1500 metres covering the major part of Jaintia Hills District and the outlying parts of East and West Khasi Hills Districts. The periphery of this region have height below 900 metres. The general topography of the land is the gentle slope towards the northern plain and a sudden falls towards the southern region.

According to R.L. Singh,[2] the region has been divided into three physiographic units: (a) the northern undulating

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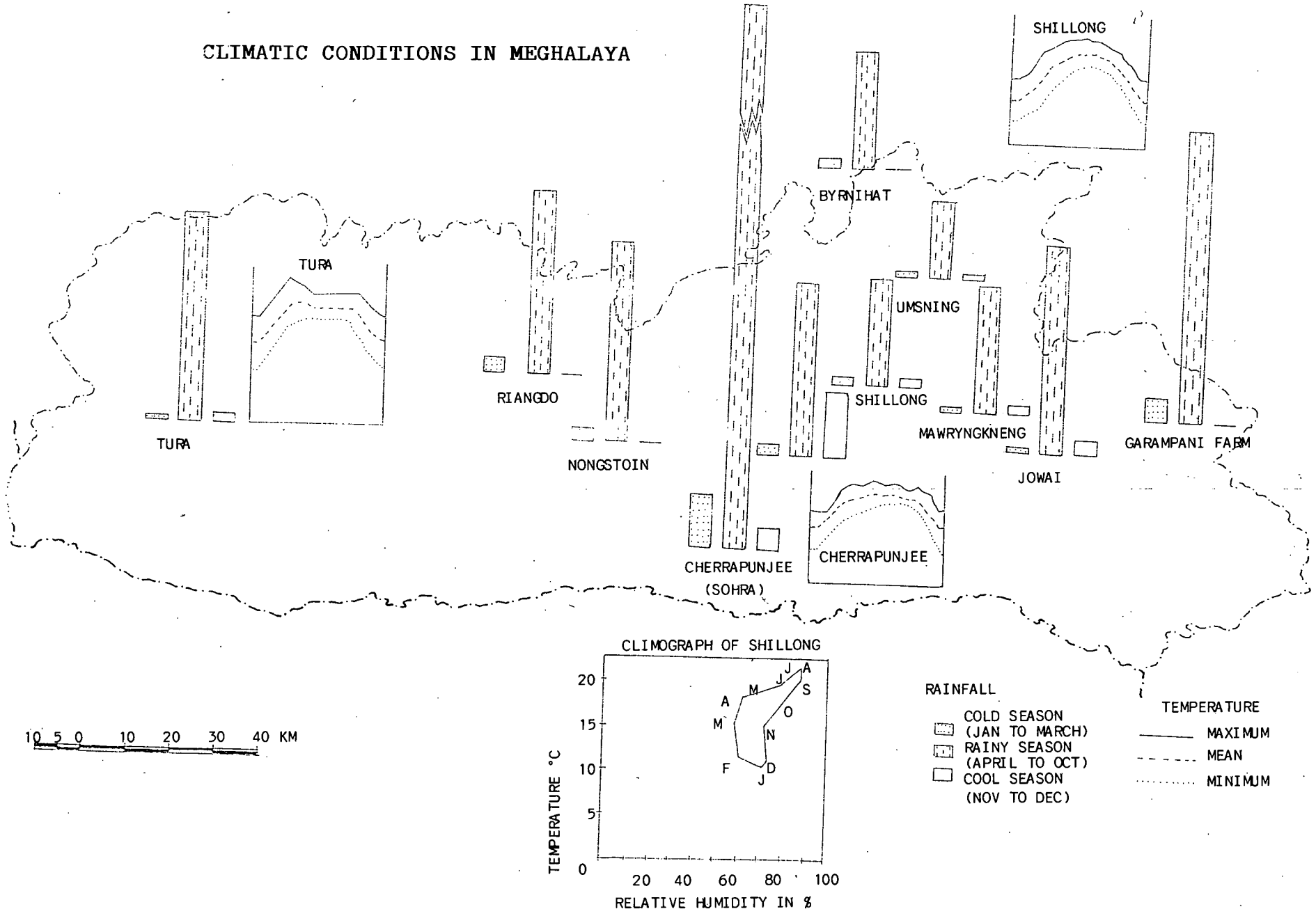
2. Sigh, R.L. India - A Regional Geography, National Geographical Society of India (Varanasi, 1971), p. 681.

hills, (b) the central upland zone, and (c) the southern precipituous face of the upland.

The undulating Hills of the northern area of lower elevation below 800 metres above sea level. This height gradually decreases towards the north till they attain a minimum of 150 metres. Most of the higher hills have flat surface topped which is an indication that the area is in a mature stage. The people living in this region are known as the "Bhois" and their country termed "Ri-Bhoi", by the local people.

Most classical writers were aware of the existence of the Shillong plateau rather than the "Meghalaya Plateau". Thus the Shillong Plateau proper is synonymous with Chatterjee's central upland zone. It is separated from its adjoining units by the 1000 metre contour. The major portion of the region is covered mainly by grasslands, besides pine trees, bamboos and other jungle thickets. It is due to the presence of these rolling grasslands that the region has often been termed as the "Scotland of the East". The height increases rapidly as one leaves Umsning till one reaches Shillong Peak (1961 metres) which is the highest point in the whole state. As one proceeds further south, the height drops sharply, till at Sohra-Mawsynram region, the drop becomes abrupt towards the Bangladesh Plain. This region is locally referred to as the "Ri Lum" and its inhabitant "Khynriam".

CLIMATIC CONDITIONS IN MEGHALAYA



MAP 5

The southern wind-ward side of the plateau are the area which receives the heaviest rainfall in the state as their country is in the direct path of the south-west moisture bearing winds. Here the height drops sharply from 500 metres to 150 metres within very short distances till it abuts with the Surma Plain. Three main structural platforms which checks this abrupt falls constitute the Sohra, the Lyngkyrdem and the Mawsynram platforms. The people living in this area are known as the "War" and their country "Ri-War".

The Jaintia Hills which are inhabited by the "Jaintias" or the "Pnar" formed the eastern extremity of the State. The region has similar relief feature with that of the central region of the state. The only difference is that it has lower elevation, with Jowai as its highest point. The greater Jowai Upland is located at an elevation of about 1500 metres above sea level.

Climate

The central and elevated parts of the state experiences cool temperate climate throughout the year. However, the periphery areas with relatively lower elevation in the western, northern and southern pockets have warm and moist (Humid) climatic conditions.

102416

Table - 3: Monthly Rainfall in Meghalaya upto 1980 (in mm).

Sl. No.	Stations	Cold Seasons			Rainy Seasons							Cool Seasons		
		Jan	Feb	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.	Total
A. East Khasi Hills														
1.	Upper Shillong (Farm) Expt. Trial and Sub-station Research Centre	5.71	22.24	39.59	130.58	215.36	514.00	437.68	256.93	295.26	162.88	33.65	15.27	2123.62
		22.51						287.55				24.46		
2.	Upper Shillong (Seismological Centre)	4.15	13.48	18.32	92.98	187.07	287.08	284.68	165.93	199.73	106.43	17.63	11.03	1373.91
		11.98						189.12				14.33		
3.	Mawryngkneng Seed Farm	5.17	8.92	33.59	82.65	198.36	409.12	593.94	270.76	231.46	209.8	10.13	24.34	1804.99
		15.89						285.15				17.23		
4.	Cherrapunjee (Sohra)	3.88	19.67	329.4	1293.01	1212.27	2307.67	3222.48	1889.12	1238.52	703.68	77.77	19.57	12232.47
		117.65						1695.25				48.67		
5.	Mawphlang	Nil	34.3	41.3	31.4	270.7	535.7	580.0	700.3	349.3	288.0	292.4	Nil	2894.7
		25.2						393.62				146.2		
6.	Byrnihat Horti-culture (Orchad Cum Nursery)	Nil	42.8	18.4	74.6	272.0	478.0	381.6	313.2	176.6	165.8	Nil	Nil	1923.0
		20.00						265.97				Nil		
7.	Umsning (Office of the Sr.S.C. Asst. Ext. Tea Planta-tion Centre)	2.4	12.0	24.0	42.6	266.0	485.0	N.A.	433.8	N.A.	N.A.	31.0	Nil	1296.8
		12.8						175.16				15.5		

Table - 3 (Contd.)

Sl. No.	Stations	Cold Seasons			Rainy Seasons							Cool Seasons		Total
		Jan	Feb	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.	
8.	Mawsynram Observatory	5.6	13.7	132.1	515.9	1331.5	2810.8	2497.6	2341.9	1531.4	17.0	29.0	Nil	11244.5
		50.4						1578.0				14.5		
B. Jaintia Hills District														
1.	Madan Saphai (Garampani Farm)	3.62	17.35	149.75	493.6	626.88	909.81	950.04	618.91	517.05	503.18	Nil	Nil	4899.87
		56.74						659.92				Nil		
2.	Rymphum Seed Farm (Jowai)	8.8	11.68	24.64	168.43	350.74	876.27	906.2	416.3	399.02	191.42	52.58	19.3	3455.84
		15.44						472.62				35.94		
C. West Garo Hills District														
1.	Research Station Tura	3.8	11.25	13.88	301.52	528.73	686.65	655.72	480.13	460.87	179.51	25.76	9.31	3351.38
		9.64						470.44				17.35		
D. West Khasi Hills District														
1.	Nongstoin	3.4	52.0	43.2	129.0	379.0	577.7	765.2	664.8	354.2	269.0	Nil	Nil	3238.1
		32.86						448.88				Nil		
2.	Riangdo	3.8	40.8	61.2	97.8	410.0	587.0	589.5	608.3	376.4	227.2	Nil	Nil	3002.0
		35.26						393.62				Nil		

N.B.: Mawsynram data is not from same source, therefore it is not shown on the map.

Source: R.C.Khongwir, Joint Director, Agriculture Department, Govt. of Meghalaya.

Table - 4: Temperature conditions at different stations of Meghalaya (in °C).

Sl. No.	Stations	Nature	Jan	Feb	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.
1.	Shillong	Maximum	15.01	16.35	20.95	22.6	23.95	24.3	24.57	24.45	23.3	22.47	19.17	16.17
		Minimum	5.6	6.8	8.52	13.35	15.0	17.6	18.2	18.1	16.92	14.55	10.3	6.5
		Mean	10.3	11.57	14.73	17.97	19.47	20.4	21.38	21.27	20.11	18.51	14.73	11.33
		Humidity (in per-centage)	71.5	61.5	59.5	62.0	79.0	83.0	88.0	88.0	88.5	82.5	71.0	73.5
2.	Cherrapunjee (Sohra)	Maximum	15.8	16.9	20.5	22.0	22.1	22.9	22.2	22.5	20.9	22.4	19.7	17.0
		Minimum	7.6	10.5	12.9	15.1	16.3	17.3	18.4	18.4	18.1	15.9	11.9	8.8
		Mean	11.7	13.7	16.7	18.5	19.2	20.1	20.3	20.4	19.5	19.1	15.8	12.9
3.	Tura	Maximum	23.6	26.4	29.9	32.5	31.0	29.3	25.9	29.3	29.5	28.9	26.5	24.7
		Minimum	12.3	14.9	18.7	22.1	22.9	22.7	23.2	23.3	22.7	20.3	16.3	13.5
		Mean	17.9	20.6	24.3	27.33	26.9	26.0	26.0	26.3	26.1	24.6	21.4	19.1

N.B.: Humidity data for Tura and Cherrapunjee (Sohra) is not available.

Source: Meteorological Observatory Table, Government of India and Statistical Handbook, Meghalaya, Director of Economics, Statistics & Evaluation, Meghalaya, Shillong.

Most part of Garo Hills experiences hot, most and enervating climate throughout the year, barring the three moderately pleasant months of November, December and January. The hottest month of the year is April when the rainfall is less than 10 mm. From May onwards with the onset of the showers, the temperature drops to an average of about 27°C. The mean maximum and mean minimum temperature of the warmest months is 34.9°C and 22.1°C respectively. Conversely, the mean maximum and mean minimum temperature of the coldest months is 24°C and 11°C respectively.

In western Meghalaya rainfall begins in the first week of April to the early part of October. The total annual rainfall received during the different years averages 3351 mm. The year 1974 was a year with a maximum annual rainfall of 4062 mm. recorded, and the following year (1975) recorded a minimum annual rainfall of just 2669 mm.

The central and western Meghalaya have a relatively pleasant climate except at the foothills of the "Ri-War" and "Ri-Bhoi" when it is similar to that found in western Meghalaya. Central Meghalaya has cold nights with frost a common feature in the winter nights. Snowfall, however, is absent. There is a marked fluctuations of temperature throughout the year. This is due to the shifts of the sun rays northwards, synchronizing

with the onset of rainfall. The high humidity prevalent in the region shows a muggy climatic conditions. According to the Climograph (Map 5), the maximum temperature recorded during the warmest months is 26°C. It differs from one year to another depending on the onset of monsoon. The minimum temperature of the coldest month is 5°C. There are certain years when the borometer drops to a minimum of 2°C.

The Khasi and Jaintia Hills region receives greater amount of rainfall than that of the Garo Hills. However, a vast difference exists in the amount of rainfall received in the southern with that of the northern part. In 1977 Cherrapunjee (Sohra) had the highest annual rainfall recorded (12,112.2 mm) whereas on the same year, Shillong, located just 50 kilometres north of Sohra, had a total annual rainfall of just 3173.1 mm. The year coincidently was a year with maximum annual rainfall recorded in the region as a whole. Mawsynram with 13,923 mm holds the world's recorded for the highest rainfall recorded.

In general, the distribution of rainfall decreases spatially from south to north. This is because the southern region lies on the direct path of the south-west monsoon, being on the windward side. The northern and central portion which is on the leeward side received lesser rainfall because the effect of the monsoon winds is lessen.

According to J. N. Barua,[3] there are three major types of soil in the State. Firstly, there is the red loam or hill soils similar to those found in the Chotanagpur Plateau and parts of the Deccan Plateau. They occupy about four-fifth of the state geographical area extending roughly from Ringgi River Valley of Selsella and Dadenggiri Block of West Garo Hills District to as far as Myntdu River of Jaintia Hills District in the east. They covers almost the whole portion of southern Meghalaya with the exception of the Umkhri River Basin and Umsiang-Umiam River Basin. A portion of the central Garo Hills is also not covered by this type of soil. These soils contained a high percentage of nitrogen and organic matters and are loamy. They are acidic in nature and are favourable for the cultivation of different types of crops like rice, potatoes and fruits.

Secondly, there is the old alluvium which are found in the northern, western and southern periphery of the state. They are by nature acidic and are clayey loam containing more of potash and less of phosphate. These soils can support the growth of the different crops only after administering adequate manure and in favourable climate conditions.

Thirdly, there is the lateritic soils which occupy the central part of Garo Hills and almost the whole of Jaintia

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3. Barua, J.N. 'Assam Soil' (Unpublished), Agr. Res. Stn., Borbhila, Jorhat (1964).

Hills District in the east. Due to their deficiency in humus and inability to retain moisture, they are of little agricultural use.

Vegetation

The western Meghalaya of Garo Hills have dense tropical mixed forest with sal forest and thickets of bamboo dominating. There is very little of grass vegetation. At higher altitude of the mountain range, temperate vegetation are found, whose main species are pines and firs.

