RESOURCE DISTRIBUTION AND ECONOMIC DEVELOPMENT IN MEGHALAYA

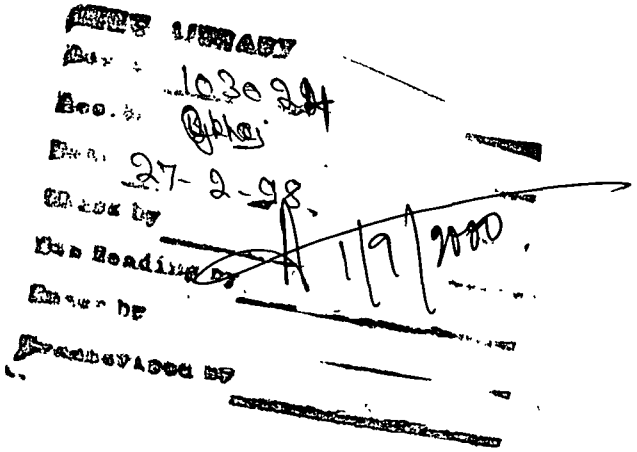
MARY ANN JYRWA

DISSERTATION

SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS
FOR THE DEGREE OF
MASTER OF PHILOSOPHY (M. Phil)
IN GEOGRAPHY

DEPARTMENT OF GEOGRAPHY
SCHOOL OF ENVIRONMENTAL SCIENCES
NORTH-EASTERN HILL UNIVERSITY
SHILLONG, MEGHALAYA

OCTOBER 1994



पूर्वोत्तर पर्वतीय विश्वविद्यालय
मयूरभंज परिसर, शिलांग - 793014 (मेघालय)
North-Eastern Hill University
Mayurbhanj Complex, Shillong - 793014 (Meghalaya)

Phone :
Grams : NEHU

CERTIFICATE

This is to certify that the dissertation entitled **Resource Distribution and Economic Development in Meghalaya** submitted by Marry Ann Jyrwa in partial fulfillment for the degree of Master of Philosophy is a bonafide 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 for any other diploma or degree.

R.K.Rai
(R.K.Rai)
Head
Department of Geography
NEHU: Shillong

Head
Department of Geography
North Eastern Hill University
Shillong.

R Gopalakrishnan
(R. Gopalakrishnan)
Supervisor
Department of Geography
NEHU: Shillong

Acknowledgment

It is my utmost pleasure to place on record my acknowledgement of the guidance, assistance, help and encouragement I received from several persons throughout the course of my work.

First and foremost, I would like to express my thanks and gratitude to my supervisor Dr. R. Gopalakrishnan, Professor, Department of Geography, North Eastern Hill University, Shillong, for his valuable guidance and encouragement throughout the course of this study.

I am also thankful to Dr. A. Ahmad and Dr. D. I. Nayak for their help and encouragement rendered to me during the course of this study.

My gratitude also goes to all the other teachers of the Department of Geography, North Eastern Hill University, Shillong, who have helped me directly of indirectly throughout the course of my study.

Thanks is also due to the officials of the Directorate of Census Operations, Meghalaya, Directorate of Economics,

Statistics and Evaluation, Meghalaya and North Eastern Council Library, Shillong for providing relevant data and information.

I would also place on record my gratitude to Dr. N. P. Goel, Department of Geography, North Eastern Hill University, Shillong, for his help in getting it typed on the computer with great care and patience within the short period of time.

My special thanks goes to my friends Sherly and Andrew for their encouragement and support they had given to me during the period of this work.

Last but not the least, my deep sense of gratitude goes to all my family members, - my parents, brothers, sister and grand mother - who have been instrumental in encouraging and supporting me throughout the period of this study.

MARY ANN JYRWA

CONTENT

List of Tables

List of Figures

CHAPTER I

Introduction

Resources both renewable and non-renewable, may be defined as "means of attaining a given ends". These ends may be the satisfaction of individual wants or the attainment of social objectives. Thus, anything useful or anything having the attribute of utility may be termed as a resources. Food, Clothing, Property or Capital are, therefore, resources only because they are useful and satisfy some human wants. Resources include many more things like land, water, air, sunshine, forests, etc. coal, machinery, etc., in addition to intangible things like good health, knowledge, freedom, social harmony etc. (as all these things have the attribute of utility). In other words, resource is something functional. According to Zimmermann, "The word resource does not refer to a thing nor a substance, but to a function which a thing or substance may perform an operation of attaining a given end, such as satisfying a want". Thus a factor is a resource so long as it satisfies some human want, and it ceases to be a resource, when it ceases to be used for the satisfactions of human wants. Resource is not something state. It is dynamic and increases in response to increased knowledge, improved arts, expanding science and changing individual wants and social objectives.

Resource creation is a continuous process and resources change with every change in human civilization.

Resources are the basis of the economic prosperity of various nations. Different countries have different levels of economic development. This is primarily because of their respective resource endowment. And development is a fundamental process of social, economic and political and transformation of a society. Thus resource development exerts a dominant influence on the stabilizing and viabilty of a state's politico economic and socio-cultural structure.

All societies aim for development. Economic development is an integral part of their objectives. Economic development occurs at varying process in different regions/states at different periods of time. Balanced development of different regions/states of a large country like India is important not only from the global economic point of view but also for the unity and political economy stability of the country.

Statement of the Problem

The state of Meghalaya is situated in the southern part of north-eastern region of the country. It has characteristic features of under-development. This is largely due to its hilly terrain and difficult accessibility conditions. Meghalaya like

the rest of the north eastern region is still a backward state. It is indeed very difficult to identify a single most important cause for this relative lack of development. But a better understanding in this regard, can surely be reached if one sees them from a broad poltico-geographical perspective. A number of developmental plans which were primarily formulated have either not been able to achieve their targets or have failed miserably as in many cases. The state has to depend on grants from the Central government to carry out most of its developmental activities. Its ability to generate needed resources are limited. The channelisa- tion of such funds is frequently influenced by different interest pressure groups and political decisions.

Meghalaya has a rich potential of both renewable and non-renewable resources. The stae's enormous hydro-power potential promises bright future for the state. Coal, limestone, silimanite, clay and uranium are the important minerals of the state. Lack of proper transport network is an important deterent to State's Economic Development. As far as industrial development is concerned, the state lags far behind, both in terms of small scale and medium sized units/enterprises.

Attempt has been made in the present study to identify and understand the actual availability of resources in the

state. It raises broad questions whose resolutions provide an understanding to the problems of economic development. It also suggests a rationale and a new direction for resolving these problems.

Objective of the Study

Keeping the above mentioned problems of development in mind, the present study focuses on the following objectives.

1. To prepare an inventory of the resources of Meghalaya and to develop an understanding of the problem of distribution of these resources.

2. To critically examine the present methods of utilization of resources of the region.

3. To analyse possible implication of the availability and utilization of national resources for economic development of this area.

Research Question

Keeping the above objectives in mind, the following research questions were proposed to be tested in the present study.

1. Is it possible to achieve economic development with the available resources.

2. If yes, what are the nature and extent of adjustments and accomodation to be made in the politico-geographical aspect of the state.

3. If the resource can be identified in terms of optimum utilization, can they lead to development?

4. If yes, what direction does the development/resource pattern suggest?

5. What posible alternatives exist to encourage development?

Study Area

Meghalaya, which is located in the north-eastern region of India lies between the longitudes of 89°45' E and 92°47' E and the latitudes of 25°47' N and 26°10' N. It is a landlocked territory. the total geographical area of the state is 22,429 square kilometres.

Meghalaya is bounded by Bangladesh in the south and south eastern corner and on all the other sides is bounded by Assam, Meghalaya, is basically a hilly region is surrounded by extensive plain lands on its north, west and south. On its east lies the Karbi Hills which is geographically a continuation of the Meghalaya plateau.

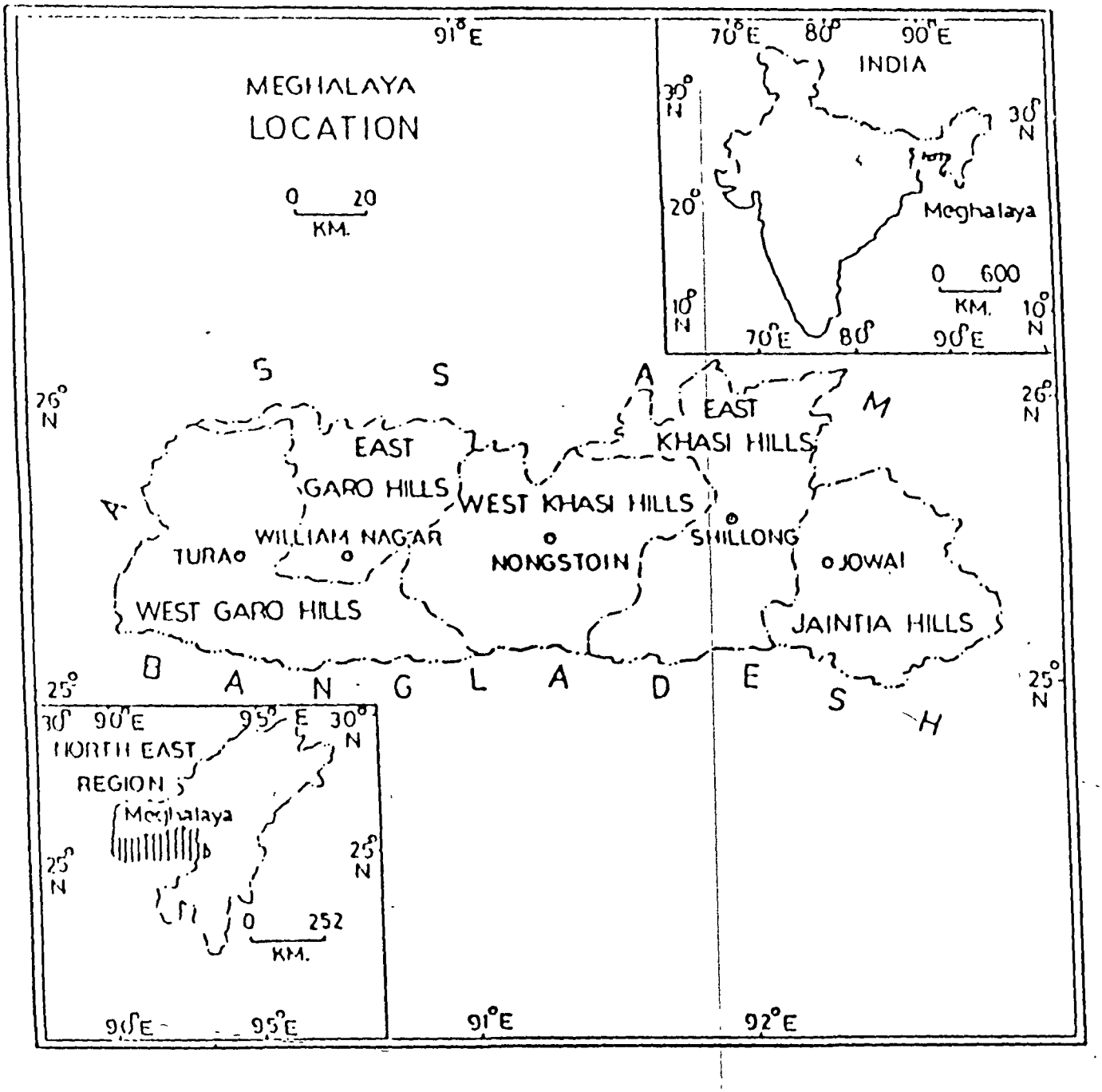

MEGHALAYA
LOCATION
0 20
KM.
91°E
INDIA
70°E 80° 90°E
30° N
20°
10° N
Meghalaya
0 600
KM.
SOUTH ASSAM
EAST GARO HILLS
EAST KHASI HILLS
WEST KHASI HILLS
WILLIAM NAGAR
TURA
NONGSTOIN
SHILLONG
JOWAI
WEST GARO HILLS
JAINTIA HILLS
BANGLADESH
26° N
25° N
NORTH EAST REGION
Meghalaya
0 252
KM.
90°E
95°E
91°E
92°E

Fig. 1.1

The physiography is marked by heavily disected terrain in the northern and western sides; while the southern side is characterised by steep scarps escrapments. The climatic conditions of the state is greatly influenced by the south-west monsoon. It vary's from tropical type to semi-temperate type depending on the physiography and attitude. The state displays a wide variety of natural vegetation ranging from tropical mixed forests to alpine forests.

Total population of the state according to the 1991 cencus was 17,60,626 (which constituted 0.21 per cent of the total population in India). The sex ratio in the state was 947 females per thousand males. The average density of population in the state was 78 persons per square kilometres. Around 72.54 per cent of the total population is engaged in agriculture and allied activities. Agriculture in the state is predominantly the shifting cultivation or 'Jhum' which is practised by about one-fifth of the total number of households. Horiculture, live-stock's rearing and mining are the other major economic activi-ties of the people of the state. Meghalaya is potentially very rich in both renewable and non-renewable resources.

Data Base

Data used in the present study were collected from the secondary sources. For data on population 1991 census wasused.

For other data relating to agriculture, forest, industry, minerals etc. were obtained from the various departments of the state government, and also from the North Eastern Council. Some books on Meghalaya also provide valuable information regarding the economic activities of the state. But there is not enough data at the micro-levels which made the study handicapped. The data available were restricted to the district level.

Methodology

In the present study in order to understand the distribution of resources, resources have been divided into agricultural, forest, water, mineral and human resources and in order to analyse the pattern and the levels of development, different indicators were taken (like for example, occupation, agricultural production, education, roads, industries, etc.) into consideration to measure the overall levels of development in the seven districts of the state.

Chapter Scheme

The first chapter introduces the problem. It attempts to state the importance of theme and why economic development should follow on accelerated growth pattern. With growing trends of liberalisation and economic reforms, the state has to set up a infrastructure that will provide an adequate basis to

aim for growth. For otherwise, the status quo and stagnation tendencies will continue undermine and hamper socio-political transactions and economic relationships. It is in this view the objective and research questions are stated.

In the second chapter, the characteristics of the study area is analysed in termes stated in introduction. It is a review of tate's characteristics. It brings about salient features of the state which act both as an accelerator and inhibitor for growth at the same time. However, it prepares an adequate base for the study of resources of the state.

The third chapter identifies the existing resources of the state in terms of natural resources and human resources. Natural resources are in turns formed by mineral resources, water resources, vegetation and soil, the human resources emphasise not only the quantitative aspects but also quality of the population. The analysis of these elements focuses around economic development. Efforts has also been made to identify and interpret distance and accessibility conditions as well.

In the fourth chapter an attempt has been made to identify the potential resources. These are primarily human resources, whose continuous qualitative improvement has provided the state to meet its demands at least partially.

This chapter also focuses attention on improvements in accessibility conditions as well as on changing perspectives on locational strategies.

In the fifth chapter, the development requirements on the basis of the needs of the polity and territory and the projected extent of development are considered. Moreover, politico-geographical factors are also identified which acted both as an accelerator and an inhibitor of state's development.

In the sixth and final chapter, effort has been made to highlight the limitation factors and possibilities of alternative that can circumvent these.

At the time of formation of the state in 1972, Meghalaya with its remotness and peripheral position (both from the main production centres and the major markets in the country) to a large extent, remained unaffected by the development impulses experienced elsewhere. At that time, there where only a small Cement Plant at Cherrapunji, a bone-meal unit at Burnihat, two tiny fruit processing units, exploitation of sillimanite and few other insignificant small industrial units including traditional small cottage industries run in the same customary primitive fashion.

The policy of the State Government had been to actively

help in promoting industrial development of the State. It pursued these ventures that could be adopted to local needs, i.e., for the benefits of the local inhabitants of the State, by utilizing local raw materials, or which, while bringing raw materials from elsewhere will cater to the existing potential markets in Meghalaya and in the North East Region. Emphasis was placed on these projects which helped to improve the skills of the people of this region minimised diversity in their occupational patterns particularly agriculture and so on. The state promoted the participation of the local people in working of the indigenous small scale industries. It also provided advice, financial aid, raw materials and by opening new industries in the rural area in order to enable them to get full time employement. In other words, a policy of industrial development of the state was attunded to the need, skill and availability of resources as well as requirement.

Difficulties of industrialisation

It is clear that financial constraints, lack of data and poor surveys of the regions, are some of inhibiting factors that stunted the industrial growth of the state. Industry and minerals were given a back seat in the budget allocation in the state. This was because, without proper research and ground work being done on the industrial front, no concrete

industry policy could be formulated. The prospect of industrialisation depended to a large extent on the availability of raw materials, skilled personnel, unskilled labour, easy transport and communication and other infrastructural facilities. It is with these reasons in view that industrialisation of the state is still at the survey and research stage with a few sprinkling of mineral based industries. Planning for development requires more precise knowledge about quality and quantity of available resources. The transition from resource potential to utilization of the reserves is affected through a sequence of exploration and probing and only a small fraction of the mineral resources of the region have been probed so far.

Cottage and Small-Scale Industries

While medium and large scale industries will continue to hold glamorous position in the industrial development of North Eastern region, the importance of handlooms and handicrafts can hardly be overlooked. The tradition in this regard is rich, but commercial viability has been a major problem due to constraints of raw materials, inadequate modernization and difficulties in marketing. Handloom weaving is a traditional ocupation of the rural people in Meghalaya, particulrly of Garo hills. it is an important cottage industry palying a vital role in the socio-economic development of the state. The weavers of

Meghalaya are women-folk not professional, but seasonal workers. The handloom fabric produced, constitutes mainly of Garo Dakmandas. Khasi Jainsems, bed covers, bed sheets, shawls, side bags, etc.

Handlooms and handicrafts of the state can be developed on commercial lines, but rich though in the designs and colours of the region, there has not been much of adaptation of designs and colour schemes to make the fabric attractive and saleable in other parts of the country. Moreover, crafts and craftsmanship available, generally tend to remain secluded without any interaction with the modern requirements of the developing society. Here the people weave their own clothes for personal use and not for commercial purposes. Thus, industrial development appears to be bogged down with a number of difficulties and a sincere attempt should be made to improve the situation.

Agriculture

The basic wealth of the nation depends not only in its gold reserves, but on the products of the resources which feed us, shelter us, and with which we trade. These are soil and land resources which are most important for our existence. Their proper and optimum utilisation is vital to the economic progress.

Meghalaya is heavily dependent on agriculture (and the age old practice of the region is jhumming). It is our endeavour to study what is the driving motive of the state in this sector. It is to increase productivity by keeping the socio-economic and cultural aspects of the tribal society in tact, or is it to bring about a change in this socio-economic and cultural condition of the people ?

Productivity can be increased by the use of better inputs and also by sophisticated farm implements; at the same time the problem of jhumming which might in the near future make this land fertile and barren is also a gigantic problem for the state to solve. Increase in productivity may be considered in this respect a short-term plan in comparison to the long term programme of trying to persuade the people to give up their heritage which is intrinsically linked with jhumming.

Although agriculture is the mainstay of the people of the state, certain conditions prevailing in this region reveal a set of ecological, production and socio-economic constraints affecting its development. Dominated entirely by shifting cultivation, the production of crops leaves a wide gap between the potential and actual. This view is supported by the move-meent of foodgrains into the state for ensuring survival of the the people of this remote area.

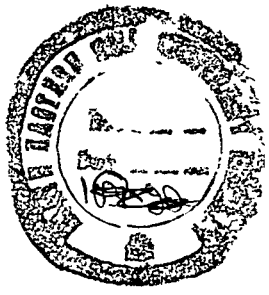
Some of the principal ecological constraints are the heavy rainfall and the practice of jhumming which leaves large areas uncovered and results in the draining of the fertile top-soil and lowering the productivity of the soil. Among the production constraints is the absence of good-seeds, fertilizer, technology, pest control, soil conservation and water management, irrigation facilities as well as post harvest technology. The socio-economic constraints comprise of risk and uncertainty, shifting character of land utilization, inadequacy of knowledge, barriers of traditional attitudes, inadequacy of rural credit system and non-existence mrketing institutions of the geographical area is available for cultivation.

The method of cultivation in this hilly region, is for the most part based on a primitive type of cultivation known as jhumming, or shifting cultivation. This is done by clearing the jungles and burning them for the cultivation of paddy, maize, millets, etc. The socio-economic problems associated with this primitive techniques of agricultural production are many and yet because this has been the way of life for most of the people of this region. It has become a difficult task to persuade them to give it up and follow a more settled type of cultivation. The problem that come up with jhumming are numerous. The cutting of rich forests affects the forest

resources of the state and in the hill slopes thus bared to the vagaries of nature soon lose their fertility and with the problems of a growing population we find that the jhum cycle is gradually narrowed to 3-4 years and the land is hardly able to recoup the lost fertility before the next jhumming season.

Thus, the state of Meghalaya presents an interesting development scenario. This interest has been further accentuated by the fact that theoretical assumptions and explanation of the spatial phenomena of development are easily explained through the state's geography and people.

Though the state has not reached that use of development, one theoretically should like to associate or which can contrasted with other developed serious criteria and its economic transformations. Geographical change has been significant. It amply illustrated the ambiguity of quantitative aspects rather than the quantitative aspects of development that is often emphasised in present day palnning.



Characteristics of the Study Area

Geography is the study of spatial variations. This idea idea calls for the understanding of the basic features of any region or area before one tries to comprehend the compact of compact of these phenomena on the different types of the activities (in regards the environment). For this reason, the physical as well as the non-physical features of the State is briefly discussed.

The state of Meghalaya is situated in the North-Eastern Region of India, between the Brahmaputra valley in the north and the Bangladesh plains in the south. It has a total geographical area of 22,489 km^2 and is divided into 7 districts and 30 community development blocks. It has a total population of 17,60,626 (1991 census) with an average density of 78 persons per square kilometers. More than 72.54 per cent of the total population is engaged in agricultural activities. The level of development in the state is low.

The districts and even the sub-divisions were found to be too big to supervise, implement and manage developmental activities in the state. So, in order to carry out the development activities in a more practical and meaningful order the whole state was divided into a number of community development blocks. At present there are 30 blocks in the state. They are:

Name of the District	Names of the Community Development Blocks
1. Jaintia Hills	1. Laskain 2. Khliehriat 3. Thadlaskein 4. Amlarem
2. East Khasi Hills	1. Mawryngkneng 2. Mylliem 3. Mawphlang 4. Pynursla 5. Shella-Bholaganj 6. Mawsynram 7. Mawkynrew
3. Ri Bhoi	1. Ri Bhoi Area 2. Nongpoh
4. West Khasi Hills	1. Mairang 2. Mawkyrwat 3. Nongstoin 4. Mawshynrelt
5. East Garo Hills	1. Resubelpara 2. Dembo-Ronsong 3. Sonsak 4. Samanda
6. West Garo Hills	1. Rongpara 2. Betasing 3. Dambu Aga 4. Rongram 5. Dadengiri 6. Selsella
7. South Garo Hills	1. Cholpot 2. Dalu 3. Zikzak

Thus, at present the whole state of Meghalaya is divided into 7 districts, 10 sub-divisions and 30 community development blocks (Fig. 2.1).

The features like Geology, relief drainage, climate and natural vegetation of an area play very important role in shaping the economic life of the people. The characteristics of these features are briefly discussed below:

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 Archean gneisses 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.

The Archean 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 parts of the Mawsynram-Sohra region.

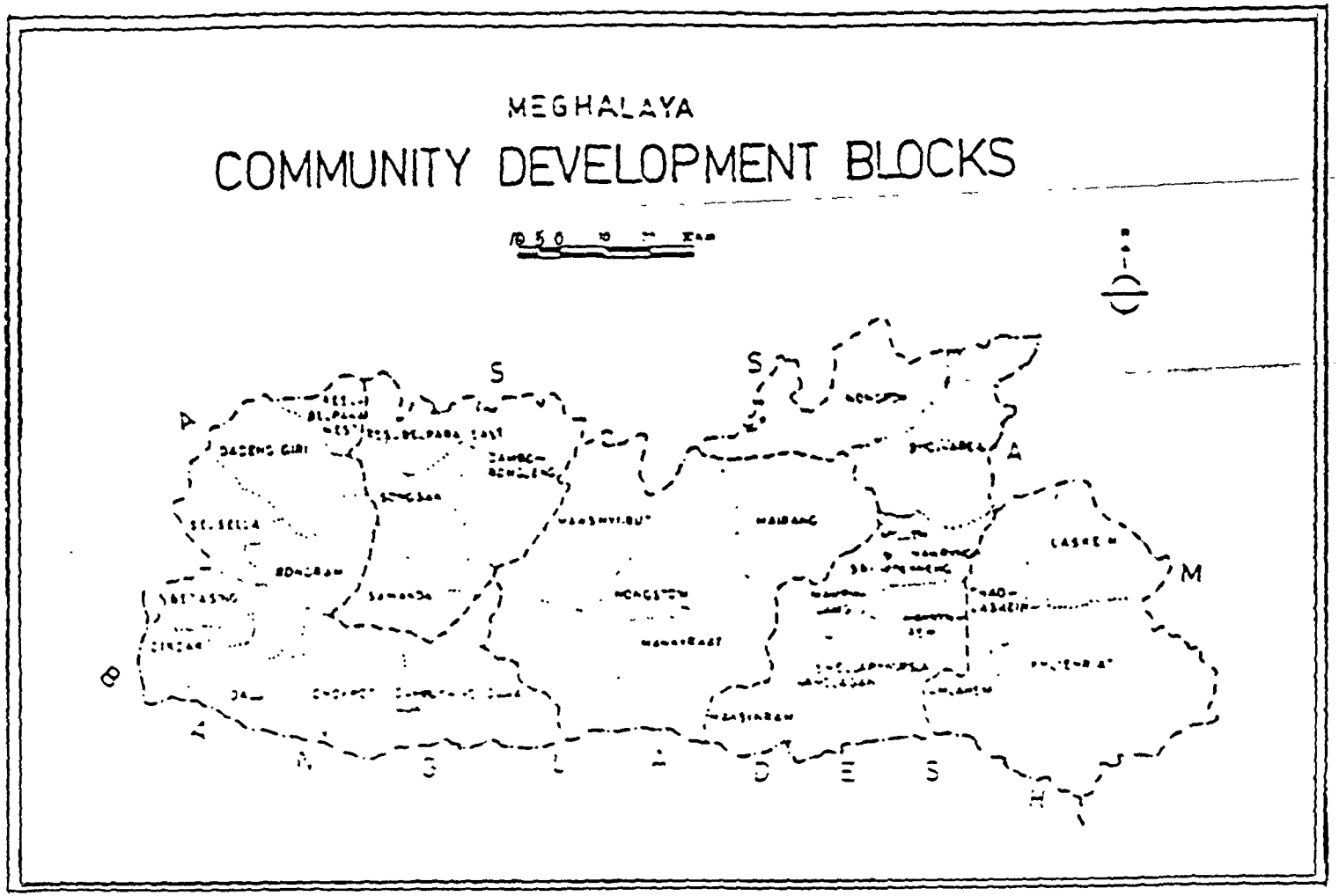


Fig. 2.1

The Shillong group of rocks cover mostly the area in and around Shillong city region, granite rocks are exposed in isolated patches in the midst. These rocks are significantly exposed in a narrow elongated belt from north to south, rather than east to west which is the general alignment 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 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 west Khasi Hills. The Jaintia group besides occupying the major portion of Jaintia Hills district, are also found in a narrow belt shielding from Mawkyrwat in the west Khasi Hills district to Tura region in the west Garo Hills district.

South of the Jaintia series lies the Garo group which consists of three formations viz., the Samsang, the Baghmara and the Chengapara 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 other 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 riverine areas of the state. However, these constitute an insignificant percentage of the state's area (Fig. 2.2).

Relief

The state of Meghalaya is characterized by physiographic diversity. The relief features vary from low lying alluvial plains to hill ranges whose heights exceed 1500 m. Meghalaya plateau which covers about 85 per cent of the state's total geographical area consists of the Garo Hills, Khasi Hills and Jaintia Hills. The plateau is believed to be a detached block and an extension of the Deccan plateau. It is separated by the Malda gap of Bengal and Raj Mahal Hills. The height of the plateau varies from 200 m ASL in the north to 1964 m in its central part. The plateau is highly dissected. It has an irregular terrain in its western and southern side. The southern face of the plateau is marked by deep gorges, spurs and abrupt slopes. Consequently, the northern face of the

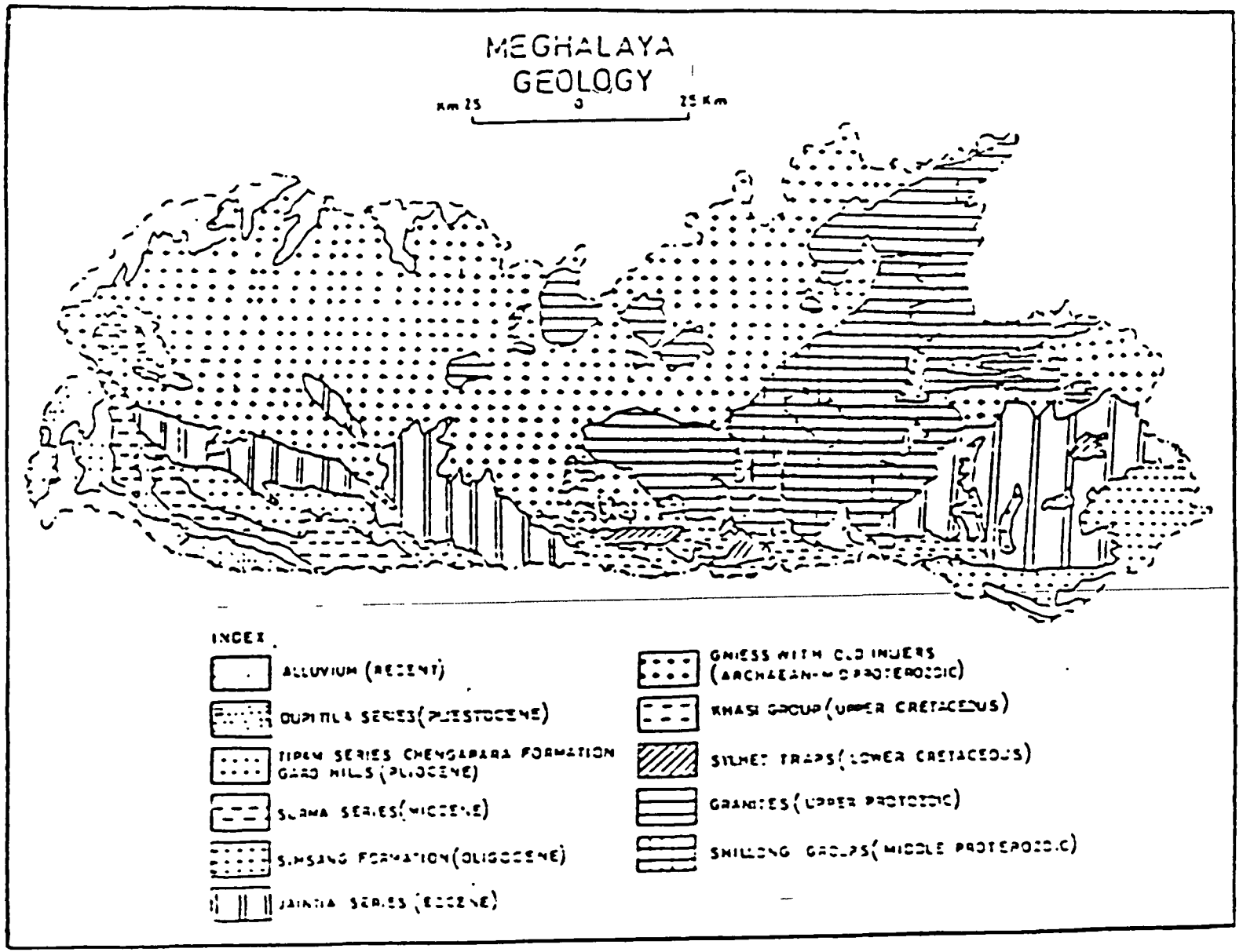

MEGHALAYA
GEOLOGY
Km 25
0
25 Km
INDEX
ALLUVIUM (RECENT)
DUPITILA SERIES(PLEISTOCENE)
TIPAM SERIES CHENGARARA FORMATION GARO HILLS (PLIOCENE)
SURMA SERIES(MIOCENE)
S.MSANG FORMATION(OLIGOCENE)
JAINTIA SERIES (EOCENE)
GNEISS WITH OLD INDERS (ARCHAEAN-M PROTEROZOIC)
KHASI GROUP(UPPER CRETACEOUS)
SYLHET TRAPS(LOWER CRETACEOUS)
GRANITES(UPPER PROTOZOIC)
SHILLONG GROUPS(MIDDLE PROTEPOZOIC)

Fig. 2 2

plateau is marked by foothills that gradually merged with the alluvial plain of the Brahmaputra valley. In its southern portion, the plateau is characterized by steep escarpments and deep valleys overlooking the Sylhet plains of Bangladesh. A narrow strip of plain land borders the northern, western and southern parts of the plateau. These low lands are drained by the rivers whose sources are in the central part of the plateau. Thus, forming a major impediment in the economic development of the state (Fig. 2.3).

Physiographically, Meghalaya can be divided into three divisions (Fig. 2.4); these are -

1. Western Meghalaya (Garo Hills)
2. Central Meghalaya (Khasi Hills)
3. Eastern Meghalaya (Jaintia Hills)

(In other words nearly 17.34 per cent of the area is above 1200 m contour; 30.96 per cent between 600-1200 m; 19.05 per cent between 300-600 m; 16.11 per cent between 150-300 m and 16.54 per cent below 150 m contour. This indicates the level and nature of complexity in the man-environment relationships in the state).

1. Western Meghalaya (Garo Hills) -

The ranges in these regions have the general allignment of the north to south . The average elevation varies from 450 m

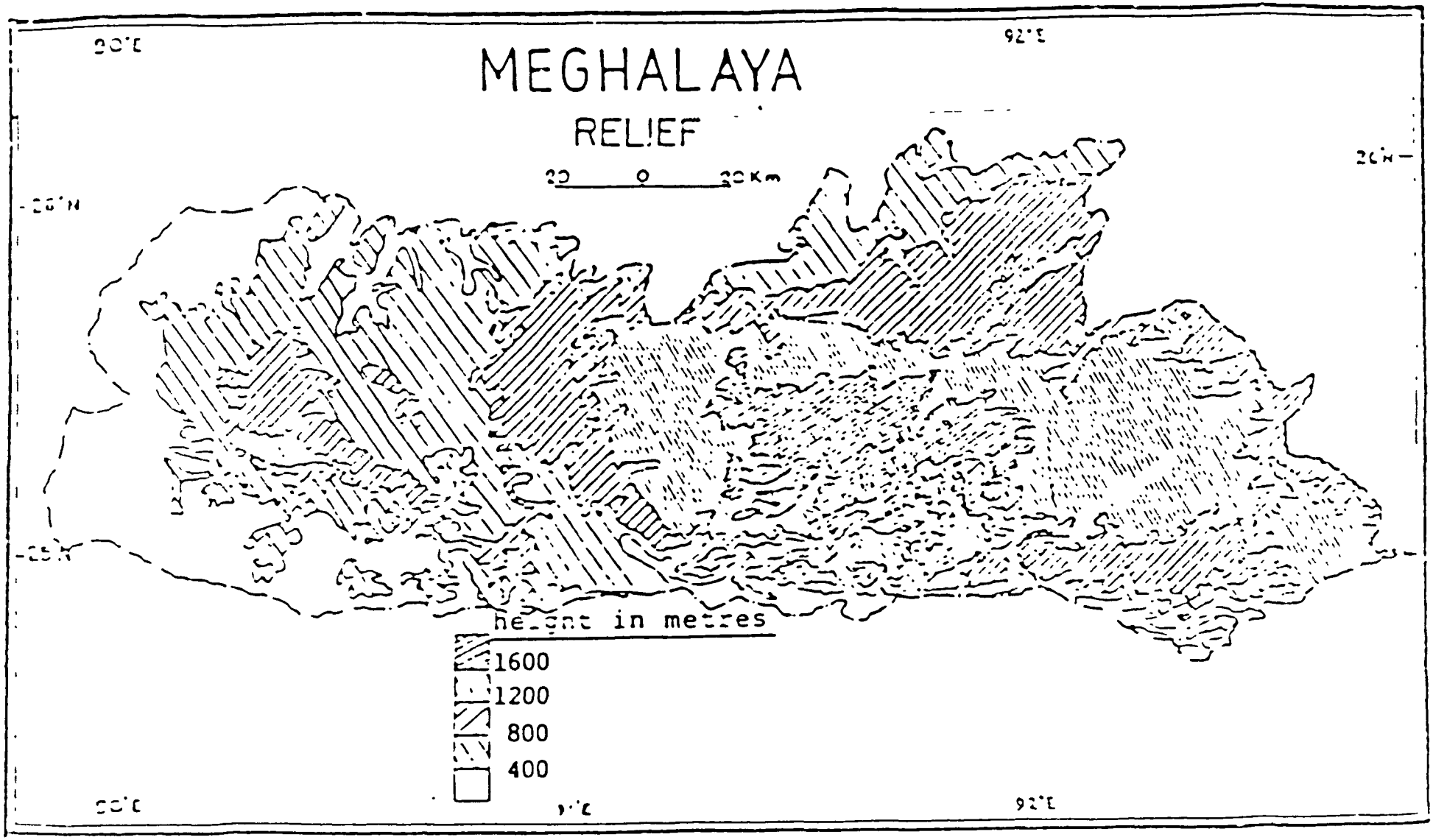

MEGHALAYA
RELIEF
30 0 30 Km
height in metres
1600
1200
800
400

Fig. 2 3

to 600 m ASL. The principal ranges are the Tura Range and Arabela Range. Nokrek (1411 m) in the Tura range is the highest peak of this region.

2. Central Meghalaya (Khasi Hills) -

The Khasi Hills is further divided into three parts (depending on their physiographic characteristic). They are

(a) Low Hills of the Northern Belt
(b) Central Upland Zone
(c) Southern Belt

(a) Low hills of the Northern Belts -

This area is locally known as Ri Bhoi. This region lies in the rain shadow area of the central plateau and reaches a maximum height of about 1500 m.

(b) Central Upland Zone -

These high lands are locally known as Ri Khasi or Ri Lum. The Shillong Peak (1964 m) which is the highest peak of the state lies in this zone. Most of the hills in this sub-region have an east west allignment. The central portion of the plateau acts as water parting. As a result of which a number of rivers and streams either flow northwards towards

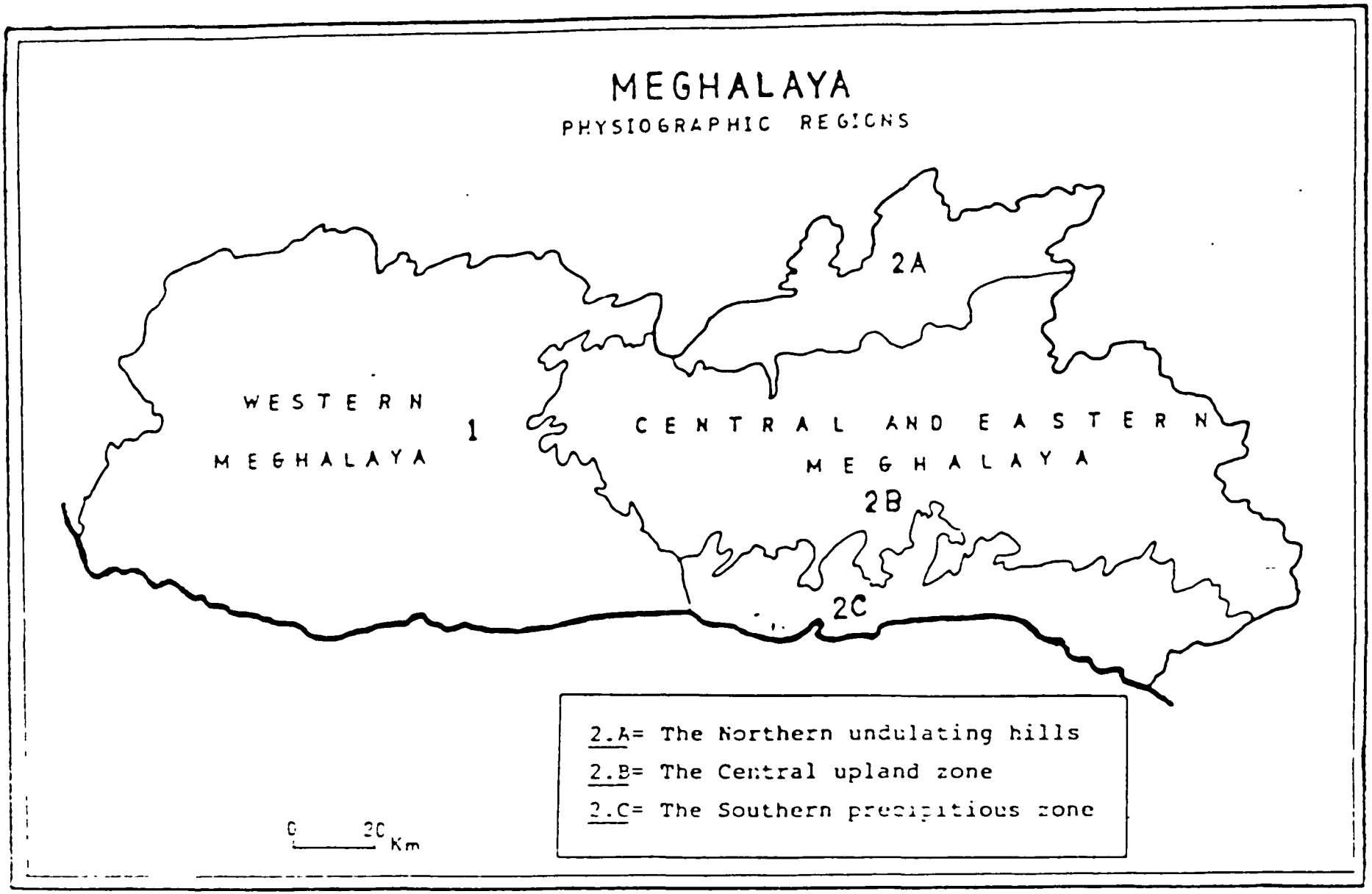

MEGHALAYA
PHYSIOGRAPHIC REGIONS
WESTERN MEGHALAYA
1
2A
CENTRAL AND EASTERN MEGHALAYA
2B
2C
2.A= The Northern undulating hills
2.B= The Central upland zone
2.C= The Southern precipitious zone
0 20 Km

Fig 2.4

Brahmaputra or southwards towards Meghalaya-Surma in Bangladesh.

(c) Southern Belt -

This area is locally known as Ri War. The hills in this belt have north-south alignment. Structural platforms are evident in many places(due to constant erosion of the face of the escarps by wind and rain water) and form karst topography.

3. Eastern Meghalaya (Jaintia Hills) -

The central portion of this sub-region is marked by east-west alignment. The southern portion is dominated by steep escarpments that are continuation of the central Meghalayas southern belt. The average altitude of this sub-region is about 1200 m ASL and Marangksih range (1601 m) is the highest range of this area.

Climate

The climate of Meghalaya is influenced by the south-west monsoon and the alternating pressure cells located in the northwest India. Within the state, climate is modified by the distribution and elevation of physical relief.

The central uplands (above 1500 m ASL) is the coldest area of the state. The temperature is higher in the Jaintia and Garo Hills. Area lying to the north and south of the central uplands experience comparatively warm climate. December and January are the coldest month. During March and April, the entire plateau experiences slow winds due to the north-ward movement of jet streams from the Gangetic plain to the Tibetian plateau. (its summer location). This consequently led to the development of the low pressure in the Tibetan plateau. Rainy season generally starts from the third week of May and continues right upto the middle of October. During October and November the climate is cool and the temperature starts declining.