In the central and eastern Meghalaya mixed tropical evergreen hardwood forest are found in those areas whose height above sea level is less than 300 metres. Further north at elevation ranging between 300 to 750 metres rolling grassland is a common sight. The predominantly pines forest vegetation occupy the higher part of the central upland zone at elevation higher than 750 metres. Till 1981-82 the total area under forest which includes reserved, protected and unclassed forests is about 8,51,000 hectares. Out of this total forested area, 100 hectares are under teak, 150 hectares under sal, 35 hectares under plywood and 60 hectares under quick growing forests.[4]

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4. Chief Conservator of Forest, Government of Meghalaya.

CHAPTER - II

POPULATION DISTRIBUTION AND COMPOSITION

POPULATION DISTRIBUTION AND COMPOSITION

The due importance given to the study of the Geography of population and its subsequent elevation to the status of a systematic branch of geography is credited to Glen T. Trewartha.[1] In his writings Trewartha has pointed out the important role of man in determing the natural environment, thus forming the central point from which all other elements achieve significance and meaning. In other words, the population structure and composition of any place acts as an important factor in the economic development of that particular region. The need for economic development and growth is to cater to the ever increasing population whose needs and wants knew no bounds. The state of Meghalaya is no exception and so an analysis of the quantity and quality of its population will help one to understand the prospect and retrospect of its economic development.

Growth of Population

According to the Census of 1901, the population of Meghalaya was 3,40,525 persons and in 1981 it was 13,35,819 persons. The absolute and percentage increase amounts to 9,95,295 persons and 292.28 percent respectively. The average decennial increase during the span of 80 years works out to be 18.98 percent. Nevertheless, till 1951, there has been a sharp fluctuations in the population variation as is evident from Table 6.

1. Chandna, R.C. A Geography of Population, Kalyani Publishers, New Delhi, 1986.

The least increase is noticed in the 1921 Census (7.21 percent) and it is only after the 1951 Census that there has been a steady increase in the population of the state. This increase can be attributed to the general improvement of medical facilities; the better transport network system which enables the easy and speedy movements of medicines and people to the needy and affected areas; the high standard of living of the people which dispense with the conservative and orthodox nature of the people and other factors.

Rural and Urban Composition

As in other states of North East India, Meghalaya also has the bulk of her population (81.93 percent) living in the rural areas. Among the five districts of the state, West Khasi Hills District has the highest percentage of rural population, 97.59 percent, followed by East Garo Hills District, 96.85 percent, Jaintia Hills District 91.73 percent, West Garo Hills District, 89.53 percent and East Khasi Hills District 64.64 percent. When compared with the population of 1971[2] there has been a significant drop in the percentage of the total rural population to that of the total population of the state, from

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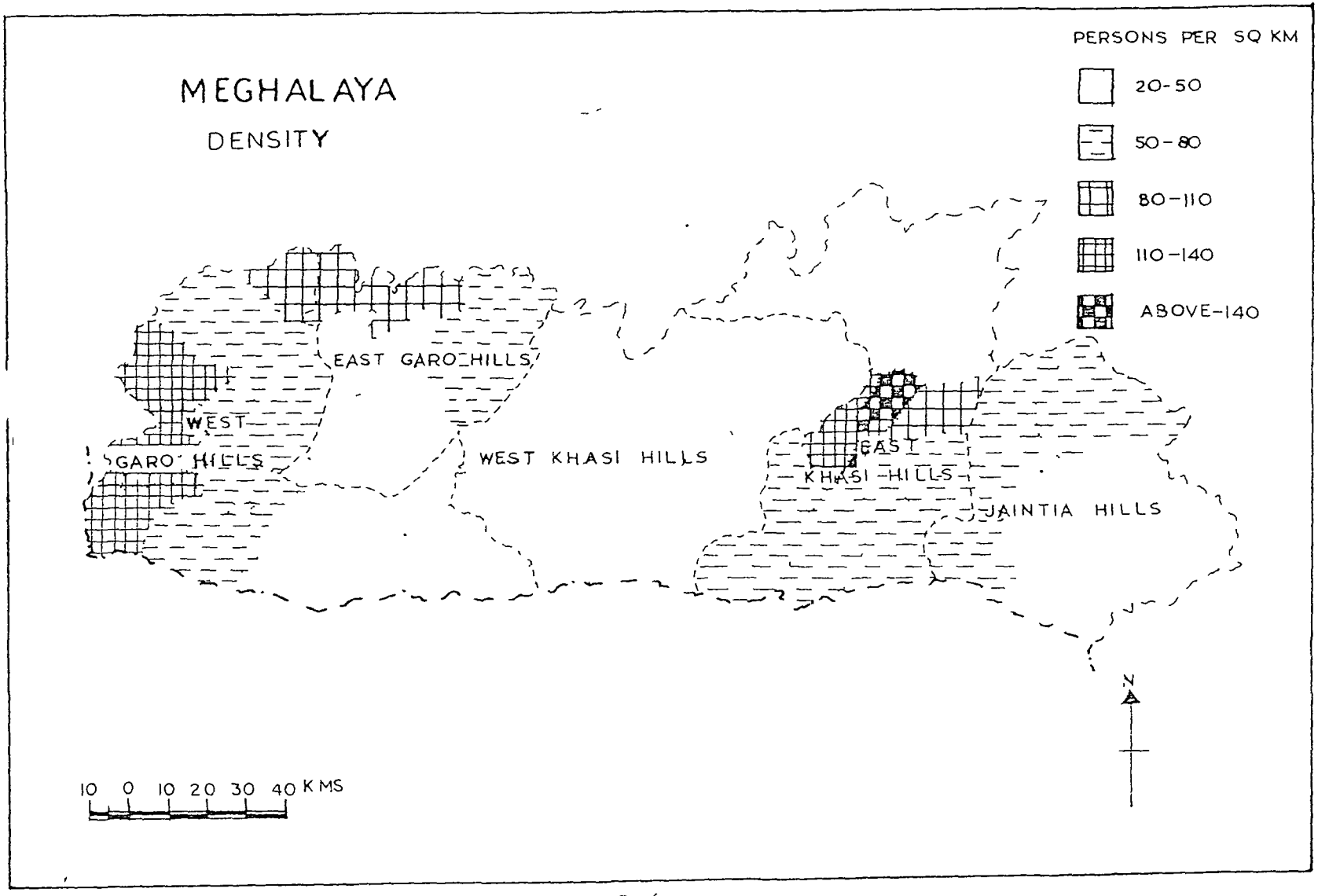
2. The district-wise break up from 1901 onwards cannot be analyse due to lack of data on account of the various administrative changes taking place in the region from 1901 to 1981 especially during the two decades 1961-1981. For clarification please see introductory chapter, table 1.


MEGHALAYA
DENSITY
PERSONS PER SQ KM
20-50
50-80
80-110
110-140
ABOVE-140
EAST GARO HILLS
WEST GARO HILLS
WEST KHASI HILLS
EAST KHASI HILLS
JAINTIA HILLS
N
10 0 10 20 30 40 KMS

MAP 6

85.45 in 1971 to 81.97 in 1981. Conversely, this has led to the overall increase in the percentage of urban population to the total population in the different districts as a whole.

When the decennial growth rate between 1971-81 is taken into account, there has been a greater growth rate in the urban areas than in the rural areas. The total growth rate in Meghalaya during the decade between 1971-81 was 31.30 percent which is 25.95 percent in the rural and 62.74 percent in the urban areas. Likewise in the rest of the districts there has been a substantial growth rate in the urban areas than in the rural areas. The main reasons for this is the doubling in the number of towns from six (6) in 1971 to 12 (twelve) in 1981. In West Garo Hills District the increase has been more than double i.e. from 5.10 percent to 10.66 percent. Here, it is particularly due to the expansion of Tura Town, by incorporating an additional 11 (eleven) villages surrounding it, under the Tura Municipality and the treatment of Baghmara as a town for the first time in 1981.

Density

The highest density of population is noticed in the Mylliem Community Development Block, where the number of person per square kilometre is as high as 1069. This, however, is due to the incorporation of the Shillong Urban Agglomeration which falls within its geographical boundary. Another fact for this

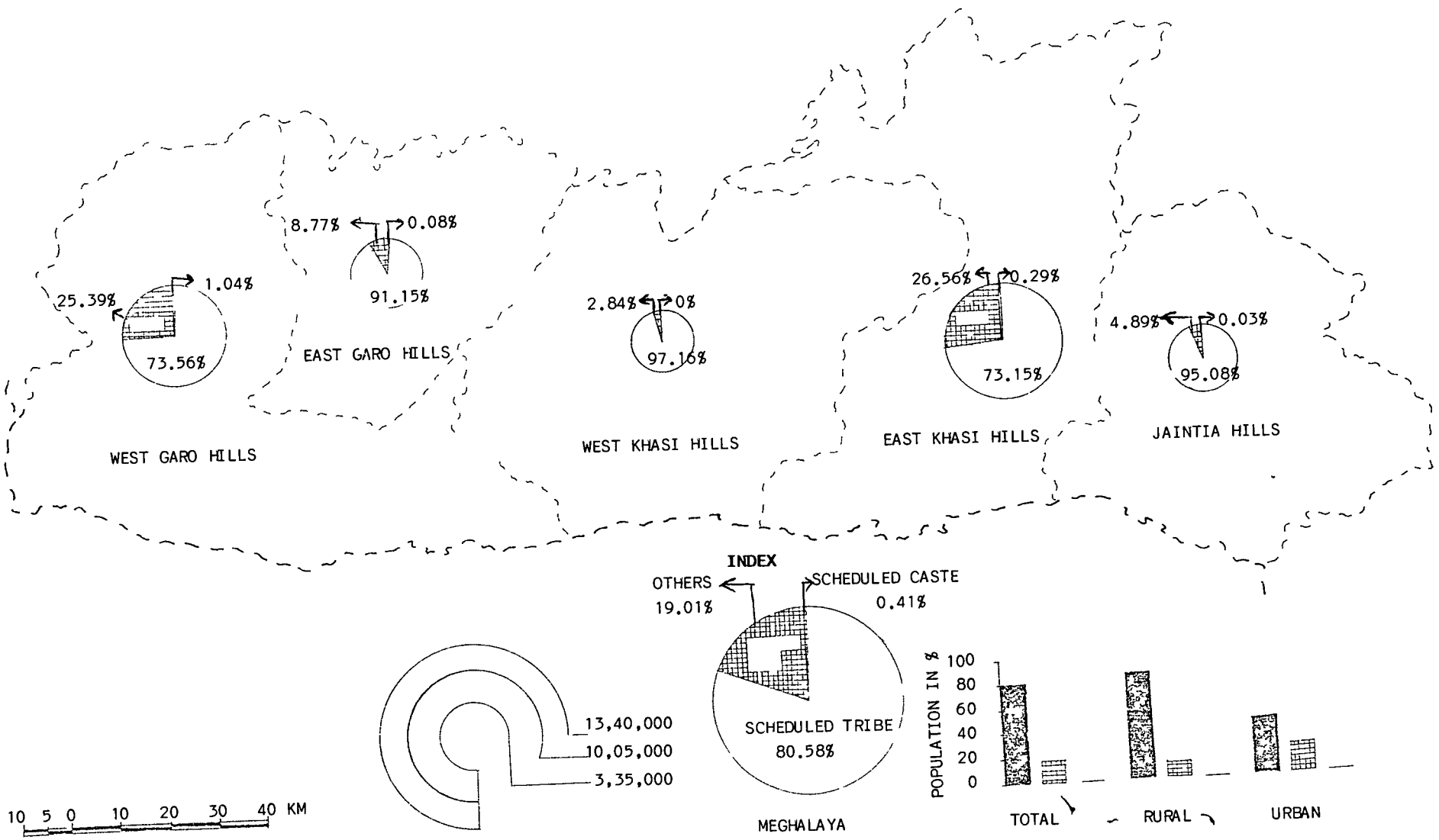
high concentration of population is attributed to the smallness of its geographical area when compared with other Community Development Blocks of the State (Table 1).

The area in and around Shillong region along with those in the periphery of West Garo Hills, is noticed to be having a comparatively high concentration of population than other regions. These are areas with low elevation i.e. less than 150 metres. The interior part of the State which are devoid of good transport networks and are of higher elevations have the lowest density of population, much below the state's average of 60 persons per sq.km. The region bordering Khasi and Garo Hills, falling under Mawshynrut and Rongara Community Development Block have the lowest density with just 20 persons per square kilometre. The region is in fact one of the most underdeveloped part in the whole state. The presence of the State's only Wild Life Sanctuary, 'Balpakram', in the area, is proved of its wild life nature and unsuitability to human occupation.

Sex Ratio

The latest population figures of 1981 shows that there are a total of 6,83,710 males and 6,52,109 females in Meghalaya. The sex ratio works out to be 954. According to Table 6, there has been a gradual decrease in the sex ratio since the beginning of this century. In 1901, there were as high as 1036 females per 1000 males in the State. This figure drops to a low of 937

DISTRIBUTION OF SCHEDULED CASTE, TRIBE & OTHERS IN MEGHALAYA



MAP 9

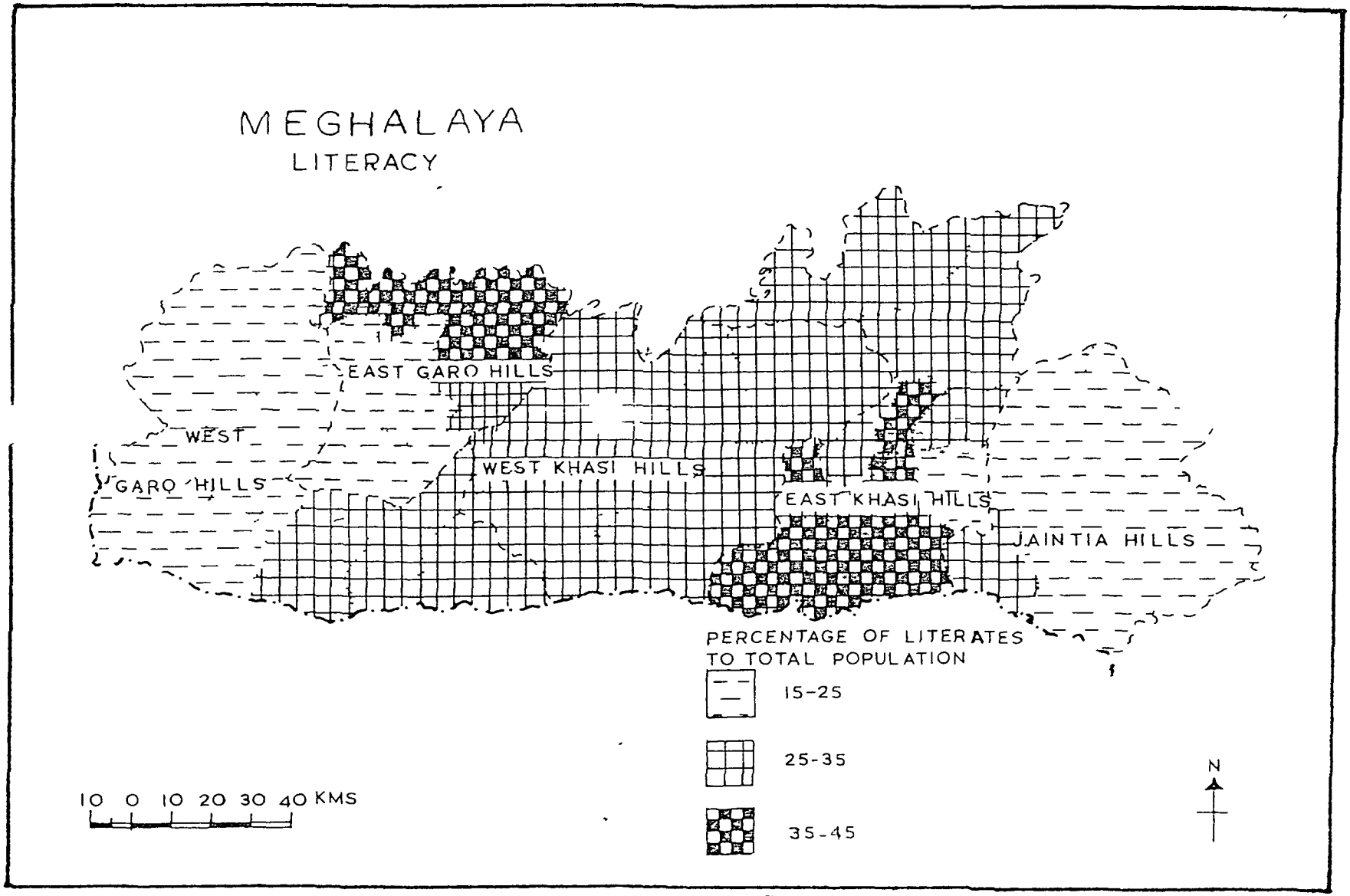
in 1961, where upon it slightly increase again in 1971 to 942 and then in 1981 to 954. Another unique features in the sex ratio is that it was higher all along in the rural than in the urban areas. In 1981, the sex ratio in the urban and rural areas stands at 965 and 904 respectively.