In the central uplands of the Khasi Hills, the average temperature drops to 5°C during winter and in the summer the average temperature rises upto 24°C. The temperature decreases with increasing elevation and in the low altitude areas of the Garo Hills, the average temperature in the summer is around 29°C and the average winter temperature is about 18°C.

Table 2.1 shows the mean monthly temperature of some selected centres in the state during 1983.

Table - 2.1

Mean Monthly Temperature (Degree Centigrade) in selected Centres in 1983

Months	Selected Centres				
	Shillong	Cherrapunji	Nongstoin	Jowai	Tura
January	9.4	10.6	17.0	16.0	13.5
February	10.6	11.7	15.0	11.5	16.5
March	15.3	20.0	18.0	16.0	19.2
April	18.1	17.5	17.0	18.0	19.2
May	18.9	18.6	21.5	18.0	18.7
June	21.4	20.7	24.0	22.0	20.5
July	21.0	20.5	23.5	22.5	20.3
August	22.2	20.6	22.5	21.5	20.0
September	19.9	20.0	19.5	21.5	20.0
October	18.9	19.9	21.0	21.0	19.4
November	10.5	11.8	18.0	18.0	17.5
December	10.5	11.7	17.0	18.0	16.0

Source : Meteorologist, Guwahati and Agriculture Department, May.

Thus, on the basis of weather conditions in the state, the whole year can be divided into the following four distinct seasons.

(a) The Cold Season (December to February)
(b) The Worm Season (March to April)
(c) The Rainy Season (May to September)
(d) The Cool Season (October to November)

The amount of rainfall in the state has a significant variation over time and space. The maximum average rainfall (1270 cm) per annum is recorded in the Mawsynram - Cherrapunji - Pynursla belt in the East Khasi Hills District. The amount of rainfall diminishes uniformly on the backward side of the rain shadow on the adiabatic rate. On the eastern region, rainfall is slightly less and it is lowest in the western part of the state (Fig. 2.5).

The average annual rainfall in the Garo Hills varies from 250 cm in the north to 700 cm in the south. The average annual rainfall in central and eastern Meghalaya is 770 cm of which more than 75 percent falls during the period from May to September. In this part also the average annual rainfall decreases from 1142 cm in the south to less than 200 cm in the northern fringes.

Table - 2.2, shows the amount of average annual rainfall experienced at different centres of the state.

MEGHALAYA

DISTRIBUTION OF TEMPERATURE

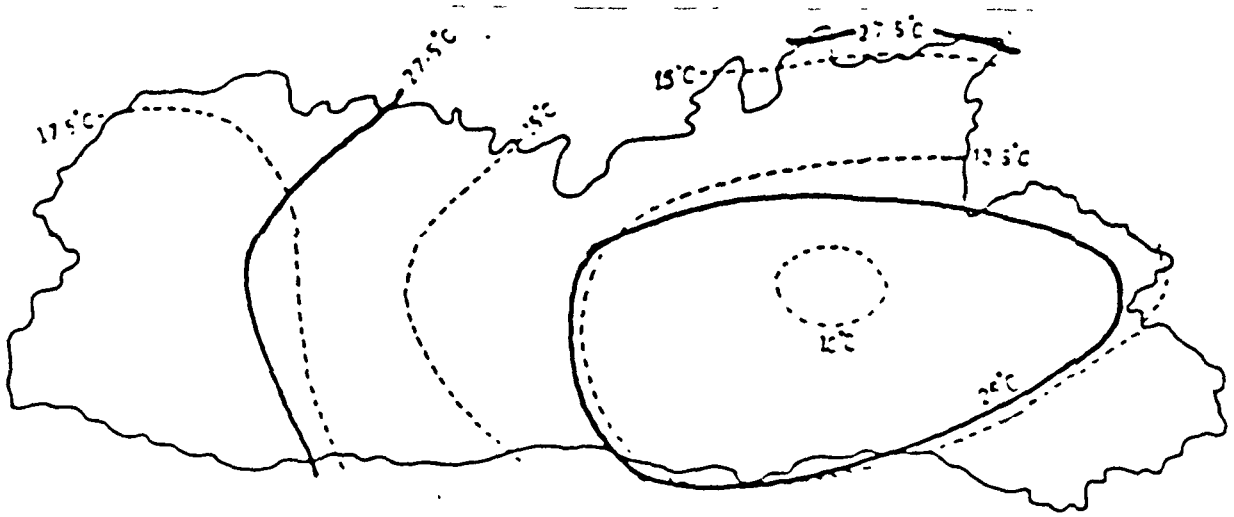


Fig. 2.5

Table - 2.2

Average Annual Rainfall in Meghalaya at Selected Centres (1980-83)

Centres	1980	1981	1982	1983
Shillong	1923	1995	2215.2	2454.7
Cherrapunji	9123	9117	10467.9	9772.9
Jowai	6184.4	9738.9	9245.9	12163.1
Tura	NA	NA	NA	NA
Nongstoin	3170.8	3642.4	4236.1	4200.1

Source : Meteorologist, Guwahati.

The middle portion of the northern proper and the northern fringes of the plateau also receives mediterranean type of rain during the winter caused by the retreating monsoon winds under the influence of the north-east trades (Fig. 2.6)..

Drainage

The central portion of Meghalaya plateau (east - west direction) being higher in altitude than the surrounding regions, forms the main water divided between the Brahmaputra and the Meghna-Surma systems. Rivers flow in all directions from this part. The northward flowing rivers from flat plains whereas the south flowing rivers while descending to the plains from deep valleys on the faulted surfaces. The drainage pattern courses of the rivers along joints and faults.

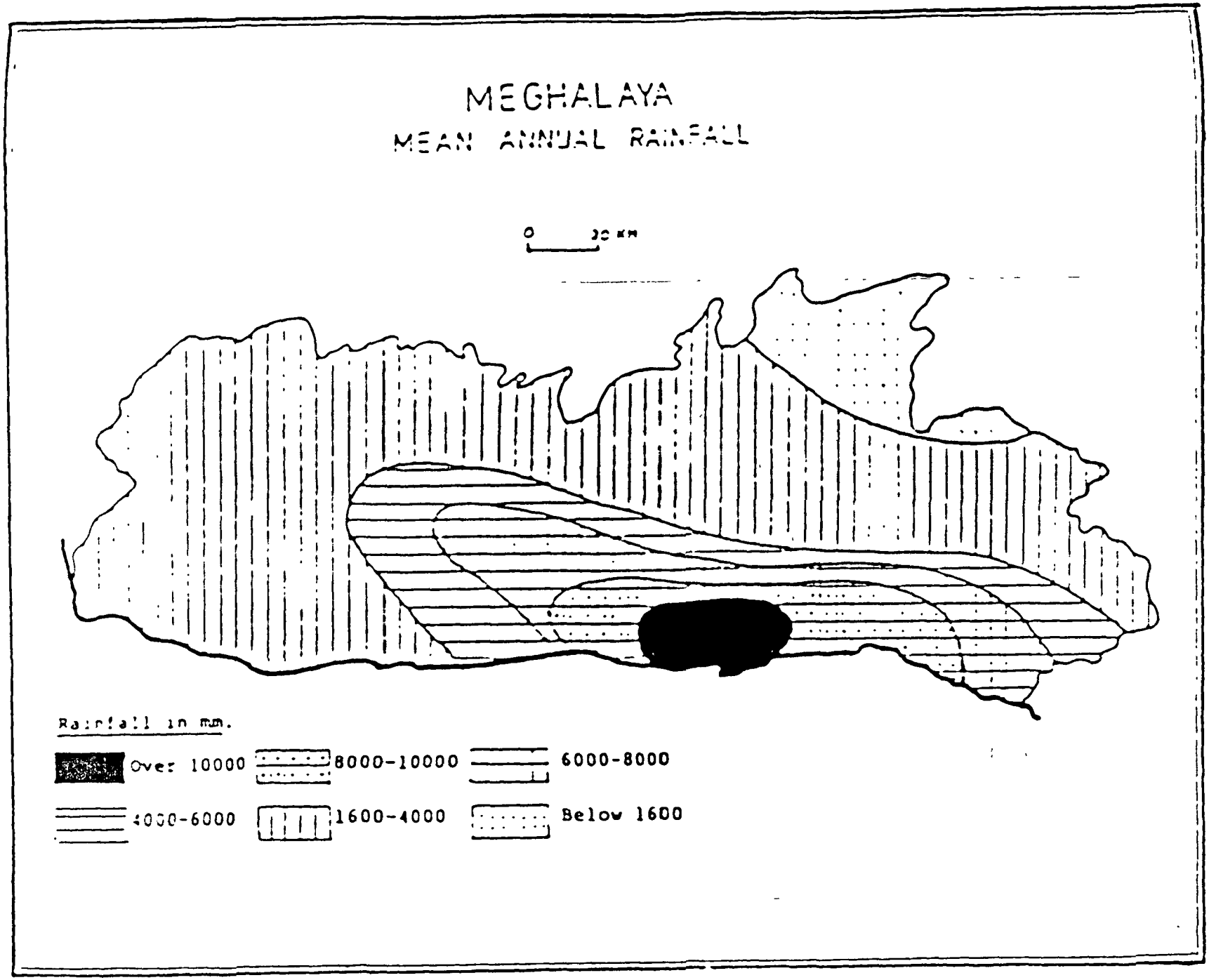

MEGHALAYA
MEAN ANNUAL RAINFALL
0
Rainfall in mm.
Over 10000
8000-10000
6000-8000
4000-6000
1600-4000
Below 1600

Fig. 2.6

The northern part of the plateau, devoid of any sedimentory cover, is marked by long incisive valley formed due to head ward erosion along joints in the gneissic rocks and granites. The limestone covered country over the southern Garo, Khasi and Jaintia Hills represent a typical karst topography[1].

Some of the important rivers of the state are Kynshi, Umriew, Umrilong, Umngi, Piyangang Umlang, Umiam, Umkhain, Umkhu, Degaru, Kynshaing, Mawpa (all in the Khasi Hills); Lubha, Myntang and Myntdu (all in Jaintia Hills) and Simsang, Nitai, Blurgoi, Krishnai, Dudhnoi, Gorai, Jinari, Rengsi, Jingram, Darang, Bandra (all in Garo Hills). Of these Simsang in the Garo Hills is Navigable only for about 30 kms and some other rivers have very negligible length suitable for Navigation.

Soil

Four distinct categories of soil types can be found in Meghalaya (Fig. 2.7). These are :

(a) Red Loamy Soil
(b) laterite Soil
(c) Red and Yellow Soil
(d) Alluvial Soil

---

1. Geological and Mineral Resources of Meghalaya, Pt. IV, GSI, December, 1974,, p. 72.

Red Loamy Soil can be found in the Central Garo Hills and Upland Zones of the Khasi and Jaintia Hills. They are rich in organic and nitrogen content, but are deficient in phosphate and potash. This type of soil is suitable for rice, potato and fruit cultivation.

Laterite Soils can be found in the northern parts of the state. These are present from east to west in between the belt of alluvial soils in the north and red loamy soils in the south. This type of soil have very limited potential for agricultural activity and as such are found in areas of large scale mining activities.

Red and Yellow Soils are found in a belt running from east to west in the southern part of the state. The soils are fine textured and are suitable for rice and cultivation of fruits.

Alluvial Soil occurs all along the northern, western and southern peripheries of the state. These are deposits of rich alluvium washed away from the higher courses of the rivers and steams. These are being used for the cultivation of rice, jute and fruits.

Terrain plays an important role in determining the character of the soils. On this basis, the soils of the state can be grouped under two broad categories. These are-

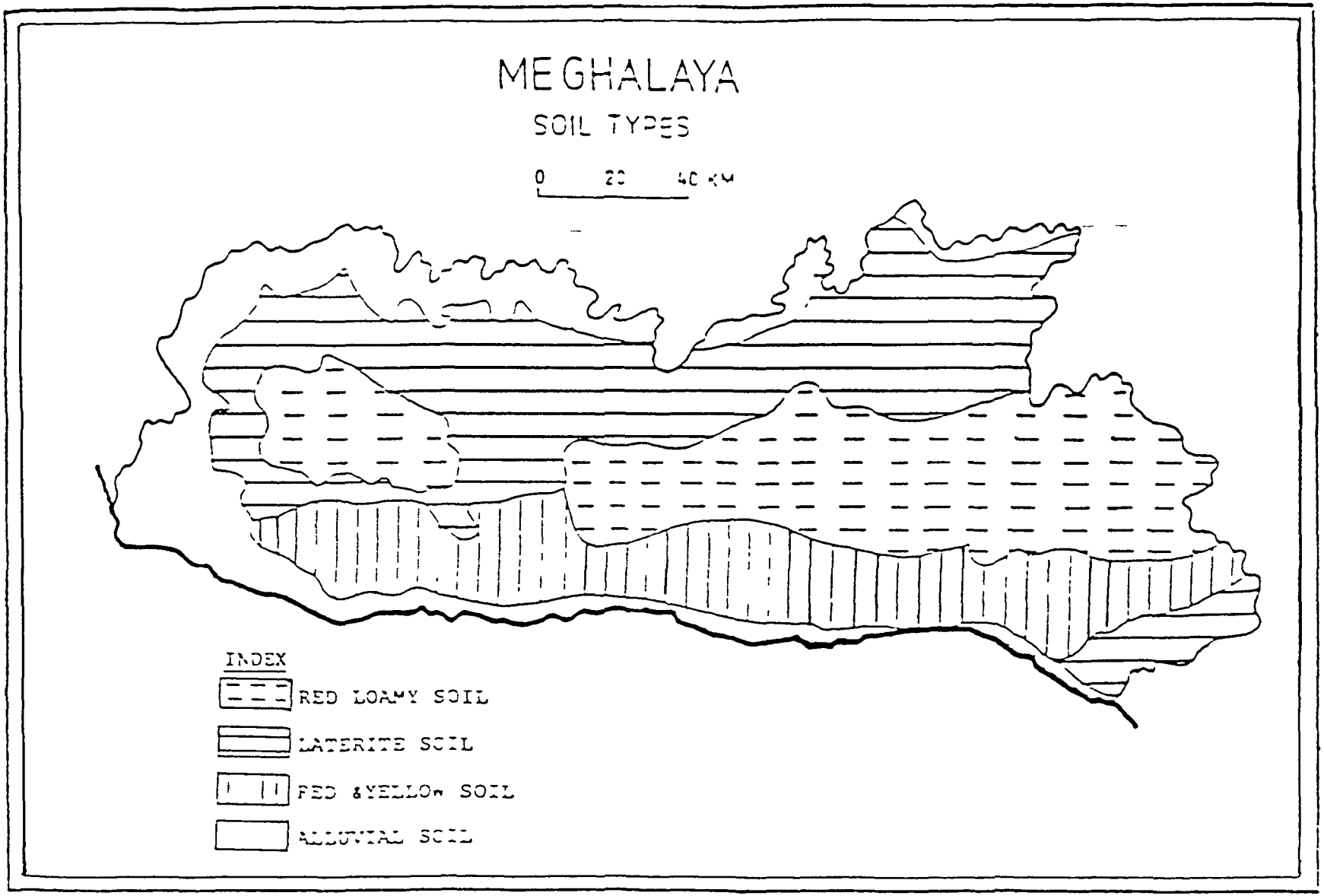

MEGHALAYA
SOIL TYPES
0 20 40 KM
INDEX
RED LOAMY SOIL
LATERITE SOIL
RED &YELLOW SOIL
ALLUVIAL SOIL

Fig 27

(1) Hill soils
(2) Plain Alluvium

1. Hill Soils - On the hill slopes soils are often thin, light in colour, less clayey and less fertile.

2. Plain Alluvium - In the lowland and river valley, soils are more mature, thick, dark in colour, more clayey and more fertile.

The problem of soil erosion is very acute in the hills like all other hilly areas of the region. The situation is further aggravated by two other factors. These are :

(i) Jhum or Shifting Cultivation and
(ii) Existing Land Tenure System.

Shifting cultivation has led to heavy soil erosion. large scale deforestation and heavy precipitation have made the problem of soil erosion very acute.

The existing land tenure system (under which the land belongs to the owner) does not allow the State to intervene in order to conserve and reclaim agricultural land.

Natural Vegetation

Meghalaya is endowed with a rich variety of natural vegetation ranging from tropical mixed forests to sub-temperate pine forests (Fig. 2.8).

Mixed tropical forests are found upto an altitude of 900m on the northern and southern parts of the central uplands. The areas above 1500 m is characterized by the presence of temperate forests of pine trees. Oaks and rhododendrons are common at higher altitudes. On the middle levels between 900m and 1350m, sub-tropical forests are found. In the lower parts of the central uplands, grasslands are found.

The total tree-covered area in the state was about 16,511 Sq. Km or 73.6 percent of the total land area of the state. However, it is it is important to note that these tree-covered area include grasslands and shrubs which are of very little economic importance.

Wastelands - both cultivable and uncultivable accounts for about 8,150 Sq. Km or about 36.37 per cent of the total geographical area of the state. Primary causes of barrenness which is prevalent in the wasteland areas of the state are jhum, fire hazard, heavy precipitation, geology of rocks and nature of soil. Unplanned and random destruction of forests have made the problem more complex.

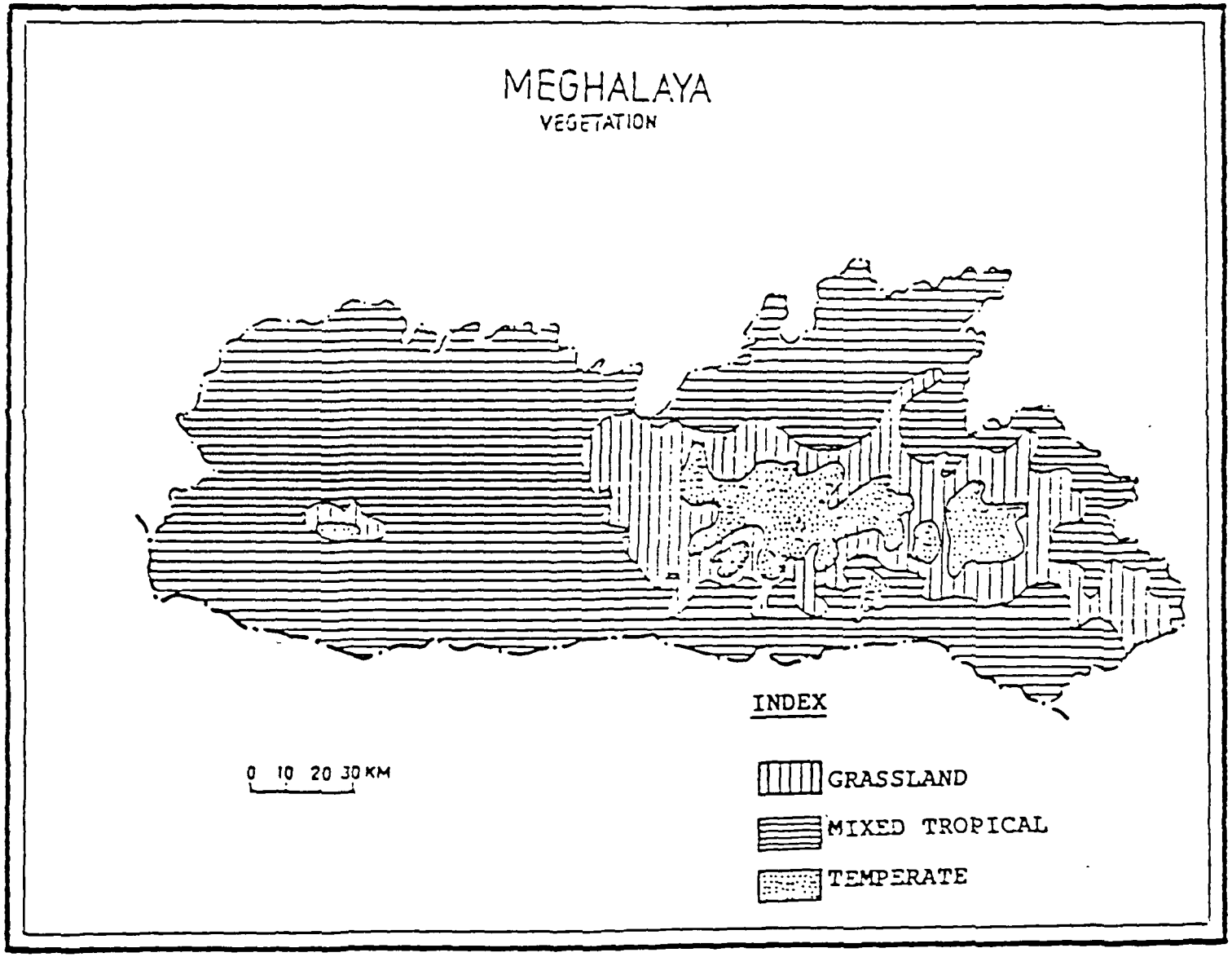

MEGHALAYA
VEGETATION
INDEX
0 10 20 30 KM
GRASSLAND
MIXED TROPICAL
TEMPERATE

Fig. 2.8

Population Characteristic

Meghalaya is an 'area of relative isolation'. It is mostly inhabited by a population that has been termed as the tribals. About 80.58 percent (Census, 1991) of the total population of the state belong to the category of 'Scheduled Tribes'. The three major tribes of the state are the Khasis, the Jaintias (the Pnar) and the Garos. The total population of Meghalaya is 17,60,626 (1991 Census). It means that Meghalaya, has 0.21 percent of the total population of the country. Out of the total population in the state, there are 9,04,308 males and 8,56,318 females. Thus, the sex ratio (number of females per 1000 malles) in the state is 947 (in 1991) which has declined from 954 (in 1981). Average density of the population in the state has increased from 60 persons per Sq. Km (in 1981) to 78 persons per Sq. Km (in 1991). The density of population of India in 1991 is 267 as against 216 in 1981. Thus, compara- tively the state is sparsely populated. However, there is a marked variation of population density ranging from 41 persons per Sq. Km in the West Garo Hills District to 126 persons per Sq. Km in the East Khasi Hils district.

Majority of the population of Meghalaya (9,43,547 out of the total population of 17,60,626) live in the rural areas and they constitute 81.31 percent of the total population of the state.

The urban population of Meghalaya as per the 1991 census, is 3,29,079 which was 2,41,333 during 1981 census, which means that the urban population of the state as percentage to the total population of the state rose from 18.07 to 18.69 per cent during the last decade.

It is very important to find that, except in East Khasi Hills district, where the share of urban population is 35.02, all other districts are marked by comparatively very high share of rural population.

The percentage of literate persons, which is considered to be an important indicator of development is comparatively low in the state. According to the 1991 Census, the percentage of literate persons in the state is only 48.26 percent compared to the 52.11 percent of the country as a whole. The percentage of literate male in the state is 41.72 per cent and that of the female is 36.45 percent.

Population

Population of the state according to the 1991 census was, 17.60 lakhs with an average density of 78 persons per square kilometer. Following are the important characteristics of the population of the state. These are -

(i) Of the population of 17.60 lakhs, 9.04 lakhs were males and 8.56 lakhs were females. Thus, indicating a sex ratio of 948 females per 1000 males.

(ii) Of the total population, 14.31 lakhs were in the rural area and 3.29 lakhs in the urban areas. Thus, percentage of urban population in the state was 8.41%.

(iii) The annual birth and death rate was 30 and 8.3 per 1000 population respectively.

(iv) 80.98 % of the total population was constituted by Scheduled Tribes (80.58%) and Scheduled caste (0.41%); 14% of whom were in the urban areas.

(v) Of the total population, 43.44 % was constituted by main workers category; 2.48% by marginal workers and 54.08% by non-workers.

During the period 1901-91, the population of the state grew from 3,40,525 to 17,60,626; thereby registering a growth of about 400% with an average annual growth rate of 17.12%. Within this period, there were fluctuations as in 1911-21 and 1941-51, when growth was decline. This decline was due to the epidemic like Kal-Azar and Cholera as well as due to territorial adjustments. The following table indicates the percentage decennial growth of population in the state.

Table - 2.3

Percentage Growth Rate of Population in Meghalaya 1901 to 1991

Decade	Percentage Growth
1901 - 11	15.71
1911 - 21	7.21
1921 - 31	13.83
1931 - 41	15.59
1941 - 51	8.97
1951 - 61	27.03
1961 - 71	31.50
1971 - 81	31.30
1981 - 91	32.54

Thus, from 1951 onwards, the state indicated the growing trend of population. Some of the reasons for this growth can be stated as-

(a) Natural increase in population
(b) In-migration that was the result of establishing central and regional institutions in the state.
(c) Until 1972, Shillong was the capital of the Assam province. In 1972, Assam capital was shifted to Dispur.
(d) Large scale influx of immigrants and refugees from Bangladesh.

This became abundantly clear from the growth trend of population in the state from 1951 to 1991 as well as through the distribution of population in the urban and rural sectors

of population. As noted in the table, it is obvious that sudden increases in the population have been due to influx of refugees and migrants.

Table - 2.4

Decennial Growth of Population in Meghalaya :1971-91

State/ District		Total Population			Decennial Variation in Percentages		
		1971	1981	1991	1961-71	1971-81	1981-91
	T	1011699	1328343	1760626	31.50	31.30	31.80
Meghalaya	R	864529	1088842	1431547	32.62	25.95	30.80
	U	147170	239501	329079	78.59	62.74	36.36
	T	113562	155993	219186	38.24	37.35	40.14
Jaintia	R	104633	143085	198473	37.77	36.75	38.33
Hills	U	8929	12908	20713	44.09	44.56	60.28
East Khasi	T	380650	506687	657160	31.03	33.00	28.50
Hills	R	257898	327617	427054	37.07	27.00	29.17
	U	122752	179168	230106	19.88	45.96	27.27
West Khasi	T	110672	160660	217462	23.87	44.91	34.59
Hills	R	110672	156784	203084	23.87	41.41	28.78
	U	-	3876	14378	-	-	270.57
Shillong UA	T	122752	176064	222273	69.46	43.43	67.54
East Garo	T	102698	135864	189043	31.21	32.29	38.44
Hills	R	102698	131574	177058	31.21	28.12	33.87
	U	-	4290	11985	-	-	179.37
West Garo	T	303917	369139	477775	32.74	21.66	29.17
Hills	R	288428	329880	425878	31.06	14.37	28.88
	U	15489	39259	51897	74.27	153.46	31.58

Both the rural and urban composition of the state's population registered substantial increase. But, it was the urban sector that indicated appreciable increase. It indicated significant changes in the structure and composition of the State's population.

Urban population increased by leaps and bounds till 1961. Shillong Urban Agglomeration was the capital of the undivided Assam. However, by 1971, urban population in the state was concentrated in -

(a) Shillong Municipality
(b) Shillong Cantonment
(c) Mawlai
(d) Nongthymmai
(e) Jowai
(f) Tura

But, between 1971 and 1991, with the emergence of the state (January, 1972) and changes in the number of districts (from two in 1971 to five in 1981 to seven in 1993) new urban centres emerged. These were (a) Madanriting, (b) Pynthor-Umkhrah, (c) Nongstoin, (d) Cherrapunji-Sohra, (e) William Nagar, and (f) Baghmara. In 1971, total urban population of the state was 1.47 lakhs. In 1981, it almost doubled to 2.39 lakhs, giving rise and absolute growth of 62.74%, to 3.29 lakhs in 1991 (nearly 50% absolute growth).

According to the Census classification of towns, Meghalaya did not have any class I town in 1971, despite the Shillong Urban Agglomeration which was treated as a city as it has a population of 2,22,273. By 1991, Shillong Municipality qualified for this by its own population numbers. But the entire Shillong UA, was classed as class I city in 1981. There was no class II town in the state. Tura and Jowai are classed as belonging to the IIIrd group, while Nongstoin and William Nagar were treated as class IV town, Cherrapunji-Sohra and Baghmara was made class V town and there was no town as class VI category in 1991.

Shillong U.A. (Urban Agglomeration), itself had shown appreciable increase from 19.88% in 1961-71 to 40.99% in 1971-81 to 43% in 1981-91. However, towns like Nongthymmai, Mawlai and Shillong Cantonment also indicated substantial growth in the corresponding period. Jowai town has shown only a marginal increase, from 44.09% in 1971-81 to 45.56% in 1981-91. While the increase in the population of Tura had been due to the extension of the city limits.

Table 2.5 clearly illustrates the growth of urban population in the state. Correspondingly, the decennial growth rate of the tribal population has been 29.40%. Region wise, it was 24.50% in the Garo Hills; 29.50% in the Khasi Hills and

36.50% in the Jaintiya Hills. On the other hand, the decennial growth of the non-tribal component of the population in the state was 61.6%. This high rate of growth was due to migration.

Density of population varied significantly throughout the state. It was more or less synonymous with the distribution of the physical relief. The state had an average of 78 persons per Sq.km . Sectorally, the rural density was about 38 persons per Sq.km, compared to the urban density of 3700 persons per Sq.km (Table 2.6).

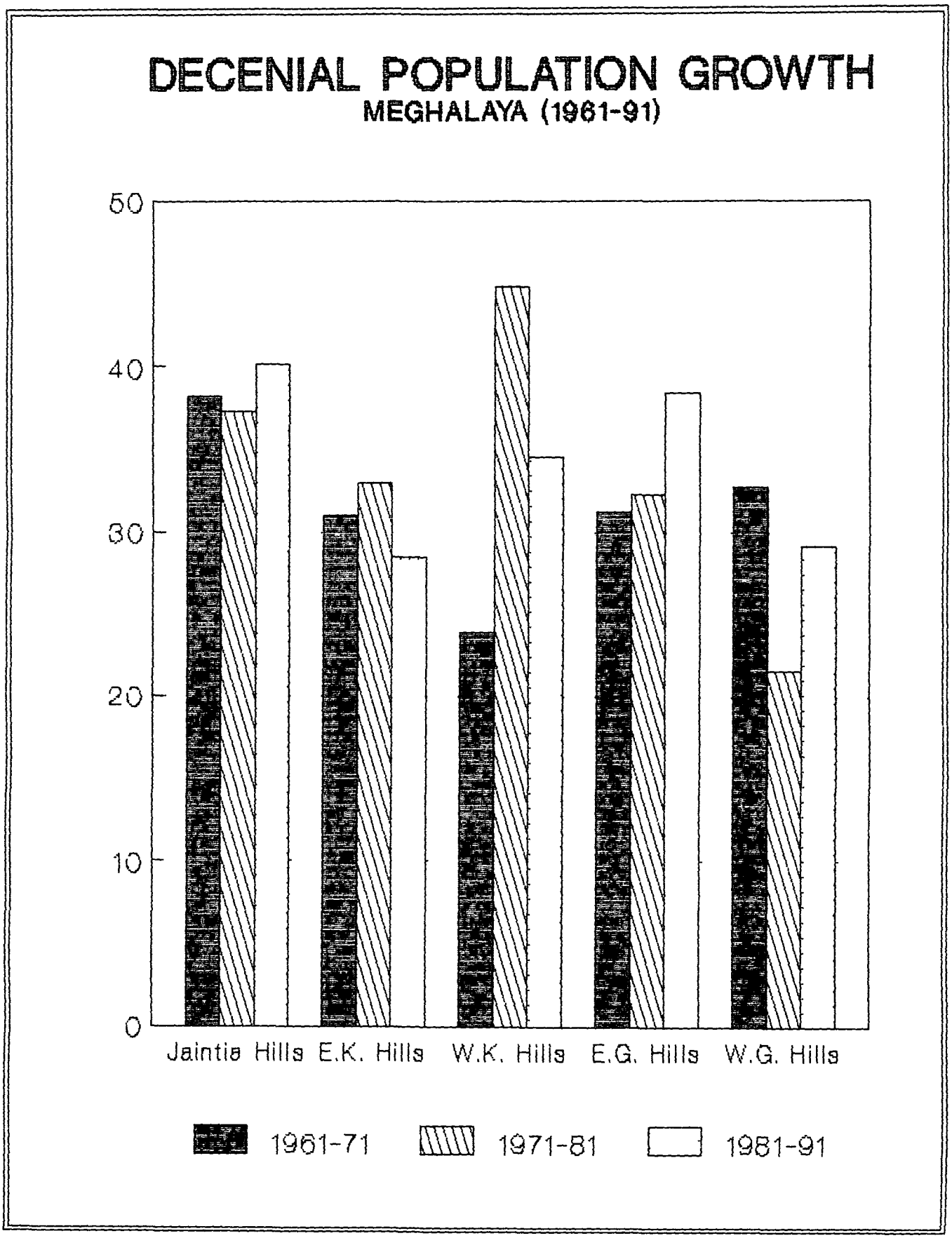

DECENIAL POPULATION GROWTH
MEGHALAYA (1961-91)
50
40
30
20
10
0
Jaintia Hills
E.K. Hills
W.K. Hills
E.G. Hills
W.G. Hills
1961-71
1971-81
1981-91

Fig. 2.9

Table - 2.5

Urban Population Growth in Meghalaya, 1991

Class /UA	Population 1991	Growth Rate (%)		
		1961-71	1971-81	1981-91
1. All Classes	239501	25.27	62.74	
2. Class I	222273	19.88	40.99	67.54
Shillong U.A.	222273	19.88	40.99	67.54
Shillong (M)	130691	21.01	22.83	39.71
Nongthymmai	26816	59.69	33.91	8.14
Mawlai	30442	67.21	42.22	9.25
Pynthor-Umkhrah	14322	-	-	4.35
Shillong (C)	11075	58.32	40.66	3.36
Madanriting	8927			2.71
3. Class II				
4. Class III	66390	74.27	126.81	37.61
Tura	45677	74.27	126.81	13.88
Jowai	20713	44.09	44.56	6.29
5. Class IV	26363	44.09	44.56	222.68
Nongstoin	14378			4.36
Williamnagar	11985			3.64
6. Class V	14053			36.70
Cherrapunji	7833			2.38
Baghmara	6220			3.64
7. Class VI				

Source : Census of India, Series 14, Meghalay, 1991.

Table - 2.6

Population Density in Meghalaya, 1991

State/District	Area in Sq. Km.	Density
		T
Meghalaya	22485	78
Jaintia Hills	3829	57
East Khasi Hills	5196	126
West Khasi Hills	5247	41
East Garo Hills	2603	73
West Garo Hills	5564	86
Shillong U.A	25.40	8751
Shillong Municipality	10.64	12283
Shillong Cantonement	1.84	6019
Mawlai	6.14	4958
Nongthymai	2.93	9152
Pynther-Umkhrah	2.02	7090
Mandanriting	2.11	4231

The regional density pattern showed a district variations that can be identified as -

(a) areas of sparse population with less than 35 persons per Sq. Km density. This includes northern parts of the East Khasi Hills and Jaintia Hills district excluding Dawki and the south-eastern East Garo Hills districts.

(b) areas of sparse population between 35-45 persons per Sq.km density. This includes central and south eastern Khasi Hills, west Khasi Hills districts and the Mauzas II, III and IV in the garo Hills.

(c) areas of moderate to heavy density population of more than 180 persons per Sq.km that includes north - western and southern peripheris of the east and west Garo hills district.

Thus it has been observed that areas with a density of more than 180 persons per Sq.km cover an area of 2.5% of the total geographical area of the state, but has more than 35% of the total population of the state. About 95% of the area gas a density of less than 45 persons per square kilometer but have more than 75% population of the state.

Population Composition

There are two major groups - tribal and non - tribal population. The tribal population of the state accounts for 80% of the total population of the state.In the interior of the state the percentage increase ti 97.3% in Garo hills, 77.4% in the Khasi hills and 95.1% in the Jaintiya hills. The following tables gives the percentage if tribal population:

Table - 2.7

Percentage of Tribal Population to Total Population in Meghalaya, 1991

District/Units	Percentage to Total Population
Jaintia Hills	**95.50**
1. Laskain	99.28
2. Khlierhriat	94.63
3. Thadlaskein	99.16
4. Amlarem	88.27
East Khasi Hills	**78.39**
1. Mawryngkreng	98.42
2. Mylliem	80.51
3. Mawphlang	99.76
4. Pynursla	98.26
5. Shella-Bholaganj	82.11
6. Mawsynram	94.04
7. Mawkynrew	99.93
8. Ri Bhoi Area	90.13
9. *Nongpoh*	86.90
West Khasi Hills	**98.10**
1. Mairang	99.62
2. Mawkyrwat	97.50
3. Nongstoin	98.86
4. Mawshynrelt	96.52
East Garo Hills	**96.83**
1. Resubelpara	97.32
2. Dembo-Ronsong	97.89
3. Sonsak	97.88
4. Samanda	97.93
West Garo Hills	**80.61**
1. Baghmara	94.82
2. Betasing	93.89
3. Rongram	94.32
4. Dadengiri	92.43
5. Selsella	55.30
6. Cholpot	99.02
7. Dalu	87.73
8. Zikzak	70.39

The main tribes of the state are:

(1) Khasi, (2) Jaintiya, (3) Garo, others, (4) Dimasa, Hajong, Hmar, Kuki, Lakhai, Man, Mikir, Koch, Rabha etc.

Out of the total of non-tribal population of 40.54% are in the urban centres. They are largely concentrated in shillong UA and Tura. Jowai still retains its predominant tribal character (82% of population).

The percentage of scheduled caste us very small only 0.45% of the total populations. They are confined to Shillong UA, Nongpoh, Cherra, Jowai. There is a relative variations in percentages of scheduled caste population in the districts.

Sex Ratio

According to 1981 census, the sex ration for the state was 954 which was second highest in the North-Eastern region (Manipur had the highest of 971) and higher than the regional average as well as higher than the national average of 933. The following table gives a district-wise picture.

SEX RATIO IN MEGHALAYA

1971-91)

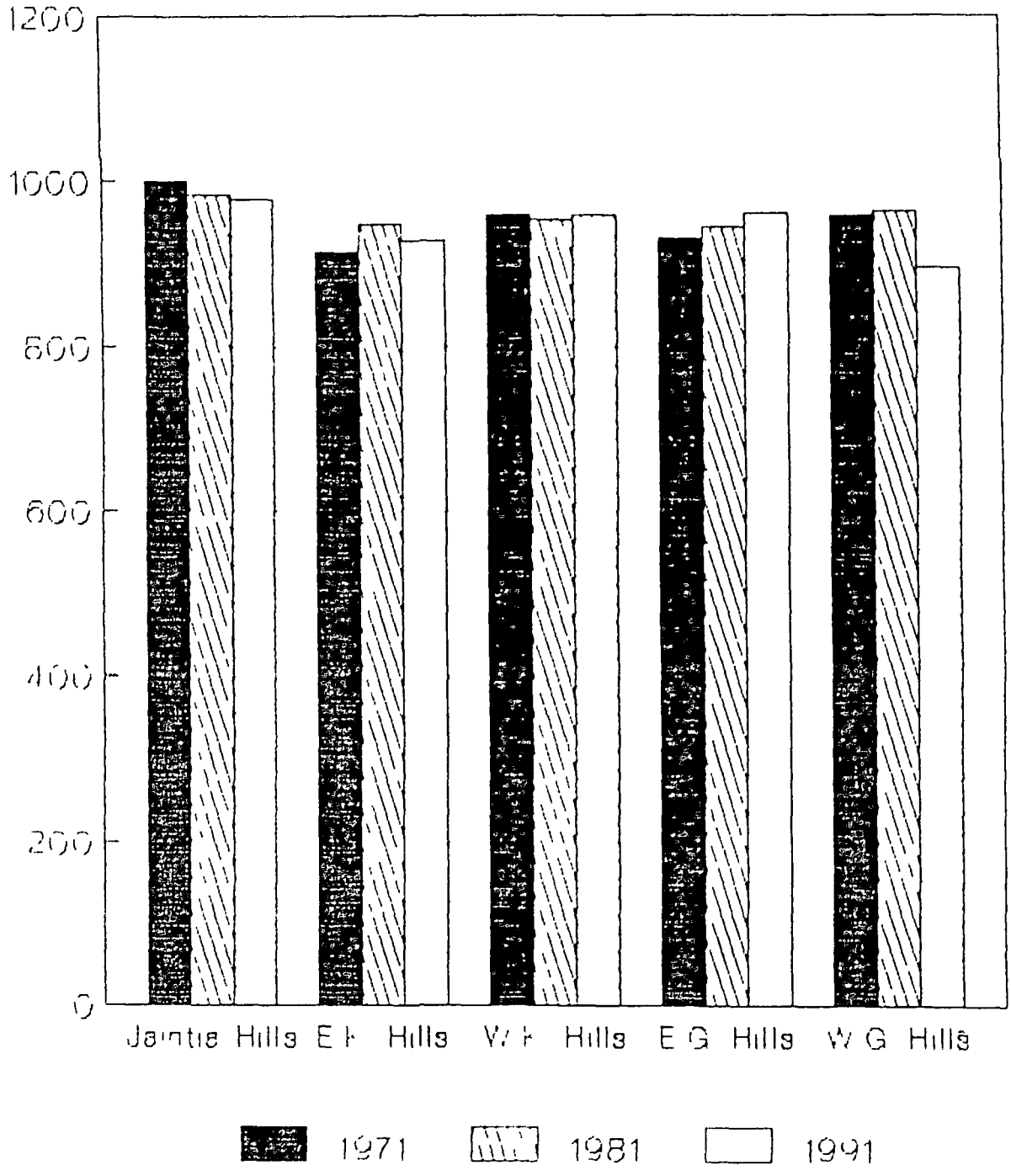


Fig 2.10

Table - 2.8

Sex Ratio in Meghalaya

State/District	Sex-Ratio		
	1971	1981	1991
Meghalaya	942	955	947
Jaintiya hills	999	982	976
Jowai	992	954	
East Khasi hills	913	946	926
Nongpoh	933	924	
Shillong UA	855	902	896
(a) Shillong M	841	910	888
(b) Shillong C	765	762	666
(c) Mawlai	938	968	993
(d) Nongthymai	881	912	968
(e) Phythorunkhrah	-	867	811
(f) Madanriting	-	950	968
(g) Cherrapunji-Sohra	-	988	982
West Khasi hills	957	591	958
Nongstoin	-	794	939
East Garo hills	930	945	960
Williamnagar	-	772	874
West Garo hills	957	964	897
Tura	779	884	880
Baghmara	940		

Literacy

The pecentage of literacy in the state in 1981 was 33.35 as against 29.49 in 1971. It was slightly higher than the national average. In the entire state, the percentage was highest in the East Khasi hills, 43.10. This was followed by West Garo hills 23.77. The percentage of literacy in the urban areas was higher than in the rural areas, i.e., 62.30 as compared to 26.93. This percentage was higher among the males 36.97 as compared to 29.55 among females.

The following table clearly illustrates the variations in literacy rates among males and females as well as between the rural and urban areas.

The female literacy in the state is higher than the national average. Rural areas of the state have varying percentages from 15.46 to 30.10 but in the urban areas, however, it is 32.16 to 62.00.