As in 1981 Census, Jaintia Hills District has the highest sex ratio. However, this district has lesser sex ratio in the rural than in the urban areas which is unlike in the other districts of the State (see Table 7). The least sex ratio is noticed in the East Garo Hills District with 941. Its corresponding sex ratio in the urban areas is 772 and in the rural areas it is 947. This district has the least sex ratio both in the rural and in the urban areas amongst all districts of the State.

Distribution of Tribals and Non-Tribals Population

According to the 1981 Census figures, there are a total of 5,492 scheduled castes, 10,76,345 scheduled tribes, and 2,53,982 other populations living in the State. In terms of percentages, scheduled tribes population accounts for 80 percent and scheduled castes only 0.41 percent. The rest about 19 percent belongs to others population. (Table 8).

In the West Khasi Hills District there was no scheduled caste population reported. This district has also the distinction of having the highest percentages of scheduled tribes


MEGHALAYA
LITERACY
EAST GARO HILLS
WEST
GARO HILLS
WEST KHASI HILLS
EAST KHASI HILLS
JAINTIA HILLS
PERCENTAGE OF LITERATES
TO TOTAL POPULATION
15-25
25-35
35-45
10 0 10 20 30 40 KMS
N

MAP 7

population (97.16%) among all others district of the State. The highest percentages of scheduled castes population is noticed in the West Garo Hills District which amounts to 1.04 percent. One fact which is however clearly distinct is that the number of scheduled castes population in the different districts and the state as a whole is insignificant.

The number of scheduled tribes population are least in the East Khasi Hills District accounting to 73.15 percent. It is also in this same district that the number of others population are the highest, surpassing all other districts of the State, with 26.56 percent. In contrast, West Khasi Hills District has the least number of other population with just 2.84 percent.

Another fact to be noted is that the bulk of the scheduled tribe population (86.13%) are found in the rural areas. Out of the total urban population, 55.37 percent constitute scheduled tribes, 1.05 percent scheduled caste and 43.58 percent others population. Thus, the number of others population forms a significant proportion of the State's urban population, in spite of this state being a predominantly tribal one.

Literacy

The total literacy rate of the state according to the 1981 Census is 33.35 percent, out of which 36.97 percent are

males and 29.55 percent are females. Among the five districts, East Khasi Hills District has the highest literacy rate of 43.1 percent and Jaintia Hills the lowest with 23.7 percent. At the lower level of administration units, i.e. the Community Development Block level, the highest literacy is noticed in Mylliem and the lowest in Songsak which is 40 and 16 percent respectively. The whole of Jaintia Hills, Western Garo Hills Districts and the central part of East Garo Hills District have a literacy rate less than 25 percent. The Khasi Hills region inhabited predominantly by the Khasis have a higher literacy rate. (See Map 7, Table 1).

Categories of Workers

Due to non-availability of data at the Block level, the districts wise categories of workers have been analysed. It is found out that there is not much differences in the distribution of different categories of workers in the different districts of the State. There has also been a normal increase in the different categories of workers of 1971 to 1981. This fact proves that there has been no major shifts of workers from the agricultural to the industrial sections. The reasons for this would be given in the later chapter.

Another important point to be noted from Map 8 is that the bulk of the people in the State are engaged in agricultural

activities. The number of persons engaged in industrial sectors is meagre. It is also surprising to note that, even in those areas where there is abundant of mineral, the majority of the people are engaged in their traditional occupations. However, a significant thing in the state is that, there are a large number of non-workers in all parts of the state. According to the Census Officials these include the juvenile and the senile who are either pursuing their higher education or are incompetent to contribute anything to the society.

Pattern of Urbanisation Shillong Urban Agglomeration

Shillong Urban Agglomeration forms an integral part of the process of Urbanisation of not only the State of Meghalaya but of the North Eastern India. It is located at an elevation of 1500 metres above mean sea level (MSL) and in a predominantly tribal area. Due to its favourable climatic conditions which is so similar to that of the Scotish highlands, the Welsh Missionaries first called it "Scotland of the East". It is on account of the above factor along with the politico-administrative expediency that led the British to locate the capital of their province here in 1876.

Shillong Urban Agglomeration is located between $25^{o}34'N$ latitude and $91^{o}53'E$ longitude in an area of 25.40 Km^2 (Table 5). This agglomeration is connected with the other parts of the North Eastern Region by two National Highways viz.,

National Highway No. 40 and National Highway No. 44. The state has well connected transport linkages between the district headquarters and Shillong, the State Capital.[3]

The Shillong Urban Agglomeration consists of six towns viz. Shillong Municipality, Shillong Cantonment, Mawlai, Nongthymmai, Madanryting and Pynthor Umkhrah. (The latter two were declared as towns only in 1981 Census). The Shillong Municipality is the only administrative and commercial centre. It has been divided into 13 (thirteen) wards (1981 Census). Till 1971 there were only 12 wards.

An attempt has been made here to analyse the growth and distribution of population in the Shillong Urban Agglomeration in two time periods viz. the pre-1972 and post 1972 or the period after the creation of Meghalaya State, in January 1972.

The genesis in the evolution of Shillong City dates back to December 1863 when the then British Government resolved to shift its headquarter from Cherrapunjee to Shillong. It requested the then Syiem of Mylliem to provide them land for the purpose. (Ditchison 1909, pp. 191-94). In accordance with the Khasi customary law, the Syiem gave on lease a large tract of land, with the consent of the owners.[4] The following year viz.

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3. For further details see chapter on Transport and Communication.

4. According to the Khasi land laws, land belongs either to a clan (Kur), a village durbar (Ri Raid) or inherited land (Ri Kynti) and does not belong to the ruling King (Syiem).

1864 the headquarters was shifted to this new site and thus Shillong was born. Prior to this, the present day Shillong constituted just a handful of huts straggling along the present day "Riat Laban". The story goes that it was from Laitkor Peak that the British first entered Shillong. The people of Shillong who had heard much about the British from couriers, the moment they saw them coming shouted "Lahwan, Lahwan", which means "they are coming". The British mistook this as the name of the place, henceforth called it "Lawan" or "Laban". This name has remained till today and evidence of this fact even today, some people prefer to call Shillong as "Laban" as it was known since that time.

Growth of Population

The growth in the number of persons living in the different wards of the Shillong Municipality till 1971 was meagre. However, according to the Census of 1981, there was a significant increase in the population in almost all wards excepting Laban, Police Bazar and Jail Road Wards. The decrease in the population of the above three wards was due to two main reasons. These were: (1) The redemarcation of wards-boundary leading to the creation of another ward in 1981, which adversely affected the population structure. (2) The conversion of most residential houses in the above wards into business establishments as they form the kernel of commercial activities of Shillong.

In the case of towns lying within the Shillong Urban Agglomeration, the increase during 1971-81 in Shillong Cantonment, Mawlai and Nongthymmai was 40 percent, 43 percent and 34 percent respectively. During 1981, two additional towns were created within the Shillong Urban Agglomeration. These are Madanryting and Pynthor Umkhrah having a population of 6,165 persons and 10,711 persons respectively. In the whole of the Shillong Urban Agglomeration, the absolute increase was 51,951 persons or 42 percent during the decade 1971-81.

Scheduled Caste Population

The scheduled caste population increased abnormally in the following towns and wards of the Shillong Urban Agglomeration. These are Shillong Cantonment (950%), Mawprem (809%), Malki (300%) and Nongthymmai (244%). There is also a large increase in the other wards, like Lumparing-Cum-Madan Laban (75%) and European Ward (71%). Conversely, a sharp drop was noticed in the scheduled caste population in some wards. These are Mawkhar (-94%), South East Mawkhar (-94%), Kench's Trace and Rilbong (-73%), Jail Road (-7%). There is a negative growth in the total scheduled caste population of the Shillong Urban Agglomeration (-28%). In the Mission Compound and Jaiaw Ward the scheduled caste population in 1971 was 176, but was reduced to nought in 1981. Conversely, in Police Bazar Ward and Mawlai town, the number of scheduled caste was zero in 1971 but it grew to 13 and 8 respectively in 1981.

The reason for the gradual decline in the number of scheduled caste population in the Shillong Urban Agglomeration are numerous. The more prominent ones are given below.

This community is by and large a minority group in the city and so an increase in their population in some wards do not have much impact on the overall population structure of the city. Due to an inferiority complex, persons belonging to this section of the society generally conceal their real identity to census enumerators. It is only in certain cases when the enumerators happen to belong to their own community or caste, and on the basis of their surname that the real truth cannot be concealed.

The communal outbreak of 1979 and its aftermath have discouraged other immigrants and also prompted the already existing one to emigrate. The anti-outsiders wave currently on in the city have further dampened whatever enthusiasm's left on the remaining ones, to think of settling in the town. And, in conclusion, the lack of employment opportunities to others due to increasing unemployment problem for the local people, have virtually close the entry of other scheduled castes from other states to come to this city.

Scheduled Tribes Population

Barring Laban and Jail Road Wards, all towns and wards of the Shillong Urban Agglomeration shows a huge increase in

the scheduled tribe population. The overall increase works out to about 69 percent. The largest increase is in Kench's Trace and Rilbong Ward from 21 to 919 persons. The minimum growth is in Mawkhar Ward (16%).

There was a significant growth (25%) in the population of other groups designated as "Others Population" in the Shillong Urban Agglomeration. However, in the Laban Jail Road, Police Bazaar, Mawkhar and Mission Compound and Jaiaw Wards there was a decline in their numbers.

The proportion of ST/SC and other population in 1971 and 1981

The percentages of Scheduled Caste population to the total population of the Shillong Urban Agglomeration decreased from 1.2 percent in 1971 to 0.6 percent in 1981. The variation in the increase and decrease of their population in 1971 and 1981 can be considered negligible in the different wards and towns with the exception Mission Compound and Jaiaw, and South East Mawkhar Wards. In the former their percentages to total population was 2 in 1971 but dropped to zero in 1981. Similarly, in the latter ward it was 9.1 in 1971 but dropped to 0.5 in 1981.

In spite of the fact that the city is in a tribal state the number of tribal population ranks next to non-tribals as revealed from the census figures. The Others Population in 1971 was 57 percent whereas that of the tribal population only 41

percent. Though in 1981 the proportions of tribals to total population increase slightly to 49 percent, the Others Population still forms the majority with over 50 percent. The same is true of the Shillong Municipality which incorporates the different wards. Here the proportions of scheduled tribes population increased from 37 percent in 1971 to 46 percent in 1981. The Others Population, however, are still in a majority in 1981 with 54 percent.

According to the 1981 Census, in the 8 (eight) Wards and 2 (two) Towns of the Shillong Urban Agglomeration, the Others Population are in a clear majority. In the rest, 5 (five) Wards and 3 (three) Towns, the scheduled tribe population are preponderance.

In all the Wards and Towns of this city there was a general increase in the scheduled tribe population and a decrease in the number of Others Population. The reasons for this may be sum up as follows:

1. The rural to urban migration of the people for employment opportunities, educational purposes and the natural lure of towns.
2. The coming of numerous central government offices and the setting up of the North Eastern Regional Offices and headquarters of different private and state owned organisation etc. has directly created employment opportunities to all and sundry.

In the process they also indirectly helped the local tribals to expand in their business activities they had. They therefore provided incentives to the tribals to live permanently in the city. Thus there was an increase in their numbers.

(3) The anti-outsiders wave currently on in the city have adversely encouraged the local tribals in all sphere of activities like trade and commerce, employment, buying of lands etc. vis-a-vis non-tribals.

(4) The transfer of Assam's Capital from Shillong to Dispur after the state attained its full fledged statehood led to a large exodus of most Assam's government employees from the city. Consequently, they also sold away most of their lands and properties which were bought by the local people.

The gradual drop in the proportion of Others Population are due mainly to three factors: (1) The decline in employment and trading opportunities to them. (2) The passing of the "Meghalaya Land Transfer Act" which disallowed non-tribals to buy lands in the state. (3) The stiff growing competition being meted out by the locals in all sphere of activities.

The density of population in the city is highest in the Shillong Municipality with 10,545 persons/km^2 and lowest in Madanryting town with 2,922 persons/km^2. This is true both for 1981 and 1971 Census. The density in the Shillong Urban Agglomeration works out to 6,878 persons per square kilometres in

1981. In the 1971 Census, its density was 4,833 person/km^2 with Mawlai having the lowest density of 2,322 persons/km^2 and Shillong Municipality the highest with 8,461 persons/km^2.

Table - 5: Area and Population Structure of the Capital's Metropolis

Sl No.	Towns	Area in Sq.Km.	Total Population		Density (Persons/Km^2)	
			1971	1981	1971	1981
1.	Shillong Urban Agglomeration	25.40	122,752	174,703	4,833	6,878
2.	Shillong Municipality	10.36	87,659	109,244	8,461	10,545
3.	Shillong Cantonment	1.84	4,730	6,620	2,571	3,598
4.	Nongthymmai	2.93	16,103	21,558	5,496	7,358
5.	Mawlai	6.14	14,260	20,405	2,322	3,323
6.	Madanryting	2.11	-	6,165	-	2,922
7.	Pynthor Umkhrah	2.02	-	10,711	-	5,302

Source: Census of India 1981.

Population and its Impact on Development

Admittedly, it is quite evident that as in other areas of the country, in Meghalaya also the changes in the population structure and composition is one indicator of the stages of development. From 1901 to 1961 there has been a slow increase in the population of the state as shown in Table 6. But from 1971 onwards, with the attainment of a separate state, there has been an unusual increase, which was hitherto lacking. The increase in the number of people from 1971 to 1981 has also been very significant.