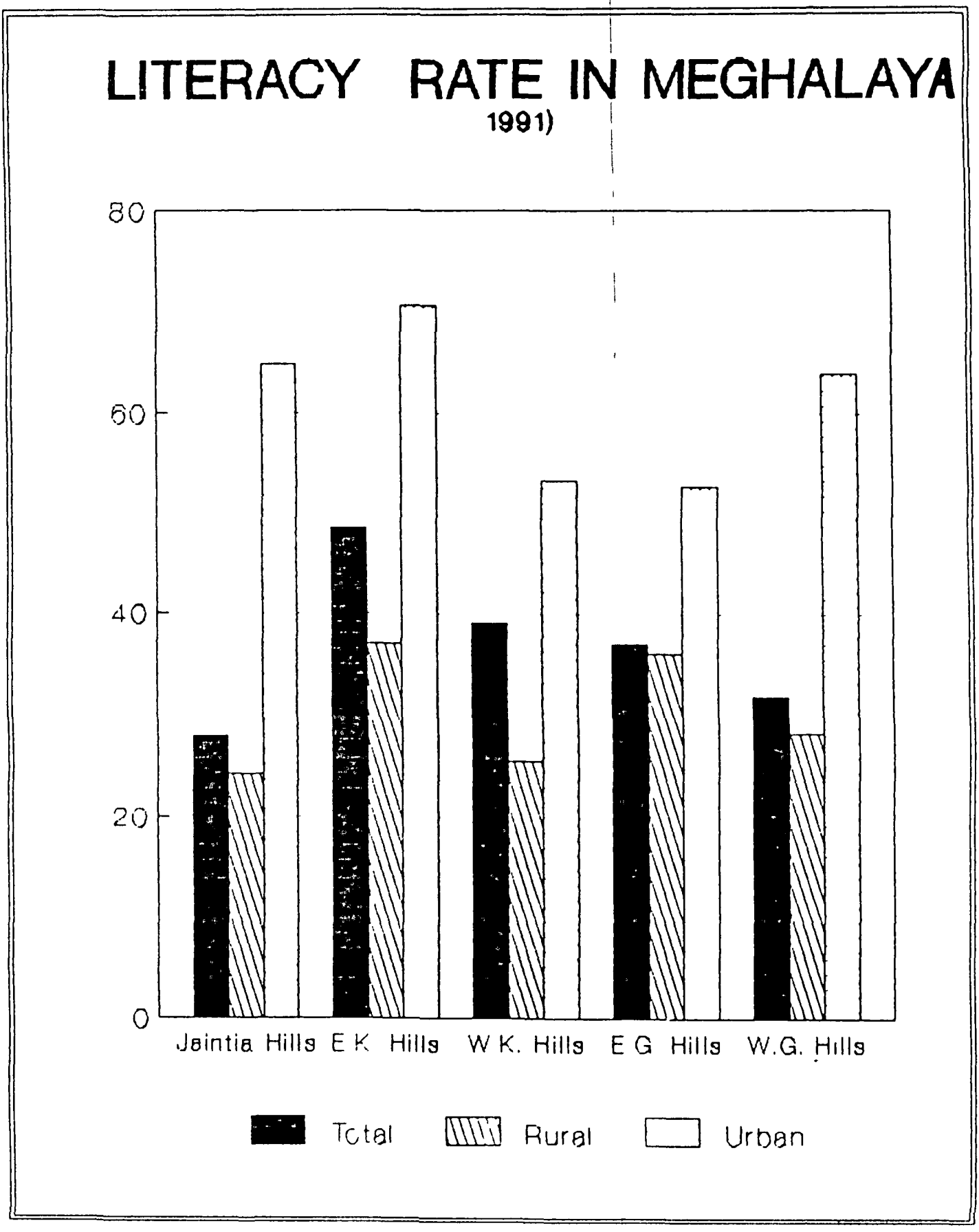

LITERACY RATE IN MEGHALAYA
1991)
80
60
40
20
0
Jaintia Hills
E K Hills
W K. Hills
E G Hills
W.G. Hills
Total
Rural
Urban

Fig. 2.11

Table - 2.9

Literacy Rate in Meghalaya

State / District		Literacy Rate Total			Rural			Urban		
		1971	1981	1991	1971	1981	1991	1971	1981	1991
	T	29.5	33.4	39.16	23.40	26.98	32.60	65.22	62.30	67.68
Meghalaya	M	34.1	37.0	41.72	27.68	30.20	54.79	69.93	66.72	54.58
	F	24.6	30.0	36.45	18.94	23.64	45.20			45.41
Jaintiya	T	19.9	23.8	28.00	17.20	19.98	24.15	51.58	65.84	64.83
Hills	M	21.7	23.7	27.33	18.72	19.51	48.71	55.91	70.15	51.89
	F	18.1	23.9	28.68	15.69	20.46	51.28	47.05	62.00	48.10
Jowai	T	51.6	64.9					51.58	65.84	
Town	M	55.9	70.2					55.91	70.15	
Urban	F	47.1	61.2					47.05	61.15	
East	T	39.3	43.1	48.68	26.59	31.87	36.91	66.11	63.63	70.49
Khasi	M	43.4	46.0	50.60	29.77	33.07	51.98	70.80	67.73	55.90
Hills	F	34.9	40.1	46.60	23.20	30.10	48.01	60.52	59.10	44.09
Shillong	T	66.1	62.9	70.83				66.11	62.92	70.83
UA	M	70.8	68.2	56.04				70.80	68.18	56.04
	F	60.6	59.4	43.95				60.62	59.39	43.95
West	T	27.2	30.9	39.06	27.21	30.43	25.49		51.78	53.25
Khasi	R	30.4	33.7	40.53	30.43	32.42	52.92		55.97	53.66
Hills	F	23.8	28.7	37.52	23.84	28.32	47.07		46.50	46.33
Nongstoin	T		51.8						51.78	
Urban	M		55.9						55.97	
	F		46.5						46.50	

State / District		Literacy Rate Total			District-wise in Percentage Rural			Urban		
		1971	1981	1991	1971	1981	1991	1971	1981	1991
East	T	30.1	32.3	37.04	30.13	31.92	35.98		43.43	52.68
Garo	M	35.2	37.8	42.18	35.21	37.26	57.96		42.13	59.29
Hills	F	24.7	26.4	31.70	24.66	26.26	42.03		32.16	40.70
West	T			32.07			28.20			63.78
Garo	M			36.22			60.42			48.47
Hills	F			27.71			39.58			51.52

Religious and Linguistic Composition

Christianity is the dominant religion of the state with 51.72% of the total population. It is followed by Hinduism, 16.58%, Islam 2.6%,Buddhism 0.16%, Sikhism 0.03% and Jainism only 0.10%. The following table shows the religious, composition district-wise of the state. There are nearly 105 languages and dialects in the state.It shows the extent of in-migration to the state from rest of the country and foreign countries as well. The major language/dialect of the state are Khasi in Khasi hills, Garo in Garo hills and Jaintiya in Jaintiya hills. They approximately account for 35.90, 31.15 and 7.90 percent of the total populations. The other languages that are spoken are Bengali, Assames, Nepali, and Hindi. English is the official language of the state.

Within the constraints imposed by the geographical factors, the economy of the state indicates a lop-side development. It is underdeveloped and backward region of the country. It has 44.20% of the total population as the main workers and shows a high dependency ratio. The following table make it abundantly clean.

Table - 2.10

Percentage of Workers to Total Population, 1991

	Total	Male	Female
Total	43.06	49.09	36.69
Rural	45.95	50.63	41.07
Urban	30.97	42.59	17.06

Within the state itself, there is a distinct regional variation as evident from the following table :

Table - 2.11

Percentage of Workers to Total Main Workers, 1991

State	1991		
	Total	Male	Female
Meghalaya	40.85	47.99	33.31
Jaintiya Hills	45.16	51.40	38.76
East Khasi Hills	40.64	48.11	32.58
West Khasi Hills	40.38	43.33	37.31
East Garo Hills	39.96	47.36	32.25
West Garo Hills	39.73	48.61	30.38

It is also observed that this percentage is highest in Rongram C.D. Block 56.01% (62.13% males and 49.76% females). In the West Garo Hills district in 1981. The lowest is also found in this district where Resubelpara West C.D. Block has 37.90% (50.96% males and 24.78% Females). The following table gives a comparative positions of the districts/CD blocks in the state in this context.

Table - 2.12

Comparative Position of Workers - Highest and Lowest in the State

District/CD Block	Total	Males	Females
Jaintiya Hills			
(i) Laskain CD Block	53.28	58.15	47.52
(ii) Khliehriat CD Block	47.05	54.76	39.43
East Khasi Hills			
(i) Mawkynrem CD Block	52.68	58.01	47.57
(ii) Mylliem CD Block	40.57	51.57	29.14
West Khasi Hills			
(i) Nongstoin CD Block	55.81	57.77	53.77
(ii) Mawkyrwat CD Block	49.20	54.75	43.48
East Garo Hills			
(i) Samanda CD Block	50.89	54.28	47.40
(ii) Dambo-Romteng CD Block	34.60	45.70	22.96
West Garo Hills			
(i) Rongara CD Block	56.27	58.24	54.24
(ii) Resubelpara CD Block	37.90	50.96	24.78

Thus with this distinct variation of percentage of main workers to total population of the state and within the districts of the state, the percentage distribution of workers assumes significance. This is clear from the following table :

Table - 2.13

Percentage Distribution of Workers 1991

State/ District	Cultivators	Agricultural Labourers	Household Industry	Other Workers
Meghalaya	56.25	13.33	0.99	29.42
Jaintiya Hills	59.33	16.18	0.86	23.63
East Khasi Hills	33.23	13.63	1.17	51.97
West Khasi Hills	71.64	16.36	0.83	11.07
East Garo Hills	83.93	5.36	0.36	10.35
West Garo Hills	68.90	13.21	1.15	16.74

Table - 2.14

Comparison of Number of Workers to Non-Workers in Migrants to Meghalaya from Selected States

State	No. of Migrants	Workers in Migrants (%)
Assam	35,432	46
Bihar	7,971	57
West Bengal	5,073	46
Uttar Pradesh	2,656	46
Manipur	1,300	36
Tripura	1,082	36
Nagaland	937	25

While in the first four states the proportion of workers is high same is not true in case of Manipur, Tripura and

Nagaland. This is because the migrants coming from the latter states are mostly students coming for pursuing of their education on the other hand persons coming from states like Assam, Bihar, etc. are engaged in various professionals or are businessmen.

Migration of Population.

Migration data for the state is not available. But from a observation of population movement in the region and the state, it appears that the in flow of people has out numbered the out flow of people from the state. Basing the analyses on the date published by the census, it is to assume that most of these migrants were employed in government or semi-government service or belonged to trade and commerce sectors. They were mostly from Assam, Bihar, West Bengal, Punjab, Uttar Pradash, Kerala, Tamilnadu and other states. Out of the total migrants, nearly 60% are in the East Khasi hill district and West Khasi hills districts. The state also received persons from Nepal and displaced persons from Bangladesh.

With the formation of Meghalaya state in 1972 and subsequent shifting of the capital of Assam to Dispur, many of the government offices have been shifted and hence those employees moved out.

In recent years the State is paying more attention to the development of the different regions. Exploration for the natural resources is being intensified. Possibilities of developmental activities are being studied and steps are being taken to implement them. In this process, some of the State agencies are either being expanded or set up a fresh. An University at Shillong has been established and expansion of educational activity in other regions of the state is going on. Due to all these has been some influx of people into the state, particularly to Shillong city. There has also been marked increase in the inflow of security personnel to this state. However all this migration is marginal when compared to the quantity of migration to some of the other states like Maharashtra, West Bengal and Assam.

Table - 2.15

Rural and Urban Migrants from Other States to Meghalaya

District to Which Migrated	Age Group of Migrants	Sex	Migrants	
			Rural	Urban
United Khasi & Jaintiya Hills	0 - 14	M	17552	3351
		F	13262	3761
	15 - 49	M	37626	18298
		F	251232	11286
	50 & Above	M	9442	2484
	Total	M	64695	24139
Garo Hills	0 - 14	M	11119	827
		F	8541	890
	15 - 49	M	48289	3247
		F	29962	1962
	50 & Above	M	12760	412
		F	5603	158
	Total	M	72239	4487
		F	44189	3010

It has been noted that the total migrants into the state from other states and Union Territories of the country are only 61,593. On the other hand from the erstwhile East Pakistan and Nepal 40,920 migrants came. The bulk of the migrants came from Assam (35,432; 57.5%), Bihar (7,971; 12.9%), West Bengal (5673; 8.2%) and Uttar Pradesh (2,656; 4.3%). Migrants from Manipur (1,300; 2.1%), Tripura (1,082; 1.7%) and Nagaland (937; 1.5%)

are also considerable compared to the population of these states.

A comparison of workers to non-workers from the migrants of the above states makes an interesting study, done in preceding pages.

Intra-State Migration

It can be noted that the migrants within the state are 2,19,394. Out of these the percentage of male migrants were 58. But the female percentage was only 42. This is because as usual man move in pursuit of employment and seek better opportunities. Since it is a matriarchal society, after marriage the boy moves into the girls house.

The rural and urban migrants from Khasi and Jaintiya hills district to Garo hills district were 5,444 and 232, respectively. And Garo to Khasi and Jaintiya hills district were 4,528 and 292, respectively. This does not show any pattern, except that the migrants from Khasi and Jaintiya hills district to Garo hills district were marginally more. However, a surprising thing is that from Khasi and Jaintiya hill district, to Garo Hills there were 2732 female migrants as to 2712 male migrants (rural). This is particularly anomalous in view of the prevailing social system, i.e., matriarchial

society. The Garo settlements in the Khasi and Jaintiya hills district are Burnihat, Rambrai, Nongstoin etc.

External Migration

There were 41,990 migrants from various countries into Meghalaya (1971 census).Since the bulk of them have come from Pakistan and Nepal (97.4%), a discussion about only these migrants is made below.

About 31,235 people migrated from erstwhile Pakistan (East) and 9,685 people from Pakistan (Bangladesh). Those who have migrated from Pakistan come under the category of displaced persons and refugees. Those from Nepal are voluntary migrants.

It can also been noticed that the percentage of workers to migrants from Pakistan and Nepal are 38 and 59, respectively. It may be inferred that migrants from Pakistan consist more of women and dependant old people. Hence the low percentage of workers. This is further clear from the fact that the percentage of women migrants from Pakistan is 44 and that from Nepal is 32.

From table 2.16, it can be seen that though the migrants are more in number into Khasi and Jaintiya district, the rural migrants from East Pakistan are more into Garo hills whereas

rural migrants from Nepal are more into Khasi and Jaintiya Hills district This may be because of the location (Garo Hills can be approached from Bangladesh from many sides) and favourable physiography. But there does not seem to be any particular reason as to why Nepali migrants should be concentrated more in Khasi and Jaintiya hills district.It follow then that urban migrants from both the countries are more in Khasi and Jaintiya district. Migrants from Meghalaya to other States.

Table - 2.16

Migrants from Nepal and Bangladesh in Meghalaya

Country	R/U	Garo Hills Population	Male	Female	U.K. & J. Hills Population	Male	Female
Nepal	R	921	533	388	4521	3047	1474
	U	131	84	47	4112	2932	1180
E. Pakistan	R	14333	7740	6593	7776	4636	3140
(Bangladesh)	U	1305	775	530	7821	4428	3393
Total		16990	9132	7558	24230	15043	9187

Migrants from Meghalaya to Other States

This information is not available and can be computed only after the scrutiny of Census reports of all other states. However,from the examination of some of the literature it appears that by and large tribal people of the state are

reluctant to migrate to other states. This is mainly due to the cultural climatic and social factors. This is not particularly of Meghalaya but is a generalization to many tribal areas.

Only a fraction of the urban population, who are in government service move out of the state if warranted.

It appears as though people of Garo hills district migrate out of the state more in number than the other district people. Garos are good at agriculture. In the plains they are experts in paddy cultivation. Garo settlements in Assam are located in Goalpara and Kamrup plains and in upper Assam valley at Sarupathar and Sadiya. This immigrants who are now settled at Sarupatchar came there after 1900 from Garo villages (see Dr. Hamlet Bareh, "Meghalaya", North East Indian News & Federation service).

Garos have migrated into a few districts of Banglandesh also.

TYPE OF MIGRATION

For the present purpose the migrants have been classified into three types. They are:

(1) Temporary migrants-Those who have been staying in Meghalaya for less than one year(as on 1971).

(2) Semi permanent migrants-Those who have been staying for 1 to 9.

(3) Permanent migrants- Those who have been staying since 10 years and above.

It can be seen that semi permanent migrants are more in number in both the districts.This is true of both the categories i.e. rural and urban.It is obvious because most of the people who come into the state are workers and their dependents, who normally stay for about 5 to 6 years and move out. The permanent migrants are generally those who come and establish some business or trade of their own or acquire some property and maintain it. This argument holds good for the migrants who move from one district to the other district of the state. Many of the business community who came from other states and refugees come under permanent migration.

Apart, from rural and urban migrants another category of migrants discussed are workers who are classified as:

(1) Primary workers - Cultivators, agricultural labourers, livestock, forestry, fishing workers. Mining and quarrying workers.

(2) Secondary workers - Manufacturing processing, repairs and servicing, construction workers.

(3) Tertiary workers - Trade and commerce, transport, storage and communications workers and other services.

Some of the aspects of these migrants have been discussed in the foregoing paragraphs.

Internal Migrants

The state following shows a characteristics of the types of migrants. First of all the migrants who have come from other states of the country only 24% are primary workers, whereas among the intra state migrants 81% are primary workers. In a basically agricultural and rural state like state like Meghalaya intra state migrants are bound to be primary workers. Out of the total 3,22,977 migrants into the state, 2,19,394 are intra migrants. Out of these in turn 2,01,625 are rural migrants. Majority of these are primary workers. These migrants have boosted up the number of primary workers.But people coming from other states are bound to be secondary and tertiary workers for various reasons, namely, the difference of mode of cultivation, non availability of irrigation facilities, restriction in acquiring of mode of cultivation, non availability of irrigation facilities, restriction in acquiring landed property by non-tribals etc. It will be difficult to the agriculturalists of the plains to adjust themselves to the hilly terrain and jhum and terrace cultivations. These are some

of the major limitations for primary workersto come to this state apart from the basic fact of non availability of land. So people coming from other States and Union Territories are bound to be tertiary workers. Among the tertiary workers, people belonging to "other services" are much more i.e., 34,745 out of 46,674 tertiary migrants. Similarly among the migrants from other states also tertiary workers are much higher. And within these tertiary workes, migrants pertaining to "other services" class are very high. Out of all migrants secondary workers are extremely low.

External Migrants

Since the bulk of the migrants from other countries are from Pakistans and Nepal a discussion regarding migrants from these countries already made. However, it is obvious that the primary workers percentages from E. Pakistan and Nepal are 44 and 39 respectively. Due to certain legislations of the state, persons other than of local tribes can not acquire landed property with certain exceptions. But to rehabilitate refugees from Pakistan, they have been allotted some plots and they resorted to agriculture. Hence the higher percentage of the primary workers among the migrants from Pakistan. The scope to to work as agricultural labourers is very limited. The holdings of land are small and agricultural activity is confined mostly to individual families.

Primary workers among external migrants are very few and secondary also are not significant in the absence of industrialisation.

Amongst the migrants from other states and Union Territories and amongst the intra state migrants rural migrants have far surpassed the urban ones. This is also our national phenomenon. In Meghalaya with only seven urban centres and without much industrialisation, the rural migration is bound to be high.

EFFECT OF MIGRATION

In the absence of industrialisation and with minor agricultural activity no industrial or agricultural expertise has come due the migration into the state. In the fields of education and administration there is considerable impact due to migrants. The North Eastern Hill University and other affiliated colleges could attract a lot of talent from other states. Similarly in the field of administration top and middle managerial cadre migrants have helped the local people in understanding the intricacies of the bureaucracy and implement them.

Meghalaya is a tribal hill state with its own climatic characters. There is no significant industrialisation and the

economic activity is very poor. Harnessing of the scanty natural resources is also not done in a major way due to various reasons. Availability of land for agricultural activity is very less. Due to all this the migrants into the state are not many.

Due to certain governmental policies there has, however been some urban migration into and our of Meghalaya. Since Shilling city is a centre of activity for not only Meghalaya but also for the entire North Eastern region the urban migration is taking place, significantly.

There are only three centres of urban population in the state and hence majority of the migrants come under rural category. In the process of rehabilitation of refugees from Bangladesh also some rural migration has taken place.

Majority of the migrants come under semi permanent category. Out of the migrants who came from other states 66% are tertiary workers, particularly belonging to other services category.

Settlement Pattern in Meghalaya

The study of settlement patterns in very important because it identifies the nature of man-environment relationship. This is particularly so in a state like Meghalaya where

physiography nature of slope and bio-climatic relationship has has exerted considerable influence on the pattern of human activities.

The process of setting in the state has covered a long period of time. Analysis of their settlement sites, types, spatial pattern and function clearly explains the inhabitants effort to adjust and exploit the environment and resources for their development. The study of the structure and patterns of settlements clearly helps in understanding social and religious conditions prevailing in the state. It also help in identifying the extent of British influence in their social relations.

The present chapter deals with

(a) Rural Settlements, and
(b) Urban Settlements

Rural Settlements

Lack of written historical records makes it a difficult task to trace the origin and evolution of rural settlements in the state. This has been further complicated by the fact that the physiography and inaccessibility had enforced isolation on the tribal inhabitants as well as absence of the written script before the advent of the British in the area. However, there are noticeable references about the tribal inhabitants of the

state in *BURANJIS* of the Ahom rulers of Assam and the 19th century historical records that was prepared on the basis of Ahom Chronicles and which was supplemented by inscription etc. This pertained more to the Khasis and particularly to the Jaintias. These records give adequate reference of occupation (by the to the state) of northern fringe even before the christian era. There is a total absences of records about pre-historic settlement in the state. Thus, the study of settlement patterns in the state has been attempted in the following stages. These are:

(1) Pre-colonial period
(2) Colonial period
(3) Independence period

Before the advent of the British rule in the area, the inhabitants of the state had maintained loose relationship with the Ahom rulers of the Brahmaputra valley. The physiography and inaccessibility enforced isolation;this enabled them to retain and develop their traditional values and activities in relative isolation. Their economy was dominated by the practice of Jhum cultivation. The inhabitants were engaged in making pottery and crude implements which enabled them to acquire the produce of the making pottery and crude implements which enabled them to acquire the produce of the surrounding forests. As a result many of their settlements were of clustered type while there

were ample evidence of isolated settlements under these circumstances. These settlements were separated from each other by dense forest cover. With the annexation of the area by the British, the area was opened up to the outside world for the first time. The British transferred their capital from Cherrapunji to Shillong in 1876, this ushered an era of dominant external influences. This also introduced the missionary activities in the region. It can be said that missionary activities in the region had profound impact on the inhabitants and which to a large extent modified the nature of socio-cultural relations.

The immediate impact was in the form of changes in structure and size of rural settlements. The colonial administrators constructed 8 major lines of transportation and communications. These were:-

1. Shillong to Guwahati-101 Km.
2. Guwahati to Bholaganj via Nongkhla, Mawphlang, Cherrapunji and Theriaghat-192 Km.
3. Shillong to Mawphlang-26 Km.
4. Shillong to Jaintiapur via Jowai and Muktapur-112½ m.
5. Shillong to Shella-96½ m.
6. Laitlyngkot to Sohram and Cherrapunji-35½ m.
7. Jowai to Nortiang-19½ m.
8. Shillong to Sonapahar-83 Km.

Evolution of Settlements

The inhabitants of this area under study trace their origin to Austro-Asiatic family and seemed to have migrated to this area from the South-East Asia. They came from the east and probably settled in groups to form scattered village settlements in the predominantly hilly terrain. The Khasis were shifting cultivator and widely practiced Jhum cultivation. Permanent wet-cultivation was developing gradually and was evident along the bordering areas with the Brahmaputra valley.

Most of these settlements were centered around their primary activity i.e. agriculture. Any change in the agricultural practices induced changes in the settlement pattern during the pre-historic times, whatever little the available evidences suggest, the people were largely hunters and food gatherers living in cages etc. With the gradual penetration of influences from the valley and changes in agricultural practices, the settlements formed a permanent features of the landscape.

The only evidence of pre-historic settlement was found in the Rongram valley in the Garo hills through Daojalihading excavation. The history of the Khasi and Jaintiya's can be traced to the early 16th century. They were split in small communities spread all over Khasi and Jaintiya hills. Between

16th and 18th centuries, they were known through their rulers- Jaintiya Rajas and Syiem of Khyrim in the Khasi hills. The Jaintiya rulers controlled the area between Sylhet and Cachar border and foothill territories overlooking Barak valley to the Kalong river in Nowgong district. But by 1835 the Jaintiya hills was brought under the British rule. And during the same period, Khasi hills was also brought under British rule. At that time, there 30 Syiems in the Khasi hills and 12 dalois or small Kingdoms.

The well known settlements at this period of time were, Jaintiyapur, Nongkhlaw, Mairang, Nartiang, Raliang and Khrungma. The exiting settlements were following important and major confederation of states in the Khasi hills. These were:

(i) The state of Ossimbea at Nongkhlaw.
(ii) Principality of Khyrim consisting of 70 villages.
(iii) Bormanik's country with 28 villages forming a part of Khyrim Principality.
(iv) The Kingdom of Cherra with 25 villages.
(v) State of Nurtung with Nartiang as capital.
(vi) Principality of Nongspung with 20 villages.
(vii) Maharam principality with 24 villages.
(viii) Myriaw Kingdom with 25 villages.
(ix) State of Rambai.

During the colonial period,the cultural landscape of the state under went drastic changes. This was largely due to

opening up of the region through the construction of transportation and communication net works. Moreover, the transfer of capital from Cherrapunji to Shillong and making the later as the capital of the entire north-east in 1876.

It may be note here that after Khasis and Jaintiya hills were brought under British rule, the Garo hills were brought under British control in 1866. Before that Cherrapunji a small village located at the excarpment overlooking the Bangladesh plain was the capital of province from 1827. However due to administrative expediency, the British moved the capital northwards to *IEWDUS*, later named Shillong. later through extensive surveys, Tura town was established and was made the headquarter of the Garo hills in 1867. In 1872, Jowai was established.

Simultaneously development of transport linkages was undertaken. In 1877, Shillong was linked with Guwahati-a 101 km long road passed through Barapani, Umsing, Nongpoh, and Burnihat. Earlier settlements like Nongkhlaw Mairang, Mawphlang, Cherrapunji, Mawblang and Thereaghat were linked with Guwahati and sylhet. This covered a distance of 208 km.and lost its importance after Guwahati Shillong road was completed. These developments were aimed at effective political and administrative control of the territories annexed by the British. Inaccessibility was reduced and the region was opened

up. Several rural settlements mostly linear settlements emerged along the major road network. These settlements took over the permanent characteristics while some the shifting agricultural practices were scaled down. Besides, the mineral resources like coal and limestone as well as forest produce began to be exploited commercially. These resulted in the formation of mining settlements.

Moreover, close to the British territorial expansion, missionary activities accelerated. The missionaries established schools, hospitals and churches. These not only encouraged the growth of settlements but also gave permanent characteristic to them besides bringing and propagating christianity in the region. In addition to these, Ramakrishna Missionaries also spread over its activities in the region.

Post independence period, ensured rapid growth of educational institutions medical services, government and semi and non-governmental agencies and institutions. Extensive surveys for mineral resources were made and a beginning of commercial exploitation was made in the southern Khasi hills that resulted in the coming up of new settlements. Several trading centres emerged and the old settlements changed their agricultural landscape and attracted administrative activities. This was better explained by creation of nearly 33 community development blocks with their respective headquarters.

However, after partition of the sub-continent, the areas witnessed rapid transformation in the content and type of settlements. The forced migration, large scale inflow of refugees from the present day Bangladesh, establishment of central and autonomous institutions, and so on, all affected the settlement pattern. Till 1972, Shillong continued to retain its regional importance; for till then it remained the capital of undivided Assam. As a result settlements along major transport arteries assumed greater significance and received adequate impetus to expand. This led to the development of series of linear settlements along the major routes. This also led to significant rural-urban migration. In the process, there emerged regional foci. Shillong, Tura, and Jowai became centres on which the surrounding rural areas became dependent. After 1976, along with the re-organisation of districts, William Nagar and Nongstoin also become centres besides the head-quarters of community development blocks.

Generally speaking the highly dissected Meghalaya plateau indicates an irregular distribution of settlements.This was particularly so in the east and west Garo hills. While in the case of other three districts of the state flat-peneplained surface encouraged more or less even distribution of settle-ment. The only exception to this are in intermontane and foot-

hills areas of the north and excarpments of the southern areas of the state.

In the mere rugged areas isolated hamlets or homestead associated with patchy agricultural land dot the landscape. In In the peneplained surfaces of Khasi and Jaintiya hills, semi-compact fragmented and dispersed settlements are abundant. However, in the northern hill region, the plateau is intersected by numerous rivers, rocky slopes and has predominantly dispersed settlements.

In the east and Garo hills as well as parts of West Khasi hills, widely spaced villages and isolated hamlets are common. Large size settlements are found along the river valleys and national-state highways. The southern scarp land is characterized by steep slopes, narrow gorges and "V" shaped valleys. The landscape of this area is characterized by forests interspersed by tiny isolated hamlets. Cherrapunji and Dawki are the only large settlement of the area.

The following table indicates the density of Rural Settlements in Meghalaya.

Table - 2.17

Rural Settlement in Meghalaya

Mauzas/Police Station		Density per 10 Km^2
1.	Mauza - 1	- 3.3
2.	" - 2	- 3.2
3.	" - 3	- 2.1
4.	" - 4	- 2.3
5.	" - 5	- 14.7
6.	" - 6	- 6.4
7.	" - 7	- 7.2
8.	" - 8	- 8.7
9.	" - 9	- 12.8
10.	" - 10	- 6.35
11.	Nongpoh/PS - 11	- 2.25
12.	Shillong/PS	- 2.34
13.	Cherra/PS	- 2.15
14.	Jowai/PS	- 1.5
15.	Dawki/PS	- 2.0
16.	Meghalaya/PS	- 2.25

As the data on district level or community development Block is not easily available, the density of rural settlement has been computed at Police Station Mauza level. According the table indicates that areas ranging from 6.15 villager per 10 Sq.Km are located in the bordering mauzas of the Garo hills with Mauza V having the highest. This suggests that the reason for this intensity in density in density

patterns has been the settlements of refugees and displaced persons in this units.

Thus, upon this basis, it is easier to make critical analysis of settlements that will reflect favourable or restrictive character of the state's physical relief. The state, on the while shows a distinct regional variations in rural settlement pattern. In order to facilitate this analysis possible, geographical divisions have been retained. Accordingly, following classification has been used.

1. Khasi and Jaintiya hills.
2. Garo hills.

(1) *Khasi and Jaintiya hills* : The Western part of this section is thinly settled displaying random or dispersed settlements. These are mainly in the form of hamlets or isolated homesteads. The area shows a dense forest cover and heavily dissected terrain with numerous flowing rivers either northward or southwards.

The Central part of the plateau has thick settlement dominated by compact or semi - compact patterns. Important settlements in this section are Mairang. Nongthliew, Jakrem, Nongspung, Mylliem, Smit, Barapani etc.

Northern part of the plateau in this section show two distinct patterns of compact and/or semi compact as well as scattered and isolated settlements. The former is characteristic of areas West of Shillong-Guwahati road. Important sites for this type of settlement are Umla, Mawhati, Mawlynring, Umroi etc. Whereas for the latter, which is better known as the Jirang. This term was attributed because Jirang was the only large settlement in the area and lies east of Shillong-Guwahati Road. Other important settlements are Nonglalaw, Umlang etc. Burnihat, and Nongpoh also comes in this category are located in the Bhoi country.

Area around Mawsynram, Cherrapunji and Umiew in the southern part have evenly distributed settlements in the form of hamlets. In semi-places, as in Cherra, compact settlements are common. There are also settlements along the slopes from average to steep and river valleys such as Nongstoin, Umblai etc.

In Jaintiya hills, the settlement patterns are located near the cultivated areas and are normally in compact or semi-compact form. Some of the important and settlements are Nartiang, Longdum, Thilentyrshi, etc. But in the south-eastern Jaintiya hills settlements get more scattered and isolated. This area is mountainous and is thickly forested, thus, there

are few settlements that too isolated and scattered as in the Saipung reserved forest area or in the Narpuh reserved forests.

Housing System

In the early development of systems of human shelter the man first responded biologically to the animal need for a protected and private sleeping shelter. At later periods as cultural development achieved significant forward steps, human beings variably extended the concept of simple shelter from the physical elements of cold, dampness, wind and sun into an increasingly complex set of cultural traits clustered around the growing concept of the *family home*. There began the functional separation of parts of the shelter for particular activities during the Vedic, and during the historic period this separation process has steadily increased to the end that the house now often contains separate compartments for evoking, eating, bathing, sleeping, working and playing. Slowly the shelter began to be dressed up through decorative but often non functional characteristics exhibiting various terms of artistic expression by the occupants and conveying some kinds of social and *economic* status.

In the early but very slow development of housing systems there were several engineering problems that had to be solved before a simple shelter could become a house.

Problems of construction when using different kinds of materials had to be worked out. Although the earliest shelters seem to have been used by small groups under a use-in-common pattern, the maturing house finally became a family shelter for most of man kind, each family occupying a separate shelter.

The regionalism of construction materials and building styles is a historic matter of considerable continuity, and there are recognized likenesses among the house of different culture groups.

Peoples colonizing new lands often take their domestic house types with them, and the domestic architecture. There is also a broad zonal similarity in building materials and/or constructional principles that continues to preserve basic relationships to environmental conditions-the flat roofs that evolved in the dry lands of the old world, or the steeply pitched roof that are most plank s, developed in forested areas, where protection from cold and winter winds was sought by builders. In the tropics and sub-tropics, where mild climatic conditions made protection from cold winter winds unnecessary, the use of leaves, matting and simple thatching for walla and roofs has apparently always been common.

Types of Houses

Against the above backdrop most of the houses are constructed in accordance with the people's tastes. There is a great variation which ranges from the old 'hasi' type to the modern types found in Shillong and other important towns of the state. Each dwelling structure with a compound and in some cases cattle sheds is occupied by each household irrespective of the number of members and income. The old type of houses are oval shaped. The foundation as well as the roof are oval shaped. These buildings are usually raised on the plinths, some two three feet above the ground. The house is usually divided into three rooms-a porch, a centre room and a sleeping room. The floor of the centre room and the sleeping room are covered with planks which are floors of these rooms are much higher than that of the porch. The walls of such buildings in this area are generally made of wooden planks. The roofs are covered with thatch obtained from the neighboring forest. In such houses there is only one door in front and a window or a small opening on one side. The fire place made of earth and stones is always in the middle of the centre floor.

Now-a-day only a few houses of this description wee found in the village (during the time of field survey the author has marked regarding the types of building materials that are in

use). Most of the houses are much improved except those in very interior part of Khasi and Jaintiya hills. Thatch as the only roofing material and wooden planks as the walling materials are in most houses replaced by flattened kerosene oil tins, plain sheets and corrugated iron sheets (plate numbers).

In other village while wooden planks are still used as materials for the walls, they are coated from outside either with thatch or any of the above imported materials. Nearly half of the villages found in Khasi Jaintiya Hills are no longer of traditional type. In comparison with the traditional type these houses are taller, having many rooms. These houses are constructed according to what is known as the Assam type houses. In short, they are more comfortable to live in than the traditional ones. The shape, size and division of these houses may vary from one to another.

Resources Availability and Their Utilization Pattern

In this chapter an attempt has been made to evaluate the extend and the nature of available resources in Meghalaya. For the development of any region, availability of natural resources constitutes the primary basis. It indicates the direction in which resources can be utilized. However, mere availability is not enough. More important aspect, is the extent of utilization of resources. This depends on a host of factors ranging from awareness level to available technology to exploit these resources. In this chapter emphasis is laid on these two aspects of resources (their availability and their utilization).

At the outset it may not be out of place to indicate some broad accepted definitions of what constitute a resource. Accordingly, it can be defined as

> *"Resource refers to a function which a thing or a substance may perform or an operation in which it may take part"*[1].

Resources may be divided into various categories depending on the criteria adopted in their classification. However,

---

1. Munshi, S. H. (1984) : "Resource", India, Resource Regions and Regional Disparity, People's Publishing House, New Delhi, p. 3.

Different types of resources have an important and intimate relationship in the eco-development of any region. Therefore, it is important to discuss the resource availability in Meghalaya. There seems to be a predominant availability of a particular type of resource in a particular area. This is also the case of Meghalaya. Resource of Meghalaya can be grouped under two broad categories of (1) Natural and (2) Human resources (Fig 3.1).

Meghalaya is very rich as far as its resource is concerned. However, the existing weak transport communication net work and very poor infrastructural factors have led to the relatively slow growth rate of economic development in the state.

Different kind of resources available in the state are briefly discussed below :

Natural Resources -

Resources like land, forests, minerals, water and live-stock can be considered as natural resources since they are found in the nature. They may be either renewable or non-non-renewable in nature.

Land -- Land as a resource is of special significance in Meghalaya, mainly because of the nature of terrain and

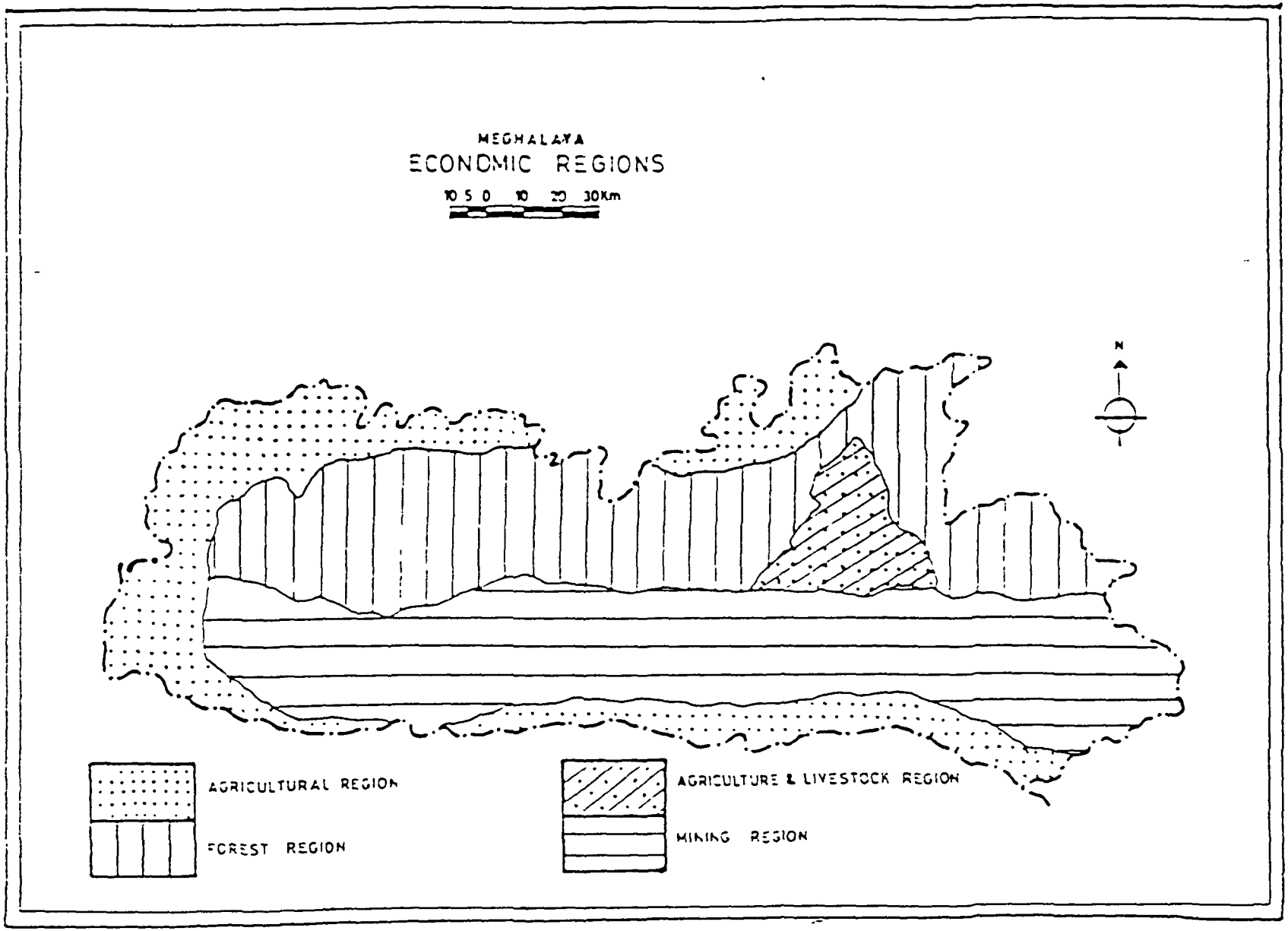

MEGHALAYA
ECONOMIC REGIONS
10 5 0 10 20 30Km
N
AGRICULTURAL REGION
FOREST REGION
AGRICULTURE & LIVESTOCK REGION
MINING REGION

Fig 3.1

paucity of land for permanent agriculture. Plain land with fertile alluvial soil constituting only a minor portion of the total land under agriculture and is located in a few river valley and in the form of narrow strips in the fringes of the state, i.e., in the lower altitude areas to the north, west and south of the plateau region. There are considerable regional variation in the land-use pattern of the state. It is because of the difference in relief, climate, soil types, and variable pattern of irrigation, etc. The regional variation on land-use are related to the physical control, socio-cultural outlook of the people, economic elements and farming technology, people are slowly shifting their economic activities from one type to another which results in the change in the land-use pattern as well.

Table 3.1 shows the land-use pattern in Meghalaya in the year 1987-88 and 1990-91 (Fig. 3.2).

Table - 3.1

Land-Use Pattern in Meghalaya during 1987-88 and 1990-91

Sl. No.	Classification	1987-88	Percent	1990-91	Percent
1.	Forest	851915	38.04	939076	41.94
2.	Area not available for cultivation	225802	10.08	225873	10.08
3.	Other uncultivated land excluding fallow land	729231	32.56	645504	28.83
4.	Fallow lands	236052	10.54	226506	10.11
5.	Net area sown	196000	8.75	202041	9.02
6.	Area sown more than once	38524		38279	
7.	Total cropped area	234524		240320	
	Total reporting area	2239000		2239000	

Source : Statistical Handbook of Meghalaya, 1992.

About 2,02,041 hectares of land or 9.02 per cent of the state's total land area is used for permanent agriculture out of which only 38,279 hectares is cropped more than once in a year. During 1990-91, the net irrigated area under different minor irrigation schemes covered 46,236 hectares (Statistical Handbook, Meghalaya, 1992).

Proper land management through appropriate land-use planning is of immense importance which has failed to receive

LANDUSE PATTERN IN MEGHALAYA

1987-88 to 1990-91

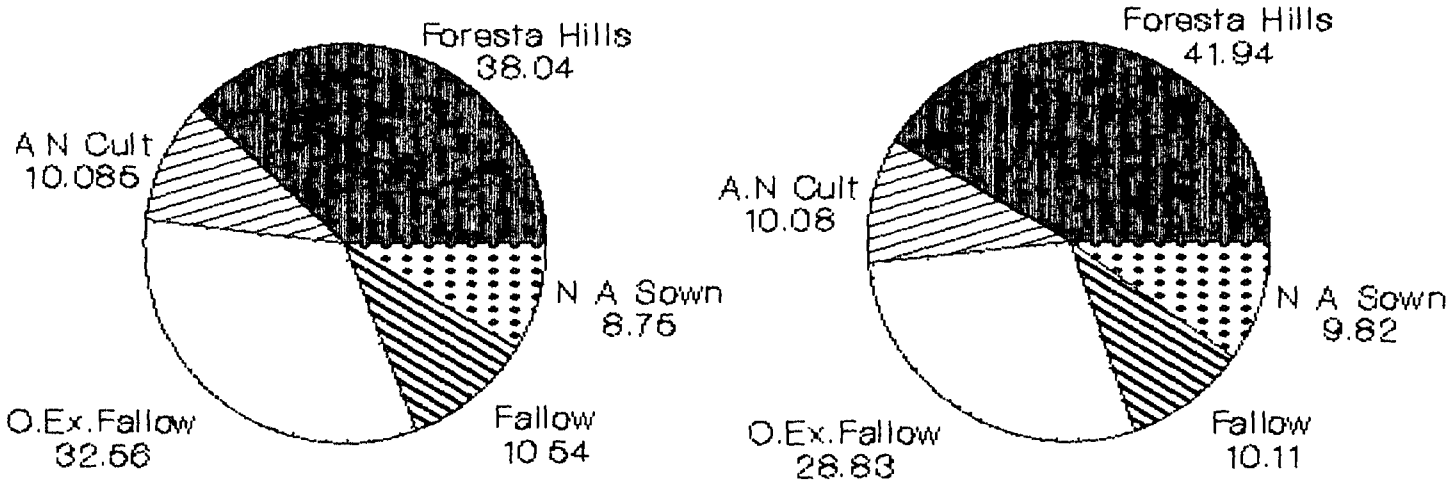


Fig. 3 2

the required importance in the state's planning process. The major bottleneck in this regard in the existing land ownership system in the tribal area of the state where the land belongs to the individual and community and not to the government. The age-old customs and beliefs of the tribal society, lack of proper communication and marketing facilities, paucity of skilled work force further aggravate the situation. According to the data interpreted from the aerial photos and NRSA reports, about 8,150 Sq. km. of land lies as waste lands which constitutes about 36.34 per cent of the total geographical area of the state. The share of wastelands to the total land in different districts are shown in Table 3.2.