Another point to be noted is the high growth rate in the urban centres during 1971 to 1981 and their subsequent increase in their numbers from 6 (six) in 1971 to 12 (twelve) in 1981. The overall growth rate of towns in terms of percentages works out to be 63.98 percent.

This increase in population and the number of urban centres shows that the state has touched a new landmark in the level of socio-economic development. The setting up of the Mawmluh Cherra Cement Factory at Mawmluh has led to the upgrading of Sohra village to the status of a town. The recent discovery of coal, limestone, along with the already existing silimanite has also led to the treatment of Nongstoin, Baghmara and Williamnagar as towns for the first time in 1981.

Thus, besides some other factors like administrative exigencies, political pressure and pressure groups; the availability of raw materials is also an important factor which help change the level of economic development and the standard of living of the people. Therefore, population plays a very important role both in indicating the degree in the level of development in the state and in furthering developmental processes.

The Relationship between Population and Environment

When one looks at the world around, one is apt to notice that there is a direct relationship between population and

environment. The fertile plains of the Indus and the Ganges have attracted invaders from as far away as the European and other countries of the globe. If we examine the distribution of population in the world map one would notice that people are concentrated only in certain pockets of the land surfaces. The blanks in the world map are widespread than areas of population concentration. This fact proves in some respect that people do not live haphazardly; wherever land is available. In most cases people prefer to live in those areas where factors like climate, accessibility, security, arable land, and above all means of livelihood is abundant. Thus people are generally found concentrated in those areas where it is conducive for their means of living.

The above factors also applies in the state of Meghalaya. Apart from the urban areas, most of the people are concentrated in the lower elevation of the state where land is fertile due to the presence of alluvial deposits. These areas are more fertile and as such form areas of attraction. The higher elevation of the mountains are commonly areas of isolation due to the rugged terrain and inaccessibility.

Table - 6: Decadal Variation in Population and Changes in Sex Ratio in Meghalaya (1901-81)

Year	Population	Variation	Percentage	Sex Ratio		Total Sex Ratio
				Rural	Urban	
1901	3,40,524	-	-	1047	725	1036
1911	3,94,005	+ 53,481	+ 15.71	1024	757	1013
1921	4,22,403	+ 28,398	+ 7.21	1009	809	1000
1931	4,80,837	+ 58,434	+ 13.83	989	697	971
1941	5,55,820	+ 74,983	+ 15.59	991	683	966
1951	6,05,674	+ 49,854	+ 8.97	969	784	949
1961	7,69,380	+ 1,63,706	+ 27.03	971	764	937
1971	10,11,699	+ 2,42,319	+ 31.50	958	853	942
1981	13,35,819	+ 3,24,120	+ 32.04	965	904	954

Source: Census of India, 1981.

Table - 7: Sex Ratio by Districts 1981

Sl. No.	Districts	Rural	Urban	Total
1.	Jaintia Hills District	977	994	978
2.	East Khasi Hills District	966	907	945
3.	West Khasi Hills District	953	795	949
4.	East Garo Hills District	947	772	941
5.	West Garo Hills District	972	888	963
	Meghalaya State	965	904	954

Source: Census of India, 1981.

Table - 8: District Wise Distribution of Scheduled Caste/Tribe and Other Population (1981)

Districts	Scheduled Caste	Scheduled Tribe	Others	Total
1. Jaintia Hills District	47 (0.03)	1,48,710 (95.08)	7,645 (4.89)	1,56,402 (100.00)
2. East Khasi Hills District	1,480 (0.29)	3,74,081 (73.15)	1,35,853 (26.56)	5,11,414 (100.00)
3. West Khasi Hills District	Nil	1,56,995 (97.16)	4,581 (2.84)	1,61,576 (100.00)
4. East Garo Hills District	114 (0.08)	1,24,462 (91.15)	11,974 (8.77)	1,36,550 (100.00)
5. West Garo Hills District	3,851 (1.04)	2,72,097 (73.56)	93,929 (25.39)	3,69,877 (100.00)
Meghalaya State	5,492 (0.41)	10,76,345 (80.58)	2,53,982 (19.01)	13,35,819 (100.00)

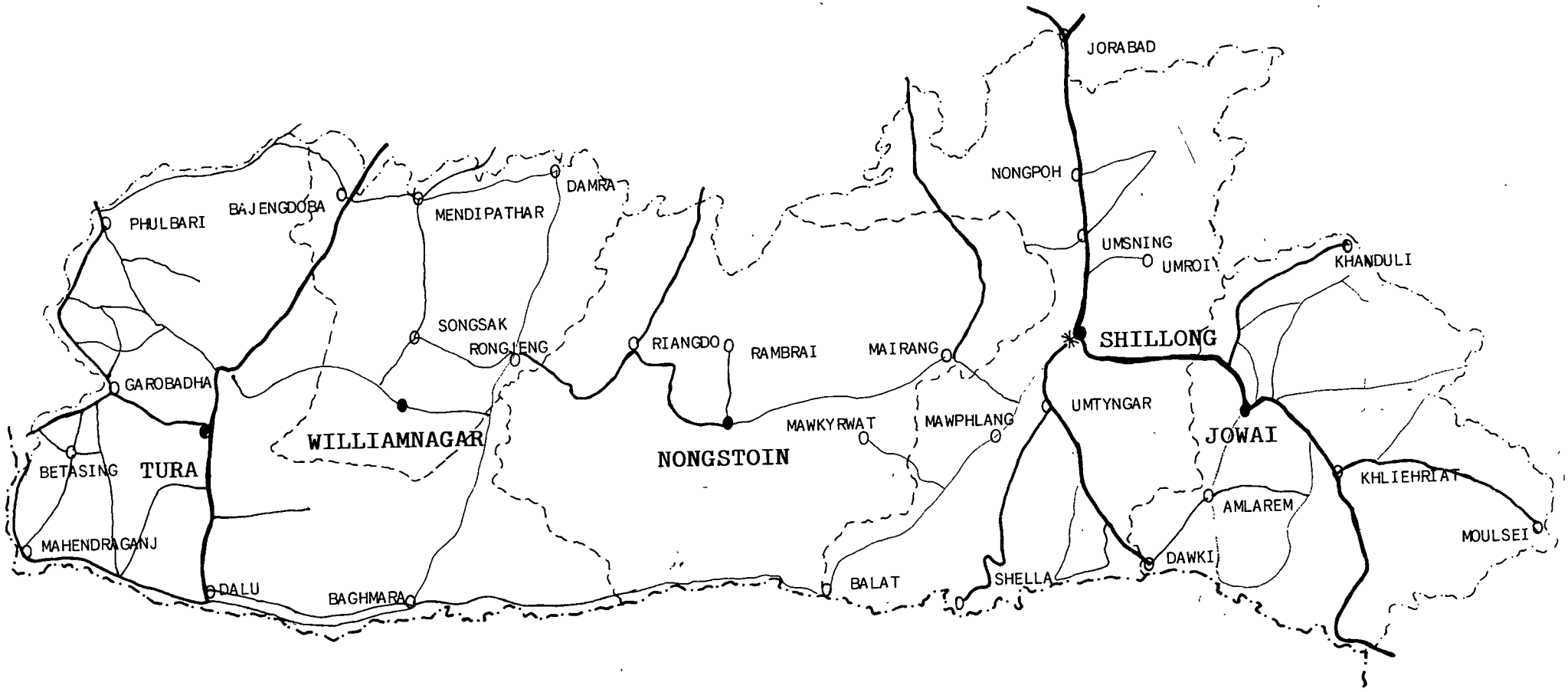
N.B.: Figures in brackets shows percentage to total population.

Source: Census of India 1981.

CHAPTER - III

TRANSPORTATION

ROAD NETWORK IN MEGHALAYA



MAP 10

TRANSPORTATION

There is no denying the fact that agriculture, mining industry, population and state's policies are indespensable for the socio-economic development of a region. But all these would fade into insignificant if the role of transport and communication is not taken into consideration. Therefore, transport is the backbone of modern economic growth which works along with other factors in accelerating economic development. In other words an efficient system of transport is indespensable for any modern economy.

Prior to the attainment of a seperate state, the transport system in the state was deplorable. There was only one National Highway No. 40 having a total length of 161 kilometres, linking Jorabad with Tamabil in the Bangladesh border. The maintenance, let alone improvement, of this highway, was negligible. It was only because of the fact that the highway previously existed and had played a vital role during the II World War that it has acquired the status of a National Highway. Other roads worth mentioning till date are as follows :-

(1) In the East Garo Hills there is the Damra-Darugiri-Nangalbibra-Baghmara road which links with the National Highway 37 in the north at Dudnai. (2) In the West Garo Hills District there is the Bajengdoba-Tura-Dalu-Baghmara road and

the Phulbari-Tura road which however, are unmetalled for much of their length. (3) In the East Khasi Hills and Jaintia Hills Districts, the Shillong-Jowai-Garampani road, the Shillong-Mawphlang-Mawsynram-Balat road and the Umtyngar-Cherrapunjee-Shella road are worth mentioning. The only important road of West Khasi Hills District proper is the Shillong-Nongstoin-Mawshynrut road. As is evident from Table 9, three-forth of roads in the erstwhile Khasi and Jaintia Hills and Garo Hills Districts were still gravelled and Kachcha. They were also not maintained properly and metalled only at the starting point of towns from which they begin and end.

Table 9: Distribution of different types of road in Meghalaya (1971-72)

Sl.No.	Types of Roads	United Khasi and Jaintia Hills.	Garo Hills	Meghalaya
1.	Blacked-topped	610 (35.02)	173 (11.00)	783 (23.62)
2.	Gravelled	693 (39.78)	775 (49.27)	1,468 (44.28)
3.	Kachcha	439 (25.20)	625 (39.73)	1,064 (32.10)

Figures in brackets show percentage to total road length in the respective area

Source: Statistical Hand Book of Meghalaya 1975, page 71.

During the 4th Five Year Plan (1969-74) a little more than two-third pf the state's total plan expenditure was diverted to transport (Table 10). This indirectly shows that the newly formed state of Meghalaya was all along lacking in proper transportation network under the then Assam government.

Table 10: Allotment of funds for transport in different plan period.

(Rs. in lakhs.)

Sl.No	Different plan period	Meghalaya	Northe Eastern Region
1.	4th year plan(1969-74)		
	Total	3624	Not Available
	Transport.	1405	"
		(38.8)	
2.	5th 5 year plan(1974-79)		
	Total	7133	61505
	Transport	1467	11515
		(20.6)	(18.9)
3.	6th 5 year plan (1980-85)		
	Total	23500	238700
	Transport	4800	36020
		(20.42)	(15.09)

Figure in brackets shown percentage alloted to transport.

Source: Planning Commission and State Plan Document on Transport and Communication in N.E.Region Dec. 1983. N.E.C. Shillong. page 2.

The 5th Five Year Plan (1974-79) alloted 20.6 percent of its total actual expenditure on transport. It was also during this plain period that a total of six different routes were taken up, by the newly constituted North Eastern Council. These routes are as follows :-

(i) Jowai - Khanduli route having an approximate length of about 60 kilometres.

(ii) The Paikan - Bajengdoba route having an approximate length of about 21 kilometres.

(iii) The Medhipara - Tura route having an approximate length of about 133 kilometres.

(iv) The Mankachar - Garobadha route having a total length of about 20 kilometres.

(v) The Nongstoin - Rongjeng route having a total length of 106 kilometres.

(vi) The Shella - Cherra - Shillong route having a total length of 90 kilometres.

The total length of the above routes is 430 kilometres which is 40.5 percent of the total routes in the region. Further, one National Highway No. 44 connecting Shillong and Agartala via Badarpur was recognised during this time.

The 6th Five Year Plan (1980-85) alloted 20.42 percent of its actual expenditure on transportation. One highway starting from Paikan on National Highway No. 37 in Assam connec-

ting Tura and Dalu in the southern extremity of the state was declared a National Highway No. 51. During this plan period the North Eastern Council identified two types of roads in the region. These are as follows :-

1. Roads of Regional Importance : In Meghalaya they account for a total of about 250 kilometres, including 7 kilometres of other minor roads, out of the region's total of 2000 kilometres. The clearly specified routes are as follows :-

(i) The Mairang - Ranigodown route whose length is about 86 kilometres.

(ii) The Mawshynrut - Hahim route whose length is about 38 kilometres.

(iii) The Dkhakia - Moulsei route whose length is about 100 kilometres.

(iv) The Ronasoi - Borohara - Bajengdoba route whose approximate length is 19 kilometres.

2. Roads of Economic Importance : The 41 kilometres Mawkachar - Pura Khasia - Mohendraganj road is the only road in Meghalaya falling under this category. It account for about 1.7 percent of the total roads in the North Eastern Region which falls under the same head.

As on the 31st March 1982, the total length of roads in India was 15,45,891 kilometres out of which 5211 kilome-

tres lies in Meghalaya. This is just 0.34 percent of the total length of roads existing in the country. Even when compared with the total length of roads in the North Eastern Region, the percentage of roads existing in Meghalaya is a more 5.23 percent. However, the length of surface road is slightly better when compared with that of the North Eastern Region and India, being respectively 15.11 percent and 0.37 percent.

The average length of surfaced road for every hundred square kilometres in Meghalays is slightly better than that of the North Eastern Region which is just 7.1 kilometres for every hundred square kilometres. However, it is much below the all India figure of 22.3.Km/00Km. Further, the percentage of surfaced road length to total road length in the state is much better than that of the North Eastern Region and even higher than the country's average of 47.3 percent. This means that though the state has less surfaced road per hundred Kms., more than fifty percent of its road are surfaced.

Out of a total of 2,761 kilometres of surface road in the state 1908 kilometres are black top 814 kilometres water Mecadam and 39 kilometres cement concrete. Motorable road constitute 58.1 percent of the state's total road length. Roads motorable per 100 square kilometres of area

are 13.5 kilometres. There are 2.3 kilometres of roads for every one thousand persons. This figures though quite low is however better than that of the North Eastern Region (2.1) and the All India (1.8).

Table 9 and 11 and Map 10 gives a detailed picture of the existing road networks in the state.

Table 11: Comparative pictures of the different types of roads found in Meghalaya and the rest of the country.

No.	Types of Roads	Meghalaya	N.E.Region	India
1.	National Highway.Total	462	3,964	31,769
	Surface	462	3,915	31,624
	Unsurface		49	145
2.	Other P.W.D.Roads.Total	4,415	42,878	4,44,109
	Surface	2,210	8,851	3,21,758
	Unsurface	2,205	34,027	1,22,351
3.	Urban Roads. Total	91	3,356	1,26,659
	Surface	87	1,997	88,895
	Unsurface	4	1,359	37,764
4.	Project Roads. Total	243	7,951	1,88,107
	Surface	2	772	22,432
	Unsurface	241	7,179	1,65,675
5.	Total Length.	5,211	99,632	15,45,891
	Surface	2,761	18,268	7,31,959
	Unsurface	2,450	81,364	8,13,932
(i)	Cement concrete	39	124	10,338
(ii)	Black top	1908	15,008	4,43,329
(iii)	Water Bound Necadam	814	3,136	2,78,292

Table 11 (Contd.)