Table - 3.2

District wise Percentage of Wasteland to the Total Area, 1987-88 (estimated)

Districts	Total Geographical Area (sq.km.)	Area Under Wasteland (sq. km.)	% of Area Under Waste Land
East Garo Hills	2,603	1,064	40.88
West Garo Hills	5,564	1,772	31.85
Jaintia Hills	3,819	1,418	37.13
East Khasi Hills	5,196	2,124	40.88
West Khasi Hills	5,274	1,772	33.60

Source : Land Utilization Statistics, Meghalaya, 1988-89.

The percentage of wastelands is very high in case of East Khasi Hills and East Garo Hills districts and this is mainly due to the mining activities and shifting cultivation which are being carried out in a relatively large scale in these two districts.

About 28.83 per cent of the total land and comes under the category of uncultivated land which includes ' cultivable waste' and 'barren and cultivable land '. The primary causes of barrenness are due to the practice of jhum, forest fire, heavy precipitation, geology of rocks and nature of soils. Mining of Coal by open-cast and rat-holes process increased the problem.

Land used for permanent agriculture constitute a minor portion (9.02 per cent) of the total land area. Land is a very important resource of the state since 69.58 per cent (1991 Census) of the population of the state is either directly or indirectly dependent on agriculture. Paucity of favourable agricultural land necessitates judicious exploration and proper utilization of land for the overall development of the state.

Forests

Forest is one of the most important resources of the state and in 1989-90 the forest covered in the state is about 42.41 per cent of the total geographical area. However, the

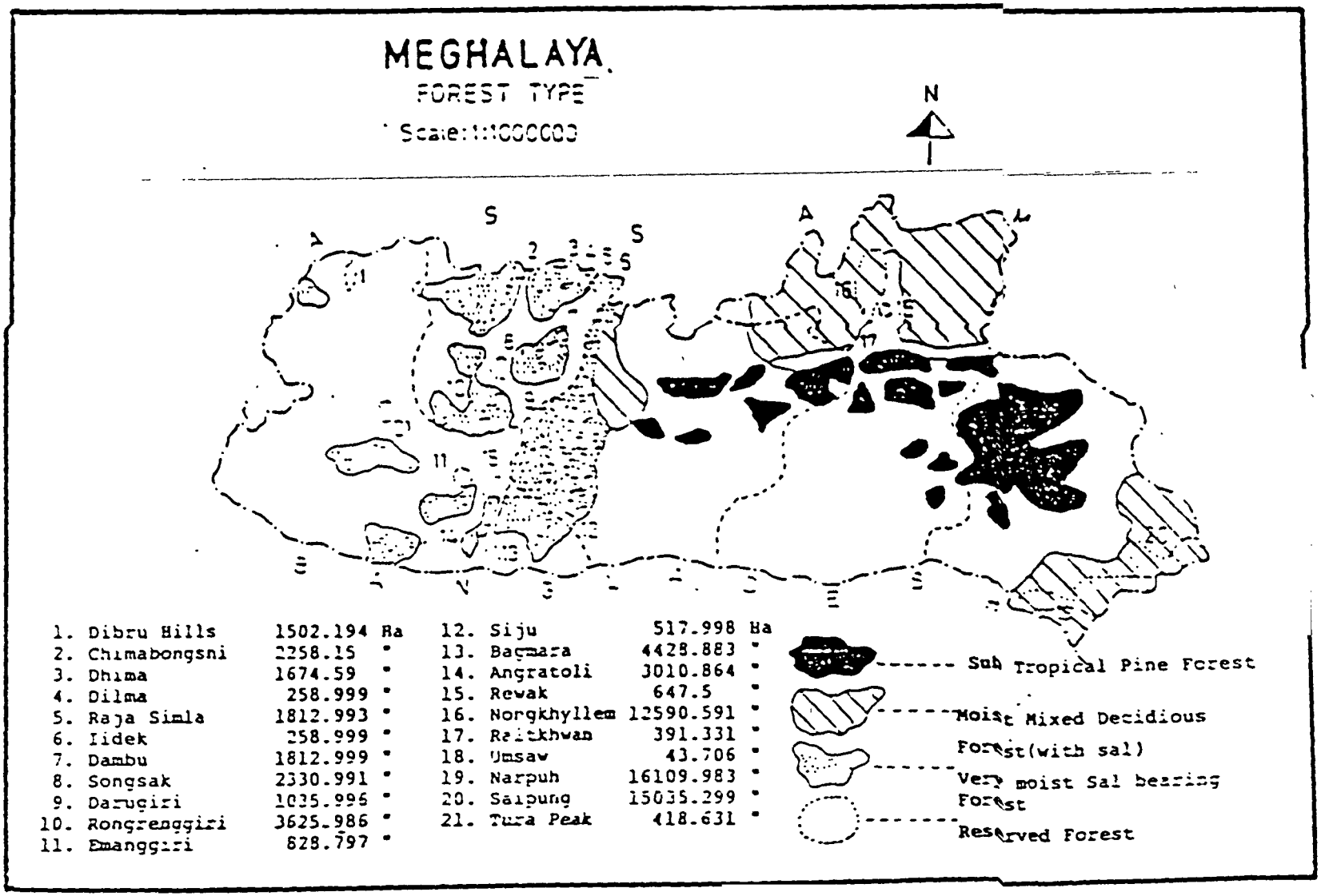

MEGHALAYA
FOREST TYPE
Scale:1:1000000
N
1. Dibru Hills 1502.194 Ha
2. Chimabongsni 2258.15 "
3. Dhima 1674.59 "
4. Dilma 258.999 "
5. Raja Simla 1812.993 "
6. Iidek 258.999 "
7. Dambu 1812.999 "
8. Songsak 2330.991 "
9. Darugiri 1035.996 "
10. Rongrenggiri 3625.986 "
11. Emanggiri 828.797 "
12. Siju 517.998 Ha
13. Bagmara 4428.883 "
14. Angratoli 3010.864 "
15. Rewak 647.5 "
16. Nongkhyllem 12590.591 "
17. Reitkhwan 391.331 "
18. Umsaw 43.706 "
19. Narpuh 16109.983 "
20. Saipung 15035.299 "
21. Tura Peak 418.631 "
Sub Tropical Pine Forest
Moist Mixed Decidious Forest(with sal)
Very moist Sal bearing Forest
Reserved Forest

Fig 3.3

present share is far below the minimum prescribed requirement of 60 per cent for the hilly area. Forests and its products have been ruthlessly cut down and exploited for the last few decades to achieve quick economic gain by some people with active co-operation of the political leaders since Meghalaya falls under the sixth schedule of the constitution of India, most of the land under forest (about 90 per cent) comes under the jurisdiction of the Autonomous District Councils and government control over forest areas is confined to the Renewable forests, National Parks and Sanctuaries which all together constitute a bare 10.47 per cent of the total forest area of the state (Fig. 3.4). Table 3.3 shows the area under different categories of forests as per their legal status.

Table - 3.3

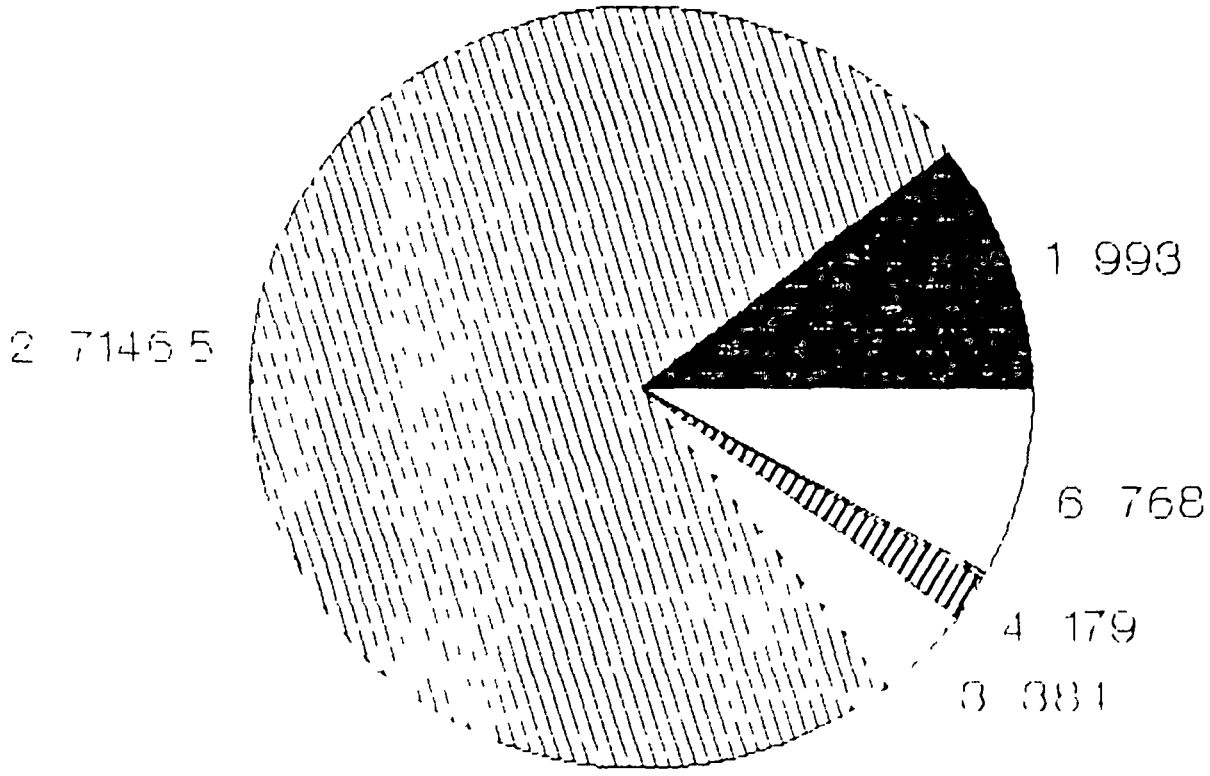
Area Under different Category of Forest with Their Legal status

Sl. No.	Status	Area (sq. km.)
1.	Reserved forest including Government Forests, National Parks and Sanctuaries	993.0
2.	Unclassified Forests	7146.5
3.	Private Forests	384.0
4.	Protected Forests	179.0
5.	Village Forests	25.9
6.	Raid (Community Forests)	768.0
	Total	9496.4

Source : Chief Conservator of Forests, Meghalaya.

Unplanned destruction of forests to meet the growing needs of the fast expanding population coupled with the practice of jhumming, forests fires and grazing by cattle have classified the states otherwise rich natural wealth to a large extent. The state government has undertaken large scale afforestation programme and the social forestry wing of the State Forest Department has taken up plantation activities in all the five districts, however, considering the extent of deforestation and large share of wastelands in the state, the need to bring more areas under such programme can not be over emphasized.

FOREST AREA
UNDER DIFFERENT CATEGORY



1-Reserve, 2-Unclassified 3-Private
4-Protected 5-Village, 6-Community

Fig 3.4

The important forest products are Sal, Teak, Birches Schimas, Beaches, Magnolia, Nahor, Tita sopa, Champa, gamani, Bogi, Pomalia, Poma, Cham, apart from Asparagus, Vallerua, Billichi, Rubia, Khasiapa, Cassia, Fisluta, Cherata, Smitex, Ayura, Terminalia, Bamboo Canes, etc. The state is also rich in flora of infinite variety.

Agriculture

The state of Meghalaya is by and large a mountaneous area. 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 utilized 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 phosphorus. 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 developed than the central and northern part.

There is a marked difference in the type of crops cultivated and the cropping pattern in the different parts of the state even within short distances. In the rugged mountain region especially in Garo Hills, jhum cultivation is still prevalent. On the other hand, the plain area have a more or less settled agriculture, under jhumming 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 pulses, oil seeds, tapioca, etc., with rice being the dominant crop. In the settled upland region crops like rice, potato, sweet potato, maize, millets, ginger, turmeric, pepper and various variety of vegetables and fruits like plum, peas, guava, grapes, peaches, etc., are also grown.

The southern belt of *Ri War* hold the monopoly of fruit cultivation. Orange is one of the important fruits of this region. Arecanuts (kwai) betel vines (lynipeco) and tezpat (la tejipat) are also grown.

In the *Ri Bhoi* area, the agro-climatic condition favours the growth of rice, ginger, pepper, betel vines, litchi, banana, papaya, mango, jack-fruit, guava, pine-apple and vegetables.

There are other local fruits which are grown in this region like Soh myngdong, Soh Myngor, Soh Kuit, Soh Ramdieng, Soh Ber, Soh Broi, Soh Kyntoi (Imli), Soh Iong, Soh Phie, Soh Phoh Khasi, Soh Shylliew, Soh Brab (Passion Fruits), Soh Phlang (Ground Nut), Soh Sjur (pyrus, begata) etc.

Modern vegetable farms have sprung up in the suburbs of Shillong town. Vegetables such as Cabbages, Turnips, Beans, Carrots, Peas, Cucumber, Squash, Leettuce, Raddiese Chillies, Brinjals, Tomato, Karela, Mustard, Pumpkins, etc., are grown in a large scale.

Rice is the major food crop grown in the state. Maize is more or less cultivated in all the districts, but only in Jaintia Hills district a substantial percentage of area is devoted to this crop. Potato is another important crop of the state. However, due to the variations in the agro-climatic conditions, the percentage of area under potato cultivation varies from 27.82 per cent in the Khasi Hills (which has very suitable conditions for the crop) to only 0.67 per cent in Garo Hills. other important crops in the state are oil seeds, jute, mesta, cotton, arecanut, sweet potato, tapioca, pine-apple, ginger, citrus fruits, etc. In the field of horticulture we see almost all types of fruits and vegetable growing in the state, thereby confirming the vast potential the area possesses

for growth of horticulture. The most widely cultivated fruits in the region are mandarin, pine-apple, banana, pears, guava, jack-fruit, etc. Citrus fruits are grownin attitude of 300 to 1000 m on slopes of varying gradients covering 14,000 hectares with an annual production of 86,000 tonnes of fruits. However, the annual production of fruits is progressively declining because of neglect of the orchards as well as due to various diseases in the trees. Further, many of these orchards are gradually being replaced by other plantation crops.

The main vegetables grown in this region are Potato, Chillies, Sweet Potato, Ginger and Tapioca. Potato covers a total area of 58 thousand hectares with an annual production of 2.70 lakh tonnes. Cabbage is cultivated in field following summer Potato. The growing of horticultural crops is not very profitable, particularly in the interior areas, because of bottlenecks in marketing, transporting and storing.

Thus it is evident that with favourable agro-climatic conditions many of these crops have direct bearing on the economy of the state. Yet there are identifiable constraints which have restricted the scale of horticultural operations in the state. These are poor cultivation practices, problems of transportation and marketing, problems of processing and inadequate financial assistance. Table 3.4, shows the area and production under different crops in Meghalaya during 1990-91.

Table - 3.4

Area and production of different Crops in Meghalaya (1990-91)

Sl. No.	Crops	Area (in ha.)	Production (in tonnes)
1.	Rice (Total)	104364	119075
(a)	Alluvium	33117	30148
(b)	Winter	69057	85336
(c)	Spring	2190	3591
2.	Wheat	4214	5555
3.	Maize	18552	23819
4.	Other Cereals	2962	2507
5.	Pulses	3198	2407
6.	Sesamum	133290	679
7.	Castor	33	16
8.	Rape and Mustard	6642	4059
9.	Jute *	4956	3883/
10	Mesta *	4785	21924
11.	Cotton **	7364	5382
12.	Sugar Cane	70	201
13.	Dry Chillies	1757	1070
14.	Tobacco	724	503
15.	Turmeric	1335	1775
16.	Arecanut	6120	5180
17.	Potato	17631	119013
18.	Sweet Potato	5042	16296
19.	Tapioca	3999	22365
20.	Soya Bean	923	883
21.	Pine Apple	8300	72000
22.	Citrus Fruits	6950	42047
23.	Ginger	6500	31121

* - Bales of 180 kg, ** - Bales of 170 kg

Source : Directorate of Economics and statistics, Meghalaya.

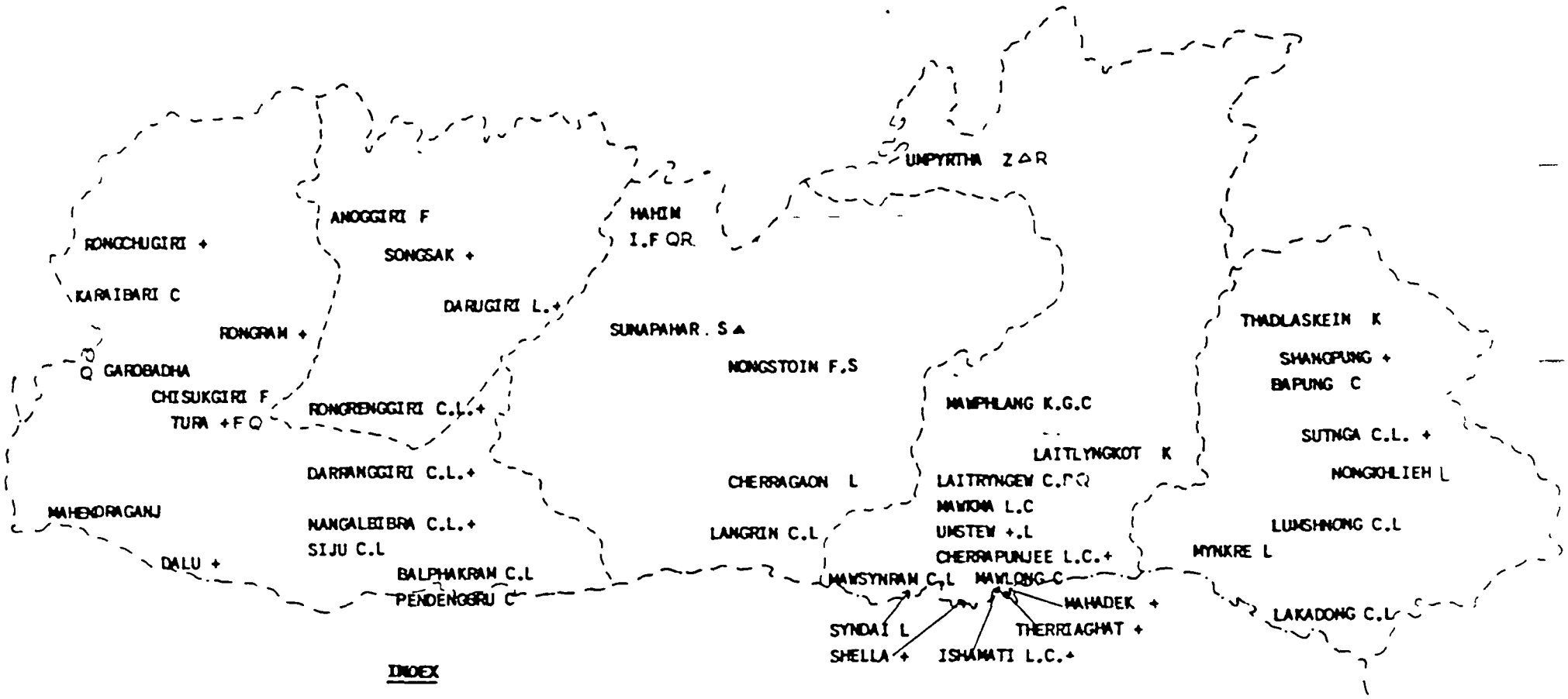
Minerals

Meghalaya is very rich in mineral resources and these resources play very important role in the states economy. Coal, Limestone, Sillimanite and Clay are the important minerals of the state that are at present subjected to commercial exploitation. The Geological Survey of India has reported the existence of the following mineral resources in the state (Fig. 3.5).

The state has an estimated coal reserve of about 4,000 lakh tonnes and produces about 60,000 tonnes annually, most of which is exported outside the state. Important places where coal is found are Umrelong, Mawfer, Lakhar, Shyunang, Bapung, Jarain, Rymbai, Utnga, Lyndong, Tiber, Lakasein, Garampani, Kharkor, Sohra rein, Mawsynram, Shella - Mawlong, Cherra, Pynursla, Lakadong, Umshang, Tenglah, Derraigiri, Langrin or Umblei, Laitryngew, Langkyrdem, Rabang, Lakaing, Khunsonoy, Mukuroi, Rajsokham, Mawlong, etc.

Sonapahar region of the West Khasi Hills district is rich in Sillimanite reserves and produces nearly 90 per cent of the country's total production of the mineral. The state is estimated to have a reserve of about 0.2 million tonnes of Sillimanite.