No.	Types of Roads	Meghalaya	N.E.Region	India
	Unsurfaced:			
(iv)	Motorable	3,028	56,377	15,49,581
(v)	Non-motorable	2,183	43,255	2,96,310
(vi)	Motorable per 100 Sq. Km.area.	13.5	22.1	38.0
(vii)	Motorable per 1000 population.	2.3	2.1	1.8
(viii)	Percentage of motorable road to total road length.	58.1	56.6	80.8

Source: Basic Road Statistics of India 1981-82. Transport Research Division, Ministry of Shipping and Transport. (Basic Statistics of N.E. Region 1985. pp.91)

From Map 10 it apparently appears that all areas of the state are properly linked with each other. However, the truth is far from correct. Most of the roads in Meghalaya are not all-weather roads. Further, they are ill-maintained and even the important ones linking the different districts and Block headquarters of the state capital are in a very bad shape. The fact that all public vehicles going from Shillong to Tura; two most important towns of the state, goes through Assam and not through its own state, is enough to prove that the roads within the state is deplorable.

The eastern section of the state is fortunate as it lies on the direct path of the only highway linking states of Tripura, Mizoram and part of Assam with the rest of India, and as such has a National Highway No. 44. This fact indirectly helped in the spreading of the transport tentacles other areas of this region.

Admittedly, all facts indicate that the transport network in Meghalaya need to be improved. As the state abut with a foreign country (Bangladesh) in its southern part, the only link with the rest of the country lies in the north and eastern part. But there are only two roads in the north and one in the eastern part that link this state with other neighbouring states and the country as a whole. Considering the immense strategic importance of this state, it is of vital importance that there are more all weather roads connecting the state with the rest of the country.

Meghalaya is the only state of North Eastern Region which do not have a railway line. Though a railway line (Broad Ganga) was sanctioned at an estimated cost of Rs. 1470 lakhs, the scheme was kept in abeyance till date due to opposition from some section of the people in the state.

Till date only one air service (Vayodoot) operates in the state. It connects Shillong with other parts of North Eastern states of India. A moved is currently on to extend this service

in the Garo Hills region. On the 18th March 1988 a helicopter service linking Shillong with Tura was inaugurated by the Chief Minister of Meghalaya, Shri. Purno A. Sangma. This service which was opened to the public on the 22nd March 1988 at present, operates three services a week viz., Monday, Wednesday and Friday.

Till date there is no commercially exploitable water-ways in the state. Some rivers like the Simsang, the Umiam, the Umtru and others are being used by the local people for short distances. They however, do not play significant role in the sphere of transport and communication system of the state.

According to the North Eastern Council, those ropeways which are "economically justifiable" in relation to specific industrial projects may be taken up. In view of this defination 3(three) ropeways were identified in Meghalaya. They are as follows :-

(1) The Ishamati- Byrnihat Ropeways

(2) The Baghmara - Siju - Dudnai Ropeways

(3) The Lumshnong - Budarpur Ropeways

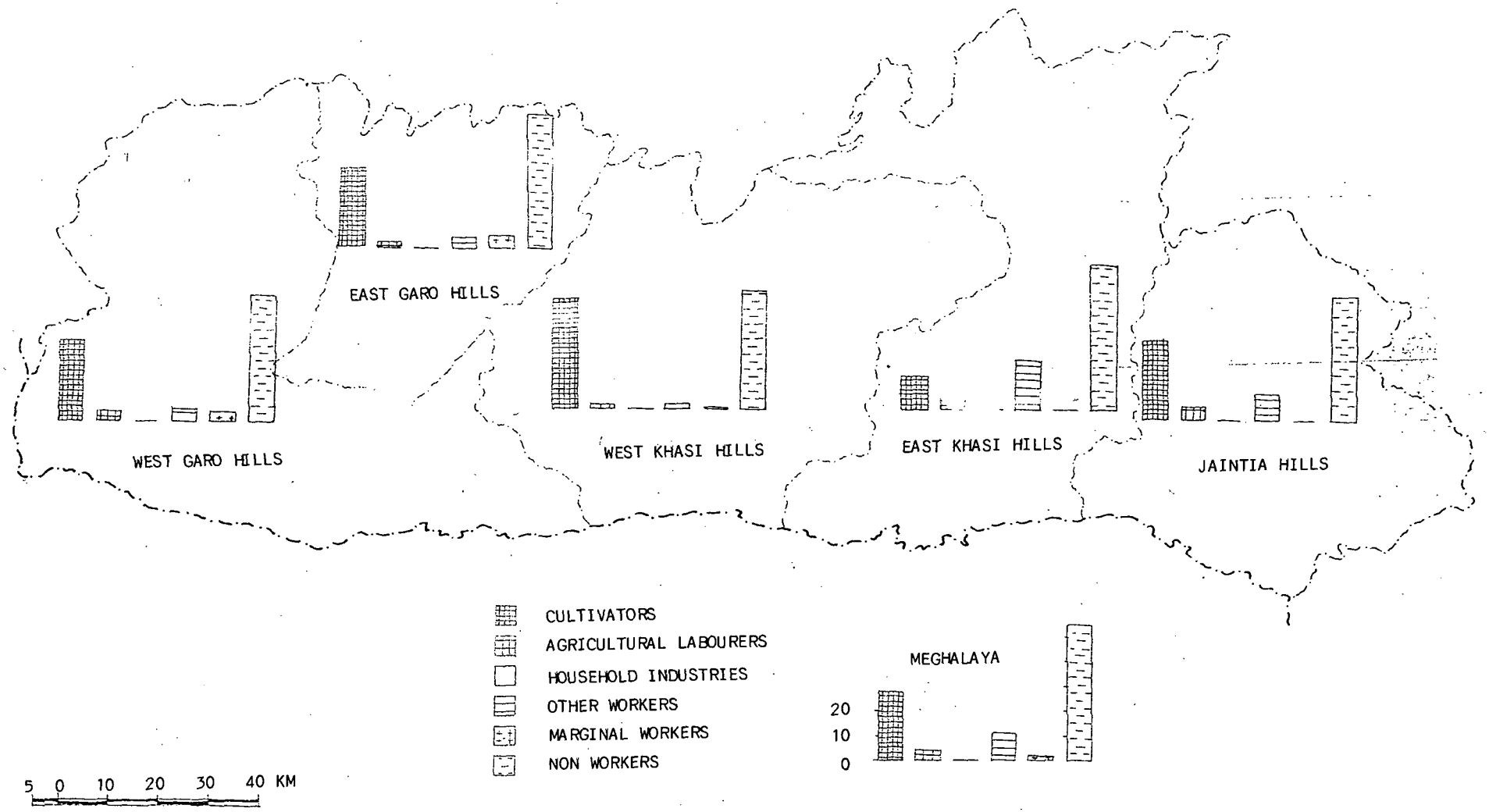
During the North Eastern Council's 6th Five Year Plan period, an amount of Rs. 265 lakhs was earmarked to start work in one of the ropeways in Garo Hills or Khasi Hills.

One of the main hurdles that have retarded the development of good transport network in the state is relief. The state being situated on a plateau, development of all forms of transport systems i.e., roadways, airways and waterways is difficult. At higher elevation of the table-land, most of the existing hills runs east to west rather than north to south. This has somewhat prevented the speedy development of roads south to north where lies the link with the rest of the country. The two existing parallel all weather roads of significance in the state are also not well connected with the southern half of the region as is evident from Map 10. Thus, when a close examination is made, it is found out that relief and the ruggedness of the region clearly effect the development and growth of good transport network in the state.

CHAPTER - IV

AGRICULTURE

CATEGORIES OF WORKERS IN MEGHALAYA



MAP 8

AGRICULTURE

Introduction

According to the Census of India 1981 a total of 5,80,220 persons in Meghalaya are total main workers. These include persons working in household industries. The percentages of workers engaged as cultivators and agricultural labourers is 31.51 percent. Non-workers constitute the majority of the state's population accounting for 54.08 percent. This shows a high dependency ration within the population of the state contributing to its slow pace of development. Table 12 shows a detailed participation rate of the population in the different districts of the state.

Table 12: District-Wise Distribution of Working Population(1981)

Categories of Workers.	Jaintia Hills.	East Khasi Hills.	West Khasi Hills.	East Garo Hills.	West Garo Hills	Megha-laya.
1.Cultivators	50,626 (32.37)	74,567 (14.58)	71,947 (44.53)	44,655 (32.70)	1,21,215 (32.77)	3,63,010 (27.18)
2.Agriculture Labourers.	18,755 (5.60)	24,729 (4.84)	4,224 (2.61)	3,869 (2.83)	16,322 (4.41)	57,899 (4.33)
3.Household Industry.	475 (0.30)	2,833 (0.55)	122 (0.08)	304 (0.22)	1,128 (0.30)	4,862 (0.36)
4.Other Workers.	16,463 (10.53)	1,05,887 (20.70)	4,619 (2.86)	5,915 (4.33)	21,565 (5.83)	1,54,449 (11.56)
5.Total Main Workers.	76,319 (48.80)	2,08,016 (40.67)	80,912 (50.08)	54,743 (40.09)	1,60,230 (43.32)	5,80,220 (43.43)
6.Marginal	880 (0.56)	4,837 (0.95)	1,885 (1.17)	7,513 (5.50)	18,106 (4.90)	33,221 (2.49)

Table 12 (Contd.)

Categories of Workers.	Jaintia Hills.	East Khasi Hills.	West Khasi Hills.	East Garo Hills.	West Garo Hills.	Meghalaya
7. Non - workers	79,203 (50.64)	2,98,561 (58.38)	78,779 (48.75)	74,294 (54.41)	1,91,541 (51.78)	7,22,378 (54.08)
Total(5+6+7)	1,56,402	5,11,414	1,61,576	1,36,550	3,69,877	13,35,819

N.B. Figures in brackets shows percentages to total population of the respective region.

Source: Statistical Handbook, Meghalaya 1984, Director of Economics and Evaluation, Government of Meghalaya, Shillong, p.137.

The bulk of the state's population (81.93 %) live in the rural areas depending either directly or indirectly on agriculture. However, the total area available for cultivation is just 16.75 percent. This factor coupled with the uneven distribution of railfall has made agricultural practices in the state subsistence in nature. Furthermore about 2,650 Sq.Km. of land are under shifting cultivation at one point of time. There are at present 52,290[1] tribal families still practising shifting cultivation in the state. This figure is expected to increase further by 2,000 A.D. according to the Director Information and Public Relations, North Eastern Council.

1. Task Force Report on Shifting Cultivation, Ministry of Agriculture (1983) (Basic Statistics of N.E. Region, 1985, p.27.)

Rice is the dominant crop in the state. The area under rice cultivation have also been steadily increasing every year as is evident from table 13. However, the production has not commensurate with the increase in the acrage under this particular crop. Till 1983-84 the total area under total rice cultivation was 49.85 percent of the total cropped area.

Altogether, food crops occupy 61.07 percent of the total cropped area, followed by oil seeds 2.58 percent. Apart from these potatoes stands out prominently among all other crops accounting for 8.05 percent of the total cropped area in the state. Some other important cash crops of the state includes cotton, Jute, Mesta and sweet potato, which together occupy 10.53 percent of the total cropped area.

The production of all food crops and cash crops however, are not very encouraging. There has been an overall stagnation, and in certain years even a fall, in the production of all crops. This is very surprising considering the discovery by hybrid seeds, application of manures and fertilisers and the used of machineries in most of the present day agricultural sectors. Thus an innovation in agriculture is definitely a necessity in the state of Meghalaya if it wants to increase production.

From the agricultural point of view, majority of the areas within the state does not favour the growth of commercial and plantation crops. Neither is the region suitable for

Table 13 : Area and Production of Principal Crops in Meghalaya (1979-80 to 1983-84)

Area in Hectares
Production '000 tonnes.

Name of Crops	1979 - 1980		1980 - 1981		1981 - 1982		1982 - 1983		1983 - 1984	
	Area	Production.	Area	Production.	Area	Production.	Area	Production.	Area	Production.
1. Rice										
(a) Autumn	30,487	28	30,755	32	34,387	36	33,965	35	35,954	37
(b) Winter	66,542	91	67,035	98	71,047	86	72,101	85	73,746	91
(c) Spring	1,655	3	1,250	2	1,795	3	1,804	3	1,854	3
Total Rice	98,684	122	99,040	132	1,07,229	125	1,07,870	123	1,11,554	131
2. Wheat	2,515	3	3,050	4	3,496	5	3,287	5	3,458	5
3. Maize	16,156	11	17,268	14	17,962	20	17,770	21	17,335	22
4. Other Cereals.	2,510	3	2,689	3	2,790	3	2,798	3	2,870	3
Total Cereals	1,19,865	139	1,22,047	153	1,31,477	153	1,31,725	152	1,35,217	161
5. Pulses (Total.)	2,079	2	1,339	1	1,349	1	1,463	1	1,446	1
Total food grains	1,21,944	141	1,23,386	154	1,33,826	154	1,33,188	153	1,36,663	162
6. Sesamum	603	0.3	625	0.3	733	0.3	732	0.3	931	0.4
7. Castor	40	...	40	0.02	42	0.02	42	0.02	42	0.03
8. Rape & Mustard	7,508	5.	6,785	4	5,682	3	6,087	3	4,818	2
Total oil seeds.	8,151	5.	7,450	5	6,457	4	6,861	4	5,791	3

Table 13 (Contd.)

Name of Crops	1979 - 1980		1980 - 1981		1981 - 1982		1982 - 1983		1983 - 1984	
	Area	Production	Area	Production.	Area	Production.	Area	Production.	Area	Production.
9. Jute*	6,195	40	5,914	42	4,700	40	5,644	44	5,656	44
10. Mesta*	7,200	25	6,523	28	5,057	22	4,663	20	4,778	20
11. Cotton**	6,899	4	7,539	5	7,522	5	7,717	5	8,641	5
12. Sugarcane	230	0.9	235	1	228	1	231	1	143	0.5
13. Dry Chillies	1,311	0.9	1,442	1	1,371	1	1,371	1	1,557	1
14. Tobacco	544	0.4	541	0.2	565	0.4	596	0.4	752	0.5
15. Turmeric	1,337	2	1,283	2	907	4	1,083	2	1,190	2
16. Potato	18,267	135	17,275	121	17,154	125	17,752	142	18,018	141
17. Sweet Potato	4,400	13	4,193	13	4,270	13	4,500	13	4,509	14
18. Tapioca	2,318	13	3,100	15	3,790	20	3,909	20	4,339	21
19. Soya beam	N.A.	N.A.	510	0.3	618	0.4	695	0.5	712	0.5

* Production in bale of 180 Kg. each

** Production in bale of 170 Kg. each

Source: Directorate of Economics, Statistics and Evaluation, Meghalaya, Shillong.

the growth of industrial crops. For example the two notable industrial crops viz., Jute and cotton occupy only about 12 percent of the total area under crops of the Garo Hills. The only crops grown extensively in different parts of the state includes, rice, maize and potato. However, suffice to mentioned here that the Meghalaya plateau does not permit large scale agricultural activities. It is only in the northern periphery, overlain by Alluvium deposits, that agricultural practices are possible to a certain extend.

With regards to the economic Geology, the state is in a relatively better position when compared with other state of the North Eastern India. In fact, it is endowed with the largest deposit of Coal, Clay and atomic minerals, besides other minor minerals. It is interesting to note that different parts of the state have some mineral deposits, though the quantity and quality varies considerably from one to another. In Chapter V a detailed account of the mineral resources of the state is given.

Agriculture

The state of Meghalaya is by and large a mountainous one. It is only in a narrow strip in the north and south, that land is available for cultivation. The mountains of the state are separated by deep gorges and narrow valleys and in

certain pockets small strips of plain land are available and are intensively utilised for agricultural purposes.

The nature of the soil varies from light to heavy texture. They are acidic, rich in organic matter and nitrogen but poor in phosphorous. In the southern fringes of the state, particularly the eastern and central Meghalaya where the rainfall is exceedingly high the soil cover is generally thin. This fact coupled with the presence of limestone have made the southern part agriculturally less develop than the central and northern part.

Cropping Pattern

There is a marked difference in the crops and the cropping pattern in the state even within short distances. In the rugged mountain region especially in the Garo Hills, Jhuming cultivation is still prevalent. On the other hand, the plain area have a more or less settled agriculture. Under Jhuming cultivation generally only a single crop is grown with paddy being the dominant crop. Other crops grown under Jhum land includes cotton, chillies, ginger, millets and maize.

In the permanent agricultural lands of the plains, a variety of crops are grown like cotton, millets, rice, ginger, maize, wheat, pulses, oil seeds and topioca with

rice being the dominant crop. In the settled upland region crops like rice, potato, sweet potato, maize, millets and variety of vegetables are grown. Some of the other important crops found in the state includes Jute, sugarcane, mesta, turmeric, soyabean, tobacco and chillies.

Orchard plantation, and pisiculture have also been practice in large areas in different parts of the state.

The former is generally found in the mountain region and the latter is experimented on a large scale in the plain area where the climate is warmer. Other allied agricultural activities practise in the state includes piggery, poultry, Bee-keeping, and sericulture. They are however, in their developing stage and as such more capital is spend on their infrastruture rather than earning profit for the state.

Rice

As already mentioned rice is the dominant crop in the whole state. It is grown both in the upland and lowland areas. Three main variety of rice are grown viz., the autumn, winter and spring rice. Of these, winter rice occupies the largest acreage i.e., 73,746 hectres and it also yeild the maximum production amongs the three. Its yield per hectare was 1,182 Kgs./Hect.

The total area under total rice cultivation upto 1983-84 was 1,11,554 hectares and production during the same period was 1,31,000 metric tons which is an all time record. In the central part of the state, rice is grown at lower altitude between 50 to 700 metres (A.S.L.) In the higher reaches above 700 metres, rice is also found but the quantity and quality is lacking. It becomes a subsistence crop only. In the eastern part very little rice is grown due to the infavourable conditionss and climatic factors.

Next in importance is the autumn rice. This variety is however found only in Garo Hills occupying about 34% of the total area under crops of the region. The area and production of this crop during 1982-83 was 34,000 hectares and 35,100 tonnes respectively. The yield during the same period was 1,032 Kgs. per hectares.

Spring and Summer rice found in Khasi and Garo Hills occupy very insignificant area of the state as is evident from table 13. The production of Spring rice is also just a meagre, In the western region of the state i.e. Garo Hills, both autumn and winter rice are grown extensively. Rice is found both in the upland and lowland areas because of the relatively better climatic conditions. Jhum rice though grown mainly as a subsistence crop, is however observed to be rich in vitamins and carbohydrates unlike the lowland rice.

Wheat

Wheat is another important crop of the state. The total area under this crop has been steadily rising since 1979-80 but its production has been more or less stagnant. It is grown in the higher reaches of the state particularly in the western part. Till 1983-84 the total area under this crop was 3,458 hectares and its production was 5,000 metric tons. Due to the rugged terrain of the central part, wheat is grown only in the northern fringes of this region. Further, the absence of plain level land and the thin soil cover of the southern and eastern part of the state do not favour the growth of wheat in these region.

This crop is found predominantly in Garo Hills region. A little wheat is grown in Khasi Hills. Jaintia Hills do not grow any wheat.

Maize

Maize is the next important cereal of the state. Till 1983-84, the total area under this crop was 17,335 hectares and production was 22,000 metric tonns. This crop is found along with other crops, at middle or lower altitudes. This crop is found extensively in most part of the central and western portion of the state. However, in the southern and eastern part very few areas grow this crop.

Pulses

This crop is grown mainly in the low lying areas of the Garo Hills. There has been a slight decrease in its acreage since 1979. This may be due to the fact that some of the pulses growing areas are being used to the cultivation of other crop. Production of this crop has also been steadily decreasing due to the above reason.

Jute

Jute is the second most important cash crop of the state. It is grown in the northern fringes of the state in the low lying areas. Byrnihat in East Khasi Hills district is an important Jute growing area of the state. The northern part of Garo Hills also grow substantial amount of Jute. There has been a steady increase both in the areas under jute cultivation and its production as is evident from table 13. Till 1983-84 the total area under jute cultivation was 5,556 hectares and its production touch an all high record of 44,000 bales. (1 bale = 180 Kg.). The bulk of jute growing areas lies in Garo Hills region. Jaintia Hills has no jute growing areas.

Cotton

This is one of the most important cash crop of Meghalaya. The growing of cotton especially in Garo Hills

dates back to the early 17th century. Only the short stable cotton variety is grown here. There has been a steady increase both in term of areas under this crop and its total production. Till 1984 the state produce about 5, 000 bales (1 bale = 170 Kg.)

Mesta

This crop which is a close substitute of jute is grown in different parts of the state. The height of the fibre varies from 5 to 8 metres. It is generally found close to jute growing areas. In area where the climate does not favour the growth of Jute, Mesta is grown. Byrnihat in East Khasi Hills is an important mesta growing areas. However, the areas under this crop have been substantially reduced in the last five years and also its production. As in the case of jute, the larger mesta growing areas are located in Garo Hills. Mesta is absent from Jaintia Hills.

Potato

This is one of the most important crop of the central upland zone. The role played by this crop is so significant that in certain pockets of the central district of East Khasi Hills, it assumes a central place for politician in

times of election campaining. This crop is generally grown alongwith other crops like maize, pumpkin, vegetables and others.

The boost to its production was initiated mainly by the North Eastern Council and the India Council of Agricultural Research in recent years by introducing modern farming Techniques improved varieties of seeds and through research and development. Till 1984 the production of potato was 1,41,000 tonnes though the areas under its cultivation have been remaining more or less static.

This is one crop of the state which is grown extensively in all the three different regions of the state viz., Garo Hills, Jaintia Hills and Khasi Hills. But the larger potato growing areas are found in Khasi Hills.

Sweet Potato

This crop is grown extensively in different parts of the state. However, the production has remain stagnant with only about 13,000 to 14,000 tonnes annually. This crop is basically a subsidiary crop. Its cultivation can be expanded and it can be made as one of the important cash crop of the state. With the government initiative like potato, this crop is also found in all the three different regions of the state. The greater sweet potato growing however lies in Khasi Hills. Some of the

other notable cash crop of the state includes gingers, rape and mustard seeds, sugarcane, chillies, tobacco, turmeric and tapioca. Apart from these the state grows different varieties of vegetables, sugarcane, banana soyabean and different varieties of fruits. In the southern portion of the central Meghalaya, betelnut, and betel-leaf is also a major crop of the people. Most of their produce are consumed locally with a little quantity exported to nearby Bangladesh.

In West Khasi Hills District 47.14 percent of the population are engaged as cultivators and agricultural labours. Meanwhile, in East Khasi Hills district cultivators and agricultural labourers account for only 19.42 percent of the total population of the district. Conversely the highest number of Non-workers is found in East Khasi Hills District and the lowest in West Khasi Hills district. In all the five districts of the state, persons engaged in household industry are meagre. The percentage of the state as a whole is only 0.36 percent. The main workers of the state averages to 43.43 percent of the total population. They includes Agricultural workers, household industrial workers and other workers. However, as evident from the total, non-workers account for more than 50 percent of the state's population.

Land utilization in Meghalaya

Out of the total of 22,43,000 hectares for land reported for utilization, only 20,3,000 hectares are total cropped areas. This includes 1,93,000 hectares net sown areas and 10,000 hectares area sown more than once. In terms of percentages, the former account for just 8.6 % and the latter 0.44 % of the total reported area for utilization. The rest, area not available for cultivation account for 14.08 %; uncultivable land 16.85 %; cultivable wasteland 6.46 %; and fallow land 13.9 %.

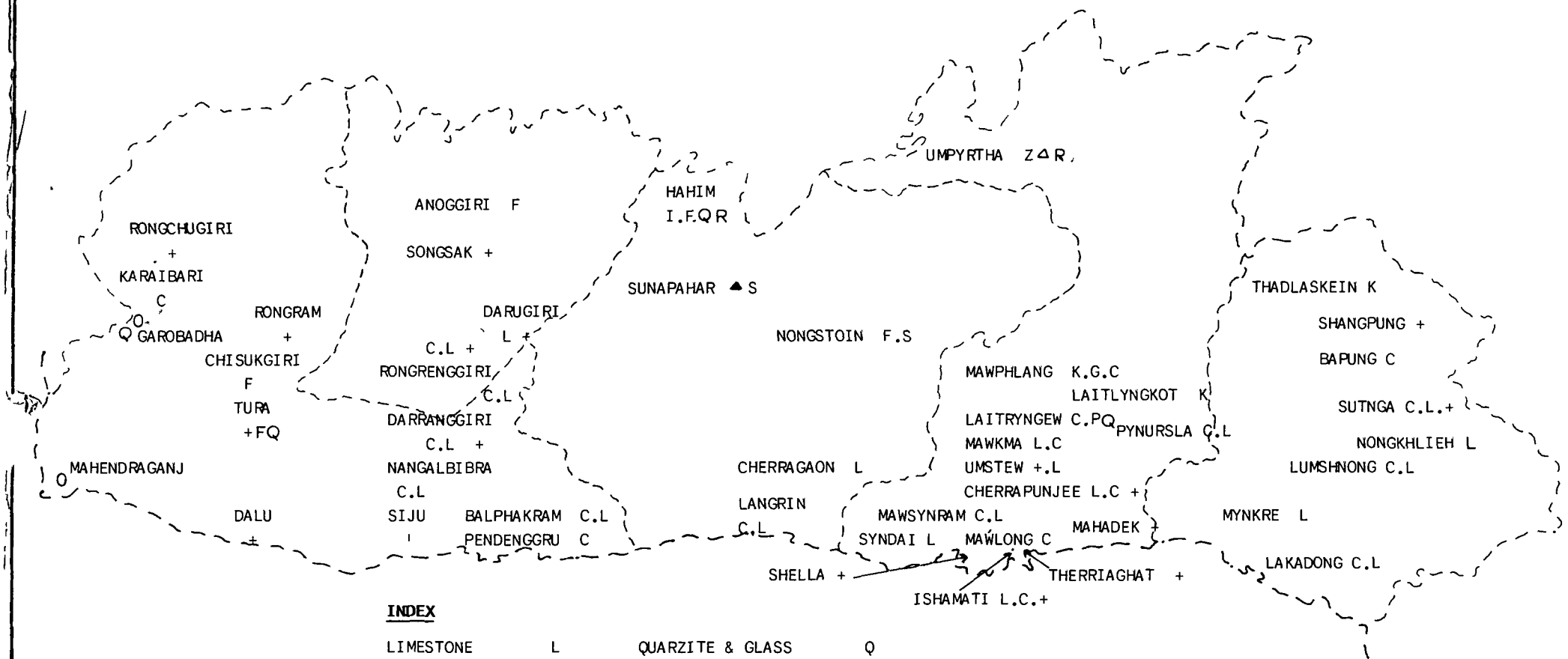
When the Community Development Block level was analysed it was found that Rongjeng of East Garo Hills district has the largest (35.2 %) areas under net area sown, while Nongstoin of West Khasi Hills district the lowest (2.5 %). Songsak Block of East Garo Hills has the largest area under fallowland (50.7 %) meanwhile Laskein of Jaintia Hills the lowest (0.51 %). This includes both current and old fallowland. Cultivable wasteland are found to be highest in Mawphlang block with 66.1 percent meanwhile Dalu has no area under this head and Zikzak Block has a meagre 0.8 percent under this head. Both of these blocks fall under West Garo Hills district. Land put to non-agricultural use is highest in Resubelpara (19.30 %) and lowest in Songsak (0.6 %) both Blocks of East Garo Hills district. Laskein block

has the largest area (27.5 %) under barren land and Betasing Block of West Garo Hills the lowest with 1.8 percent. Permanent pastures is found to occupy the largest areas of Khliehriat Block (38.3 %) of Jaintia Hills district, while Bahgmara block of West Garo Hills, the lowest (0.21 %). The Ri Bhoi block of East Khasi Hills has the largest area under forest (29.9 %) while Rongram of West Garo Hills has a meagre 0.54 percent under forest.

CHAPTER - V

MINERAL RESOURCES OF MEGHALAYA

DISTRIBUTION OF MINERALS IN MEGHALAYA



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IRON ORE	I	LEAD	Δ
PYRITE &		ZINC	Z
PYRRHOTITE	P	CORUNDUM	▲
GOLD	G		

10 5 0 10 20 30 40 Km

MAP 11

SOURCE: MINERAL MAP OF MEGHALAYA, GOVERNMENT OF MEGHALAYA, DIRECTORATE OF MINERAL RESOURCE, 1983.

MINERAL RESOURCES OF MEGHALAYA

Distribution

Coal

The move to set up Tea Industry about 80 years ago led to the search for coal to run the railway engines for transportation of machinery equipment, raw materials and finished goods. This in fact, was the beginning of coal mining history in the North Eastern Region. Meghalaya has the distinction of being the pioneer amongst the sister states of the North Eastern Region of India to have initiated coal mining in places like Darrenggiri, Langrin, Mawlong and Shella. It was estimated that about 12 lakhs tonnes of coal was exported to erstwhile East Pakistan during the last century. Coal is found extensively in many parts of the states particularly from the south west extremity to the north eastern corner of the state.

In Garo Hills coal is found in the Darrenggiri, Siju, Rongrenggiri and Blaphakram-Pengdengrew Coalfields. Notable coalfields of Darrenggiri includes Jangkhre, Mermelsaram, Rengdim-Agalgithim, Nabru, Holwang Hill, Kylas Hills, Baljong, Dogring and Asilgoan Hill. The total estimated reserves of coal in the whole of Garo Hills is about 400 million tonnes (Table 14) with the largest reserve lying in Darrenggiri, Siju and Balphakram-Pengdengru region.

Table 14: Total Reserves and Production of Coal in Meghalaya

Sl.No.	Areas/Region	Total Reserves in metric tonnes	Production till 1981 in metric tonnes
1.	Garo Hills	- 400	- 12,383
	(i) Darrenggiri	- 267.7	-
	(ii) Siju	- 125	-
	(iii) Balpkhakram - Pendengrew	- 9.1	-
2.	Khasi Hills	- 106.3	- 56,594
	(i) Laitryngew	- 2.7	-
	(ii) Cherrapunjee	- 15.5	-
	(iii) Laitduh	- 0.12	-
	(iv) Mawbehlarkar	- 0.12	-
	(v) Mawlong	- 9.00	-
	(vi) Bairang(Wahlong)	- 0.76	-
	(vii) Mawsynram	- 0.03	-
	(viii) Langrin	- 60.11	-
3.	Jaintia Hills	- 8	-4,51,596
	(i) Lakadong	- 0.47	
	(ii) Bapung	- 5.7	
	(iii) Jarain & Tkentlang	- 1.1	-
	(iv) Sutnga	- 0.65	-
		Total = 515 (Approx.)	5,20,573

Source : 1. Directorate of Mineral Resources, Meghalaya, Shillong

2. Resource Potential of N.E. India, Meghalaya Science Society.

In the Khasi Hills the total reserves of coal is about 106 million tonnes. The largest deposit is located in Langrin. Other important areas includes Sohra, Laitryngew, Mawsynram, Pynursla, Lynkyrdem and Mawlong.

Jaintia Hills has the least deposit of coal in the state accounting for about 8 million tonnes. Bapung, Jarain and Tkentlang, Umlatdoh and Pamsaru are some of the important coalfields of the region. Though the region have limited reserves, the quality however is of a high order.

The production of coal as in 1981, in Garo Hills is 12,383 metric tonnes. This is a mere 2.4 % of the state total production considering its large estimated reserve. Khasi Hills, though having 20.6 % of the state's total reserves, produced 56,594 metric tonnes of coal or 10.9 % of the states total production. Jaintia Hills has the least reserves of coal (1.6 %) but it produced the bulk of the state's coal (86.7 %). Bapung is a notable coal producing region of Jaintia Hills.

Limestone

Limestone is the next important mineral in Meghalaya. The state has the largest deposit of limestone in the whole of North Eastern Region. The total estimated reserves is of the order of 3,000 million tonnes. However, only a fraction of the mineral have been exploited as is evident from Table 15.

Table 15: Total Reserves and Production of Limestone

Sl.No.	Areas/Regions	Total Reserves in metric tonnes.	Production in 1981 in metric tonnes.
1.	Khasi Hills -	2,220.00 -	2,33,890
	(i) Cherrapunjee -	40.00 -	N.A.
	(ii) Mawlong-Ishamati Shella -	2,166.00 -	N.A.
	(iii) Therriaghat - Komorreh.	14.26 -	N.A.
	(iv) Syndai -	1.00 -	N.A.
2.	Jaintia Hills -	670.00 -	N.A.
	(i) Lumshnong-Mynkre -	652.00 -	N.A.
	(ii) Sutnga -	2.00 -	N.A.
	(iii) Nongkhlieh -	16.00 -	N.A.
3.	Garo Hills -	203.00 -	N.A.
	(i) Darrang-Era-Aming-	38.30 -	N.A.
	(ii) Siju Artheka -	165.0 -	N.A.
	Total =	3,093.00	

Source : Directorate of Mineral Resources, Government of Meghalaya

Meghalaya Science Society, Resource Potential, N.E. India.

The largest deposit of limestone occurs in the Shella-Bholaganj and the Khliehriat Community Development Block.

In the Shella-Bholaganj Block, the Cherrapunjee deposits of Mawmluh-Mawsmai Hills; the Laitryngew deposit of Umstew and Mawkma; the Mawlong-Ishamati-Shella deposit; and the Therriaghat-Komorrah deposit are the most important (Map 11). Besides the above, limestone also occurs in the Pynursla area in the East Khasi Hills District.

In the Khliehriat Block of Jaintia Hills District, limestone is found in the Lumshnong-Mynkre area, Sutnga, Nongkhlieh, Lakadong and Nongtalang.

In the Garo Hills, limestone is found in the Darrang-Era-Aming, Siju-Artheka and in Tura. Some of the other important field includes Nangalbibra, Pathargithim and Baghmara. Traces of limestone are also noticed in Rongrenggiri, Dapri and Gurugiri. They are however of poor quality.

Production of limestone in Khasi Hills alone was 2,33,890 metric tonnes till 1981. Data for the other region was not available.

Silimanite

The state of Meghalaya has the distinction of possessing the best silimanite deposits in the world. It occurs

predominantly at Mawshynrut (Sunapahar) region of West Khasi Hills District. This mineral which is being used as a refractory is also found in Dapsi-Tholegiri of Garo Hills. About 95 percent of India's silimanite comes from the state of Meghalaya. However, due to reasons best known only to the government, the extraction and exploitation of this mineral is at a low ebb. Conservative estimates puts the total reserves at about 0.2 million tonnes whereas liberal estimates put it at about 2 million tonnes. The total production of silimanite as in 1981 is 4,388 metric tonnes.

Clay and Kaolin

This is another important mineral of the state occuring mostly in the Shella-Bholaganj and Mawphlang region. Certain parts of Jaintia Hills and extensive areas of Garo Hills also has this mineral. Conservative estimates puts the total reserves of crude clay in Garo Hills at 74 million tonnes.

Besides the above mentioned minerals, deposit of glass sand, iron ore, gold, gypsum, quartz, feldspar, copper, lead, zinc, phosphate and various types of building materials are also found in the state (Map 11). Further, the Atomic Mineral Division of the Government of India have also carried out extensive investigation on the occurance of atomic minerals.

Traces of Uranium and Nb-Ta-Phosphate Carbonalite have been detected in the Shillong Plateau and the Wansung Valley of Jaintia Hills District. Till date the total reserves and quality of this mineral is not finally determined.

Coal, limestone, silimanite and clay are the only minerals which are at present commercially exploited in the state. Of these, limestone used in the cement factory and coal, are exploited on a larger scale than the other two (Table 14 and 15). However, till 1981, the percentages production of limestone, coal and silimanite (for which data is available) constitute only 0.01 % , 0.10 % and 2.19 % respectively of their total reserves. Evidently, only a small proportion of their total reserves are being currently exploited. Therefore, there is still a vast scope for utilizing these resources for the upliftment of the people, before these resources are drain-off to other states. Apart from the above four minerals, there are also other valuable minerals (Map 11) but their quality and quantity are not satisfactory.

Power Development And Its Potentialities

One of the reasons for the slow pace of socio-economic growth in Meghalaya was the lack of power supply, in spite of its large potentials. The first hydel power in the state

was the Umtru Hydro Electric Project started way back in 1949 with an installed capacity of 11.2 MW. Unfortunately, no major project could be undertaken immediately after this project. Investigation of the Umiam Hydro Electric Project stage I and II with an installed capacity of 50 MW was next taken, at a latter date. However, due to many difficulties that arose in the speedy implementation of this project, an alternative 6 MW Thermal Project was started in the same area in 1958. Today the Hydel Power position have improved significantly though only a small percentage of the total installed capacity have so far been generated.

The table below gives the existing installed capacity and generation of Electricity in Meghalaya.

Table 16: Capacity and generation of Electricity in Meghalaya

Name of Project commission and year of commission	Installed Capacity (Megawatts)	Generation (M.Kwts.) (1981 - 82)
1. Umiam Hydel Project		
Stage I (1965)	36.00	103.37
Stage II (1970)	18.00	46.65
Stage III (1979)	60.00	155.06
(Kyrdemkulai Hydro Electric Project)		

Table 16 (Contd.)

Name of Project commission and year of commission	Installed Capacity (Megawatts)	Generation (M.Kwts.) (1981-82)
2. Umtru Hydel Project ... 1957 (Original) 1963 (Extension)	11.20	61.05
3. Nangalbibra Thermal Project (1977) ...	5.00	1.20
4. Tura Diesel Project ...	1.95	2.16
5. Sunapani (Micro Hydel) (S.E.S.U.) ...	1.51	3.52

Source : Statistical Handbook, Meghalaya (1982), Directorate of Economics Statistical and Evaluation, Meghalaya. p.p. 80-81)

Apart from the above mentioned projects the IVth stage of Umiam-Umtru Hydel Project with an installed capacity of 60 MW is yet to be completed. Investigation is also on in two other areas of the state. They are the Leskha Hydro Electric Scheme with a proposed installed capacity of about 100 MW and the Umling Hydro Electric Scheme with a proposed installed capacity of about 150 MW.

CHAPTER - VI
INDUSTRIES

INDUSTRIES

The North Eastern Region is one among the most industrially backward region of India. The state of Meghalaya being part and parcel of this region is no exception to this. Though the state is endowed with enough raw materials for the setting up of certain industries, there are no important industries worth mentioning here. In other words, the pace of industrialisation have been rather slow when compared with other parts of the country.* A number of factors which have retarded the development of industries in the state may be cited as follows:-

(1) The Historical Factor

This region have been a traditionally neglected one since time immemorial as it constitute an area of repulsion due to its inaccessibility.

(2) The People

The Conservatism and orthodox nature of the people who are prejudice towards any innovation.

(3) Communication

The lack of good network of transport and communication system.

(4) The Political Factor

The Members of Parliament sent from the state, who could not impress upon the Central Government of revamp

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*At the outset, it is fair to state that the present analysis takes into account only the mineral based industries into consideration. This emphasis has been made largely due to the available and potential mineral resources in the State.

industries in the state, due to their meagre numerical strength.

(5) Government Attitude

The step-motherly treatment and indifferent attitude of the central government towards this state.

(6) Infrastructure

The lack of infrastructure in the field of industries in the state.

(7) Climate

The climatic factor which discourage the setting up of certain industries in the state.

(8) State Government

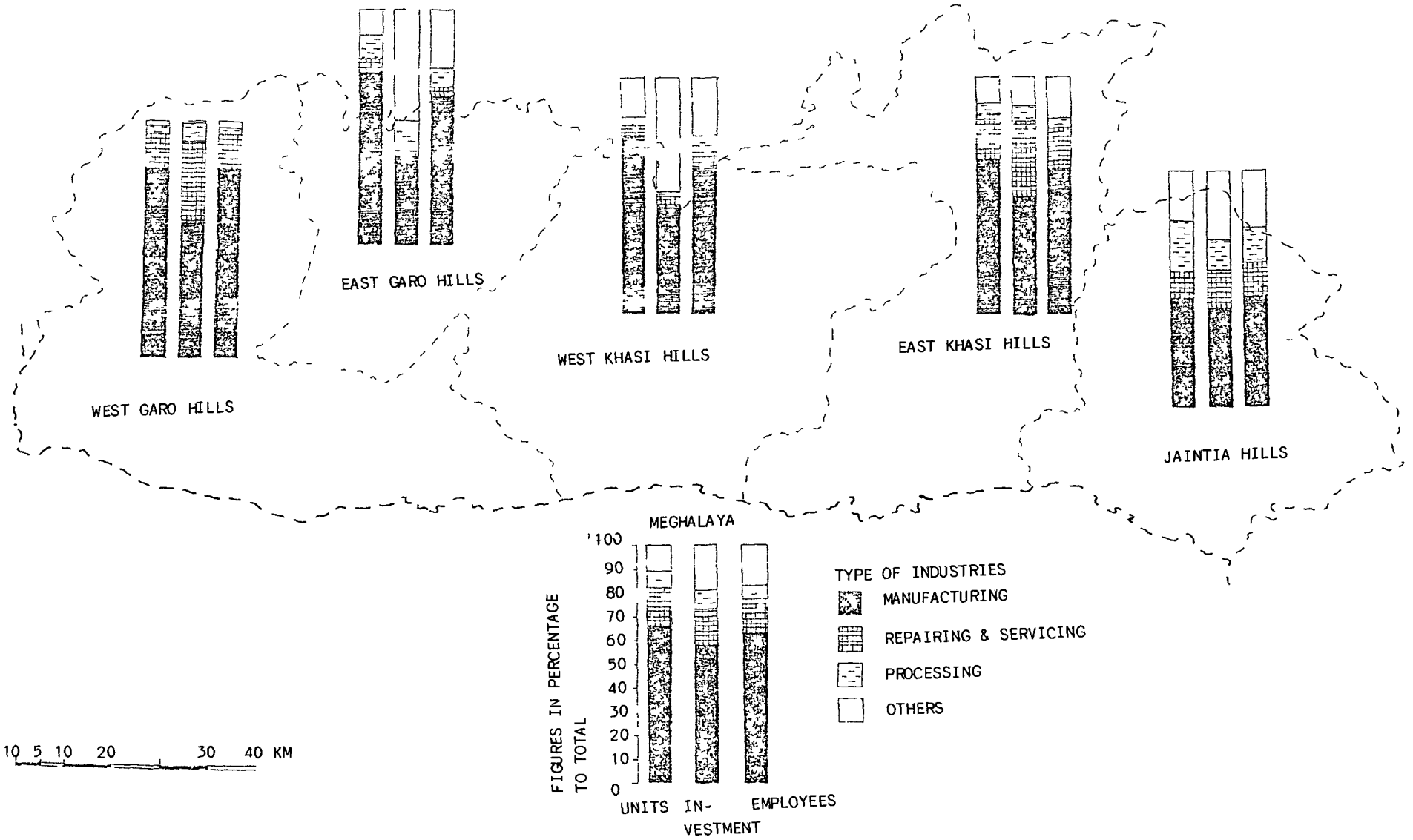
Dearth of capital, trained personnel and initiative from the state government.

Nevertheless, most of the above mentioned hurdles can be overcome, provided there is an earnest desire by all and sundry to bring about industrialization in the state. This desire will be reflected in the amount of sacrifices, the indigenous people are willing to make, and above all they should be willing to set aside all prejudice and differences.

MEGHALAYA

INDUSTRIES BY TYPE INVESTMENT AND PERSONS EMPLOYED

(1985-86)



Quality and Quantity

The Industries Department of the Government of Meghalaya have categorised all registered industries in Meghalaya into four main heads. These are :-

(i) Manufacturing industries
(ii) Repairing and Servicing industries
(iii)Processing industries
(iv) Other industries which includes tailoring, saw mill arts and stone crushers industries.

Out of the total of 671 registered industrial units, 443 are in manufacturing, 107 in repairing and servicing, 46 in processing and 75 in other industries. Thus manufacturing accounts for the largest share of registered industrial units which is 66.02 percent. More than three-fourths of the state industrial units are confined to Manufacturing and Repairing and Servicing. The bulk in the investment in plant and machinery and the number of persons employed also goes to these two heads. The total investment in plant and machinery in these two heads is Rs. 198.62 lakhs or 72.93 percent of the total investment, and they employ a total number of 3,309 persons or 77.95 percent of the total number of persons employed in the industrial sectors. There-

fore it is obvious that these two industries are predominant in the state.

The district-wise distribution of industries is given in Table 17. From the table it is clear that East Khasi Hills District has the distinction of being the most industrialized district of the state. It is followed by West Garo Hills, Jaintia Hills, East Garo Hills and lastly West Khasi Hills District.

The industries in East Khasi Hills District are mainly Manufacturing industries. It is then followed by Repairing and Servicing, and Processing as is the case in the state as a whole. However, in Jaintia Hills and East Garo Hills District, though Manufacturing industries dominates, the Processing industries comes second with Repairing and Servicing taking third place.

Other services accounts for a significant number in terms of their number, Investment in plant and machinery and in the total number of persons employed. But as most persons engaged in this, and other services do not registered themselves with the government, the exact position is hazy.

As is evident from the table, West Khasi Hills District is the most industrially backward district of the state. The other three districts though slightly more industrialized

Table 17: District-Wise Registered Small Scale Industries by Type. Investment and number of Persons employed (1985-86)

(Investment - Rupees in lakhs)

Sl. No.	Particulars	East Khasi Hills	West Khasi Hills	Jaintia Hills	West Garo Hills	East Garo Hills	Meghalaya (Total)
1.	Manufacturing						
	i) No. of Units	261	18	42	80	42	443
	ii) Investment in Plant and Machinery	133.94	2.36	6.94	5.64	8.04	156.92
	iii) No. of Persons Employed	1,887	76	172	3333	187	2,655
2.	Repairing & Servicing						
	i) No. of Units	77	1	10	15	4	107
	ii) Investment in Plant and Machinery	85	0.22	2.66	3.37	0.37	41.70
	iii) No. of Persons Employed	516	12	51	64	11	654
3.	Processing						
	i) No. of Units	15	1	20	4	6	46
	ii) Investment in Plant and Machinery	16.08	0.11	2.16	0.78	2.73	21.86
	iii) No. of Persons Employed	131	5	56	13	24	229

Table 17 (Contd.)

(Investment - Rupees in lakhs)

Sl. No.	Particulars	East Khasi Hills	West Khasi Hills	Jaintia Hills	West Garo Hills	East Garo Hills	Meghalaya (Total)
4.	Others						
	i) No. of Units	44	4	19	2	6	75
	ii) Investment in Plant & Machinery	34.20	2.60	4.89	0.13	9.98	51.81
	iii) No. of Persons Employed	500	31	86	12	77	706
5.	Total						
	i) No. of Units	397	24	91	101	58	671
	ii) Investment in Plant & Machinery	219.41	5.29	16.55	9.92	21.12	272.29
	iii) No. of Persons Employed	3,034	124	365	422	299	4,244

Source : Compiled by the author from data obtained from Industry Department, Government of Meghalaya.

than West Khasi Hills District are however lacking far behind when compared with East Khasi Hills District. But the presence of raw materials in these districts are at par and in some cases even higher than that found in the East Khasi Hills District (See Map 12). Thus a marked disparity exists in the over all industrialization in the state.

Distribution Of Industries - District-Wise East Khasi Hills

In East Khasi Hills District, the cement based industries the most important, both in terms of number of units, Investment in Plant and Machineries and the number of persons employed. Next in importance are the Bakery, Wooden Furniture, Printing Press, Steel-based industries and the Knitting and Embroidery, in order of their importance. Two other important industries in the districts are the Motor Repairing, Servicing and Painting, and the Saw Mill industries. There are 67 units in these two heads. They together employed 597 persons and have a total investment of Rs. 48.93 lakhs. The rest of the industries form a negligible percentages in the district, both in terms of units, investment and persons employed. However, what is surprising to note is that lime making industries are very few, considering the immense availability of limestone in the district.

Nevertheless, besides the number of small scale industries given in Table 17, this district have also some Medium

scale industries (Table 18). These facts helped the district in being the most industrialized one among other districts of the state.

Table 18: List of Medium Scale Industries in East Khasi Hills

Sl. No.	Name of Units	Date of Incorporation	Produce	Investment Catalyzed (in Rs.)
1.	M/S Meghalaya Plywood, Ltd. Byrnihat.	28.9.73	Plywood, Blackboard, Tea Chest.	80 lakhs
2.	M/S Associated Beverage, Pvt. Ltd. Byrnihat.	28.8.73	Soft Drink	35 lakhs
3.	M/S Komorrah Lime stone Mining Co. Ltd. Shillong	24.1.73	Limestone (Export to Bangladesh)	30 lakhs
4.	M/S Meghalaya Essential oils and Chemicals Ltd. Shillong.	21.2.74	Annamon leaf oil	11 lakhs
5.	M/S Meghalaya Phyto Chemical Ltd. Barapani.	5.11.74	Citrovella oil and aromatic chemicals.	30 lakhs
6.	M/S Mawmluh Cherra Cement Ltd. Cherrapunjee.	N.A.	Cement	N.A.
			Total	- 186.75 lakhs

Source : Directorate of Industries, Meghalaya, Shillong.

West Khasi Hills

This district is the most industrially backward district of the state. Out of the total of 671 industrial unit of the state, only 24 or 3.6 percent are located in this district. These 24 units have a total investment of Rs. 5.29 lakhs or 1.9 % of the total investment in Plantand Machinery in the state. Further, a mere 2.9 percent of the total industrial workers of the state are in this district. The Cement based industries is the only important industry in this district. The wood based and iron based (Blacksmithy) industry are the other important industries of the district. However, it is important to note that the district boast of the largest deposits of silimanite in the state. There are also numerous other minerals found here as evident from Map 11.

West Garo Hills

This is the second most industrialized district of the state, being next to East Khasi Hills District. However, when the data is closely examined it does not come anywhere close to East Khasi Hills both in terms of number of units, investment and persons employed, which are 15.0 percent, 3.6 percent and 10.0 percent respectively out of the state total figures.

The wood based industries like furniture industries, cane and bamboo works and woodcraft forms the major manufac-

turing industries of the districts. The iron based and knitting and embroidery are the two other important manufacturing industries of the district. Among the processing industries mentioned may be made of the flour and rice mill industry.

Jaintia Hills

This district stands third in the state in terms of industrial development. It incorporates 13.6 percent of the state industrial units which together accounts for 8.6 percent of the total industrial workers of the state. It takes up 6.1 percent of the total investment in plant and machinery of the state. The bulk of her industries are in manufacturing (52 Nos) followed by processing (20 Nos). This is a unique feature of this district, in that in all other districts of the state, the Repairing and Servicing industries greatly outnumbered that of Processing industries.

The notable manufacturing industries of this district are :- Cement based, Bakery Knitting and Embroidery, and Wooden Furnitures. The most important processing industry is the Flour and Rice Mill Industry.

East Garo Hills

The bulk of industries in this district are in Knitting and Embroidery followed by Cane and Bamboo works. It has a total of 58 industrial units employing 299 persons. The

total amount of money invested in Plant and Machinery in the district is to the tune of Rs. 21.12 lakhs.

As in the general pattern, in this district also, Manufacturing forms the largest group. The other industries like Repairing and Servicing, Processing and other industries are almost of equal numbers.

Allocation Of Funds For Industries In Meghalaya For The Period 1987-88

In Meghalaya there five depatmental heads that provide loans grants and incentiyes to different industries of the state. These are the Industries Department, the Sericulture Department, Community Development Block Department.

The total budget for the Industries Department, Government of Meghalaya for the year 1987-88 is Rs. 2,94,41,000/-. This includes Revenue Budget of Rs. 67,41,000/- and Capital Budget of Rs. 2,27,000/-. Out of this total, Rs. 4 lakhs has been alloted to large and medium industries; Rs. 6 lakhs to Man Power Training Entrepreuners Motivation Training and Subsidy on Interest, Rs. 2 lakhs on Entrepreunership development Programme; Rs. 60 lakhs on share capital to Mawmluh Cherra Cement Limited; and lions share of 1 crore 67 lakhs goes to Meghalaya Industrial Development Corporation.

For the Sericulture Department the Revenue Budget is Rs. 1,67,000/- and the Capital Budget Rs. 13,00,000/- which

together accounts for a total of Rs. 1,89,90,000/-. To the industrial side most of the funds involves developing of industrial infrastructure which is Rs. 15,74,000/- or 8.28 percent of its Total Budget.

The Village and Small Industries has been alloted a total budget of Rs. 2,88,54,000/- which includes Rs. 2,56,54,000/- as Revenue Budget and Rs. 32,00,000/- as Capital Budget. Most of this is for man power development; such as for strengthening industrial hands and for providing incentives to persons in Village and Small Industrial activities.

Last but not the least is the Community Development Department which also has a share in Industrial promotion in the state. The department has alloted Rs. 3 lakhs to Industries including Arts and Crafts during the annual Plan 1987-88

CHAPTER - VII

CONCLUSION

CONCLUSION

Present day geographers have become increasingly interested in the development of economies, mainly for three reasons. Formerly geographers' approach was strictly confined to their own field which made theoretical explanation of a particular area difficult. But with the revision of perception, this hurdle was overcome. Secondly, geographers have today adopted an approach that is theoretical rather than descriptive which is basic to development. Thirdly, the currently accepted fact that development within economies is not the exclusive field of economists but rather an interdisciplinary one — has encouraged the geographers further in this field. This is reinforced by the nature of terrain and socio-economic factors that has influenced the developmental prospects of Meghalaya.

Though most writers while referring to 'growth' associate it with the overall growth of the advanced countries and 'development' with that taking place in the third world countries. Here it is sufficed to mention that these two terms are used differently. The former is used strictly for the aggregate economic improvement in the economy and the latter is to include other variables like social, economic and political processes which are indicators of the nature of the standard of living of the people.

Changes are indispensable within economies if the per capita income is to be raised. But as individuals differ from one another, and from one region to another, in terms of availability of resources, it is difficult to attain a balance economic growth. For some areas, the basis for successfully raising the standard of living are social and political factors rather than economic or material. Thus, in some areas, the determining factors for economic growth may be and increase in the income, in another it may be full employment, setting up of industries or the injection of more funds to the backward region.

Therefore, what is required for the upliftment of an economy and attaining optimum development is a carefully laid out planning process. Planning process though begin at the Centre. Planning may be initiated at the local or regional level also. A specific decision has to be taken while allocating resources that takes into account factors like time, space, techniques and above all the relative importance of agriculture, industry, education, health, transport and irrigation in the planning process. Moreover, priorities and strategy has to be clearly spelled out, so that no conflict arises between the interest of total aggregate economic growth with that of economic equality. Others interest like economic and environmental, and the individual interest with those of the larger group may also be given due consideration.

While planning for an effective economic revolution, the various lines of development within a particular area has to be carefully looked into. An integration of the different existing element is a necessity. Therefore, planning involves a thorough integration and a dynamic analysis of the particular area.

The government has a very important role to play in planning for development of any area. Today, all development plans take into account the public as well as the private sector of the economy, and its plan is such that whatever be the public expenditures, its objective is for maximisation of economic development. The aims of most developmental plan is to influence the private sectors to invest or otherwise clearly specifying within the plan what the government hopes to provide in the form of infrastructure and technical manpower.

The result of planning for development depends upon the proper evaluation of the projects against an anticipated overall development of the economy. For example, the setting up of one project may induce the setting up of another. Planning for development is another indirect way of seeking assistance.

Nevertheless, some of the problems faced by proper planning is the lack of detail and accurate information about the existing economy. Secondly, the planning for development over exaggerate their potentiality and capability which when fail to

achieve, results in the loss of faith of the masses; thereby hampering future planning. Thirdly, planning for development cannot produce projects by itself. Another problem is that most large private sector is not under the direct control of the government and the planning authority. Similarly, all economies are not within the purview of the government. Last but not the least, the most difficult problem it faced is the lack of adequate efficient and skilled personnel by which to implement the planning process properly.

The geology of Meghalaya is composed of the Archaean rock believed to be the oldest in the geological age. The periphery of the State however has alluvium deposits which in contrast is of very recent geological age. This spatial arrangement could have enhanced the flourishing of agriculture in the periphery and establishment of industries in the central part. But as the people are by tradition, agriculturalists, they have not exploited this relative opportunity satisfactorily.

The rugged terrains and the presence of numerous rivers are favourable to establish micro-hydel power generating stations. The generated power can be effectively linked with the stage grid and used for power intensive industrial units. At present most of the surplus power is given to neighbouring States of Meghalaya.

The rich flora of the State like the cytronella plant, the teak, the sal and others could encourage the forest based industries in a big way while keeping the conservation in view. At present only a limited number of factories based on forest resources are in the State. Notable among them are the Meghalaya Plywood Limited, the Meghalaya Phyto Chemicals Limited, the Meghalaya Associated Beverages Limited, and the Meghalaya Essential Oils and Chemicals Limited.

One of the criteria for under development in the State is the low density of population which is just 60 persons per square kilometres. However, the significant increase of population during the last decade coupled with the doubling of urban centres, is an indicator that development is slowly taking place in the State. But the bulk of the State's population still live in the rural areas and depend on their traditional ways of life. Further, it is in areas where resources are abundant that the population are sparse and accessibility is restricted. There are two options for the government to effectively encourage the utilisation of the resources. It has either to import skilled persons from outside or keep the resources as it is, until the indigenous people are well trained for this purpose or do things simultaneously. It can also bring trained persons from outside on a mutual exchange programme or on a contract basis while the indigenous persons are undergoing training. The

strict measures adopted by the State Government on outsiders while helping to protect the tribal identity may act as a negative factors towards progress. Therefore, relaxation to those who come to help develop and advise on proper utilization of the State's resources is a prerequisite.

The lack of a good network of transport and communication system is the basic causes of industrial stagnation of the State. As evident from the study the State lacks a railway line and a waterway. The existing railway has played very little role in promoting industrial activity and there is much to be done to further improve roadways. It is only after the development of the infrastructure that one can seriously think about harnessing the resources of the region for industrial purposes.

The majority of the people of the State are subsistence farmers who depended on agriculture either directly or indirectly. What is more significant is that in spite of the marginal gains – and at times even a loss due to natural calamities – people still stick to their traditional ways of life. There are areas which no doubt favours the growth of certain crops like cotton in Garo Hills and Jute in the northern periphery. However, it is obvious from the study that in those areas where certain minerals are in plentiful, e.g. the limestone region of the south central part; the setting up of factories based

on the local resources would be more beneficial than farming. In such areas people should be encouraged to set up industrial units of one kind or another.

When the Government of Meghalaya announces its Industrial Policy of 1988, it laid down certain objectives keeping in view its rich resources. An Industrial Policy is felt necessary so as to quicken the pace of industrialisation in the State. In a nutshell the objectives are to initiate an industrial culture, to develop local tribal entrepreneurship, to generate employment and to promote training facilities for the indigenous people of the State.

The specific sectors in which the industries may be set up are those based on minerals, horticulture and agriculture, forest, power, and climate sensitive industries such as watch, computers, etc. To achieve this many package scheme of incentives were also announced. For the large and medium industries the subsidies are, subsidy on cost of infrastructure, sales tax, refund of C.S.T., exemption of stamp duty, training subsidy, power subsidy, incentive on feasibility study cost. For the small scale industries the various subsidies announced include project subsidy, employment subsidy, training expenses, tax incentives, power subsidy, subsidy on drawal of power lines, incentives on feasibility study cost, exemption on stamp duty, subsidy on rent, on

technical know-how, quality control, import substitution, pollution control and price preference. Special incentives for horticulture based industries was also announced.

Thus keeping in view the Industrial Policy of the Government of Meghalaya the above study it is felt; has further collaborated the feasibility of industrialisation of the State, on the basis of local raw materials. For example, coal which is being daily exported outside may be used locally in the making of tar, dyes, oils etc., which could have greatly helped solve employment problem and earn a larger revenue for the State. The feasibility of setting up other industries may also be given careful examination so as to get maximum return from the particular resources. If this is done along with the people's earnest participation, a time is not far ahead when Meghalaya will figure prominently in the nation's industrial map.

Last but not the least, detailed analysis of anyone of the objectives, that has been stated earlier, will enable one to make an in-depth analysis, this will go a long way in identifying the situations in each sector of the economy.

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