DISTRIBUTION OF MINERALS IN MEGHALAYA



INDEX

LIMESTONE	L	QUARZITE & GLASS	Q
COAL	C	SAND	
CLAY	+	KAOLIN	K
COPPER	R	FELDSPAR	F
SILIMANITE	S	GYPSUM	O
IRON ORE	I	LEAD	△
PYRITE &		ZINC	Z
PYRRHOTITE	P	CORUNDUM	▲
GOLD	G		

fig 3.5

Deposit of Limestone is found in Laitadong, Syndai, Pynursla, Monglatang, Sutnga, Nongkhlieh, Shella-Bholla ganj Zone, etc.

Other minerals like White Clay, Fire Clay, Kaolin, Copper, Lorendum, Gear Stnes, Iron-Ore, Oil, and Gold is also found in some parts of the state.

Water

Water is a very important resource from the point that unlike other fixed energy resources. The supply of water is unlimited in the nature on a time scale. So, development of this resource is a prime neccessary for the economic development of the state. According to an estimate, Meghalaya has the highest hydro-electric potential in the north eastern region, second only to Arunachal Pradesh. The enormous hydro power potential of the state, if properly developed and utilized, promise bright future not only for its own state but for the neighbouring states as well. Till 1989-90, the Meghalaya State Electricity Board, has five hydel projects whose combined installed capacity was 133.76 Megawatt.

Livestock

Animal Husbandary and Dairy Farming is another important resources which, if developed properly, can cater to the

economic needs of the people. This sector of the economy has not developed properly in Meghalaya. Poultry farming is extensively practiced in the state, particularly in the rural areas. Government has set up three cattle farms, ten poultry farms, nine pig farms, and one goat farm till 1986-87, which obviously is not sufficient. Table 3.5 shows the numbers of different types of livestock in the state.

Table - 3.5

Live-Stock Population of Meghalaya, 1982

Livestock	Numbers
Poultry	1418904
Cattle	549795
Pigs	206520
Goats	186282
Buffaloes	28836
Sheep	25559
Horses and Ponies	7953
Other Livestock	11635

Source : Livestock Census, Meghalaya, 1982.

Human Resources

Man plays the most important role in shaping the economy of a region. No planning can be complele without taking human-resource into consideration and hence, the need for proper man-

power planning which includes development and effective utilization of scientific, technical and other skills which are used for creating, designing and developing organization, enterprises and economic institutions and activities is of great importance.

The quality and quantity of human resource depend much on the extract of literacy and urbanisation of the population of any region because with changes in these parameters charges occurs in the types of economic activities.

Workers and Non-Workers

On the basis of economic activities, the population can be broadly divided into two categories -workers and non-workers (dependants). According to the 1991 census, 43.06 per cent of the states population which was 45.92 per cent during 1981. The all India percentage of 'working population' is 37.68 (1991). Percentage of male workers in Meghalaya is 49.09 (India : 51.56) and that of female workers is 36.69 as compared to 22.73 in case of the country as a whole. Over the last ten years, percentage of workers of both male and female's have decreased. In rural areas of the state, 45.95 per cent of the population are working as against only 30.47 per cent in the urban areas.

Table 3.6, shows the proportion of total workers, main workers and marginal workers to the total population in each district of Meghalaya during 1981 and 1991.

Table - 3.6

Proportion of Total Workers, Main Workers and Marginal Workers in Different Districts of Meghalaya, 1981-91

Districts/ State	Percentage of Total Population					
	Total Workers		Main Workers		Marginal Workers	
	1981	1991	1981	1991	1981	1991
Jaintia Hills	49.36	46.35	48.80	45.15	0.56	1.20
East Khasi Hills	41.62	41.67	40.67	40.64	0.95	1.35
West Khasi Hills	51.24	41.94	50.08	40.39	1.16	1.55
East Garo Hills	45.59	43.70	40.09	39.96	5.50	3.81
West Garo Hills	48.21	43.70	43.32	39.73	4.89	3.97
Meghalaya	45.92	43.06	43.43	40.85	2.49	2.21

Source : Census of India, 1991.

It can be observed from the above Table that while the percentage of workers in each category has declined in the state as a whole, percentage of total workers have increased in East Khasi Hills. The decline of total workers share is very very sharp in the West Garo Hills, whereas the share of marginal workers has decreased in the Garo Hills, while in

the Khasi Hills and Jaintia Hills, it shaows a marginal increase in this category.

Again if one considers the case of the 'main workers', one can find that this section of the working population is again divided into some major sections which more or less reflect the type of economic activities being carried out in the state (Fig. 3.6).

Table 3.7, shows the percentage distribution of main workers as cultivators, agricultural labourers, house-hold industry workers and other workers in the state and in its different districts.

Table - 3.7

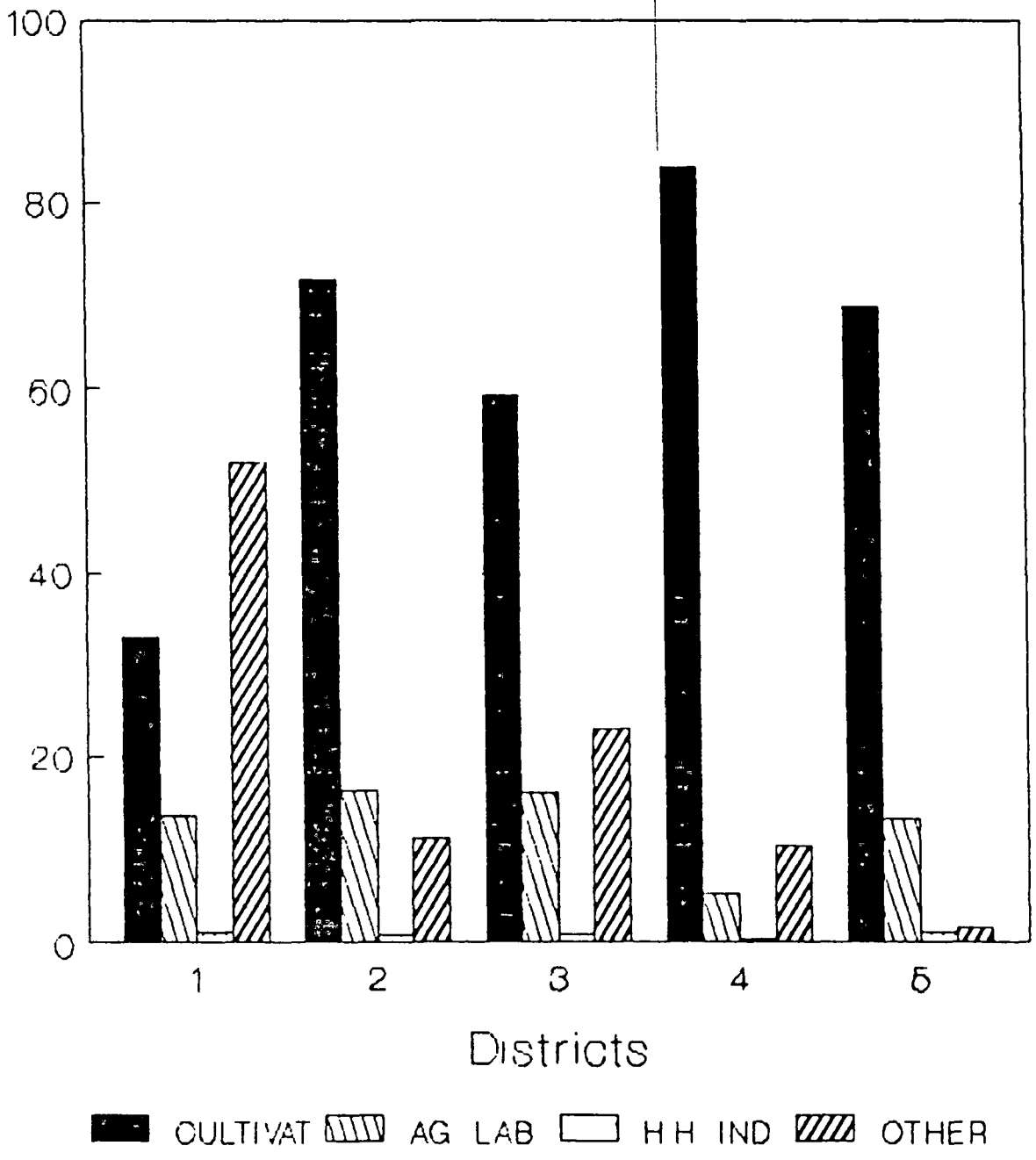
Percentage Distribution of Main Workers in Meghalaya, 1991

Districts/ State	Total Rural Urban	Percentage of Main Workers			
		Cultivators	Agricultural Labourers	House-Hold/ Industry Workers	Other Workers
	T	56.25	13.33	1.0	29.42
Meghalaya	R	64.64	14.99	0.87	19.50
	U	3.51	2.92	1.76	91.81
	T	33.23	13.63	1.17	51.97
East Khasi Hills	R	44.50	17.86	0.93	36.71
	U	1.25	1.62	1.83	95.30
	T	71.64	16.36	0.83	11.17
West Khasi Hills	R	74.49	16.76	0.76	8.32
	U	18.54	14.36	2.61	64.49
	T	59.33	16.18	0.86	23.23
Jaintia Hills	R	63.75	17.39	0.80	18.06
	U	0.92	.30	1.62	97.16
	T	83.93	5.36	0.36	10.35
East Garo Hills	R	86.45	5.34	0.33	7.88
	U	32.05	5.72	0.91	61.32
	T	68.90	13.21	1.15	16.74
West Garo Hills	R	74.12	13.74	1.13	10.99
	U	4.14	6.28	1.41	88.17

Source : Census of India, 1991.

The above Table shows that above 70 per cent of the total work-force in the state is engaged directly in

DISTRIBUTION OF MAIN WORKERS
MEGHALAYA (1991)



1-E.K Hills, 2-W K Hills, 3. Jaintia
4-E G Hills, 5-W G Hills

Fig 3.6

agricultural activities either as cultivator (56.25 per cent) or as agricultural labourers (13.33 per cent). Only 1.0 per cent work force in house-hold industries and 29.42 per cent of the work-force falls in the category of ' other workers '. All these shows the predominance of ' primary ' economic activities followed by the activities in the tertiary or in the service sector and the Table projects a low level of industrial activities being carried out in the state.

Literacy and Level of Education

According to 1991 Census, the literacy rate of the state's population was 39.16, the same for the scheduled tribes was 31.55, for the scheduled castes was 25.78 and for others it was 44.97. So, it can be seen that although the scheduled castes and scheduled tribes have been acccorded special facilities like reservations during admission in educational institutions and scholarships. Their level of literacy lags far behind than that of others. The socio-economic conditions of these people play an important role in their attitude towards education.

As far as the level of education is concerned, only 3.58 per cent of the population have studied upto graduation or above, 3.09 per cent upto XIIth standard, 3.41 per cent upto Xth standard, 36.64 per cent upto VIth standard and 20.58 per

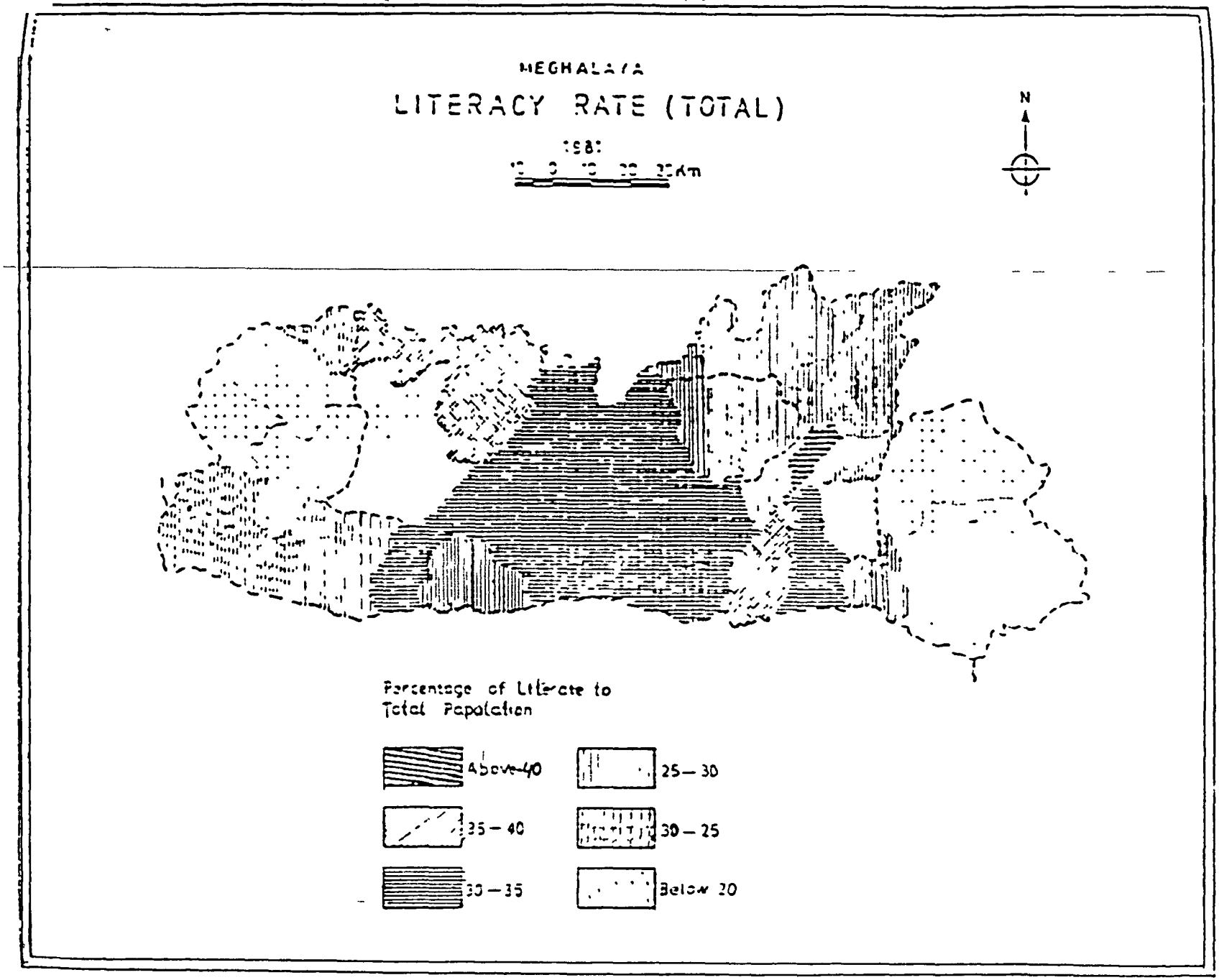

MEGHALAYA
LITERACY RATE (TOTAL)
N
Percentage of Literate to
Total Population
Above 40
35 – 40
30 – 35
25 – 30
30 – 25
Below 20

Fig 37

cent upto IIIrd standard. Above 20 per cent of the literates have not achieved any educational level (Fig. 3.7).

Table 3.8, shows the number of educational institutions in Meghalaya during 1990-91.

Table - 3.8

Number of Educational Institutions in Meghalaya, 1990-91

Sl. No.	Types of Institution	No. of Institution
1.	Pre - Primary and Pre - Basic	1272
2.	Primary and Junior Basic	4273
3.	Middle and Senior Basic	805
4.	High/Higher Secondary	447
5.	Basic/Non - Basic Training School	10
6.	Teachers Training College	1
7.	Polytechnic	1
8.	Colleges	23
9.	University	1

Source : Directorate of Public Instructions, Meghalaya.

Except one polytechnic college, the state does not have any other higher institution to impart vocational training to the students. The government has approved the setting up of a medical college in the state which is yet to take its final shape. Looking at the growing unemployment problem, the government must take up steps to see that the educated and

non-educated youths get proper facilities to train themselves so that they can start their own enterprises and thus reduces the burden on the so called 'white collar' jobs of the service sector. This will not only reduce the unemployment problem, but will also induce a new lease of life to the economy of the state.

Transport and Communication

Transport and Communication is the backbone of modern economic growth which play a very important role along with other factors in accelerating economic development. The newly formed stat of Meghalaya was all along lacking in proper Transport and Communication system and about three-fourth of road mileage were still gravelled and kachha. However, after achieving statehood, a number of projects were taken up by the government to provide accessibility to interior areas of the state and to connect those areas with the growth centres and administrative centres of the state.

Till 1990-91, the state had a total road length of about 5,687 km of which 2,407 kilometres was sufaced. Table 3.11, presents the road mileage by class of roads in Meghalaya during 1990-91.

Table - 3.9

Road Mileage by Class of Road in Meghalaya, 1990-91

(in Kms)

District	Class of Roads				
	National Highway	State Highway	Major District Roads	Other District Roads	Total
E.K. Hills	212.20	235.42	273.33	1135.54	1854.49
W.K. Hills	-	156.70	155.12	396.18	710.00
Jaintia Hills	122.49	137.68	175.49	586.68	1021.74
E.G. Hills	-	199.00	177.06	179.34	555.40
W.G. Hills	127.31	188.00	291.10	570.56	
Meghalaya	462.00	934.00	1072.10	3233.00	5687.00

Source : Public Works Department, Meghalaya.

It can be seen that out of a total area of 5687 Km, 1854.49 Km lies in East Khasi Hills district alone while only 555.40 Km lies in East Garo Hills district. The eastern part of the state is located in an area which lies on the direct path of the national Highway (No. 44) that links the state of Tripura, Mizoram and parts of Assam with the rest of the country. The state does not have any Railway Line within its teritory. At present the state does not have any commercially viable waterways and is linked by air to Guwahati, Agartala,

and Calcutta through 'Vayudoot' service which operates to and from Umroi near Shillong.

Mineral Resources

Coal, limestone, Silimanite and clay are the important minerals in the state that are subjected to commercial exploitation. Besides this, there are clear indications of the presence of iron ore, gypsum, quartz, feldspar, copper, lead, zinc and phosphate. As of present, these are still in the estimate stage and no major effort has been made to exploit them for commercial purposes. Besides this, the state has also exhibited potential for having exploitable reserves of atomic minerals. Coal and limestone, are minerals that have been exploited and exported. Limestone is partially consumed locally by the cement plant at Cherrapunji while Coal in exported to other parts of the region and the country.

Coal

The move to set up the Tea industry about 100 years ago led lot to a search for coal to cater to the energy needs of the industry as well as for railways. The state was one of the pioneers in this regard with the initiation of coal mining in places like the Darrangiri, Langria, Mawlong and Shella. In the the formative stages of coal mining, an estimated 200,000

tonnes of coal was exported annually. In the Garo Hills, coal is found in Darrangiri, Siju, Rongrengiri and Balphakra-Pngdengrew coal fields. Other notable coal fields are Jangkhre, Mermelsaram, Rengdim-Agalgithin Nabru, Holwang hills, Khylas hills, Baljong, Dogring and Asligoan hills. The Garo hills have a total estimated reserves of about 400 million tons with the largest known reserve located at Darrengiri, Siju and Balphakram-Pngdengru region.

In the Jaintiya hills, the reserves have been variously estimated at 8 million tons and is largely found in the areas of Bapung, Jarain and Thentlang, Ullatdoh and Pamsru. The quality of coal in these hills are better than others.

Limestone

Limestone is the next important mineral of the state. The state has the largest deposit of limestone in the entire North- Eastern region. The total reserves have been variously estimated at 3,000 million tonnes. However, at present only a fraction has been exploited. The largest deposit occurs in the Shella-Bholaganj zone and the Khlieriat community development block.

In the Shella-Bholaganj zone, the Cherrapunji deposits of Mewmluh-Mawsamai hills, the Laitrygew deposits of Umstew

and Mawkha, the Mawlong-Ishamati-Shella deposits and the Therriggha- Komorrah deposits are the most important ones. Besides, limestone also occurs in the Pynursla area of the East Khasi Hills districts. It is also found in the Lumahnong-Mynkre area, Sutnga, Ningkhlieh, Lakadon and Nongtanglong areas in the Jaintiya hills. In the east and West Garo hills, limestone is found in the Darrengiri-Aming, Siju-Artheka and Tura areas. Some of the important fields include Nangalbibra, Pathargithim and Baghmara traces of Garigiri.

Sillimanite

The state has the distinction of possessing the best quality of sillimanite deposits in the world. It occurs predominantly at Mawshrynrt (Sonapahar) region of the West Khasi Hills district. This mineral used as a refractive element is also found in Dapsi-Tholegiri areas of the Garo hills. About 95 per cent of India's Sillimanite comes from the State of Meghalaya. Conservative estimates put the total reserves at about 0.2 million tonnes whereas liberal estimates put it about 2 million tonnes. The total production of sillimanite a s in 1984 is 4,388 metric tonnes.

Clay and Kaolin

This is another important mineral of the state occurring mostly in the Shella-Bholaganj and Mawphlang region. Certain parts of Jaintiya 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.

Hydel Potentialities

Meghalaya has a hilly terrain. Its altitude varies from 1220 metres to 1965 metres above sea level and the area is characterized by heavy rainfall as already mentioned before. Numerous sizeable rivers rising in the high plateau with steep drops drain this mountainous state and offer ample scope for the development of electricity. Considering that this region is gifted by nature with so much natural wealth like minerals, forest and fertile lands, attempts should be made to make better use of all these. This enormous wealth can be exploited in a better way for development of the region with the availability of power. Undoubtably, the availability of cheap power would enhance the development of industries as well as as benefit agriculture. This would no doubt lead to a definite rise in the standard of living of the people of this region. Meghalaya through blessed with so much power potential is still much behind in power generation. At present, the hydel projects that have been developed in Meghalaya are in the

Umiam Umtru basin. They are the Umiam Hydel project, Stage I (36 MW), Umiam Hydel Project, State II (10 MW), Umiam Hydel Project Stage III (Kyrdemkulai) 60 MW and Umtru Hydel Project (11.20 MW), with an installed capacity totalling 125.2 MW. The combined generating capacity of four hydel projects and one small thermal station (2'5 MW) is about 127'7 MW. A new project known as Umiam-Umtru Stage IV with a capacity of 2x30 MW has recently been cleared by the Planning Commission. The estimated cost of the project is 38'80 crores. Further extension of Stages V and VI is under investigation. the total hydel power potential of the Umtru-Khri valley is 400 MW approximately.

To tap the enormous power potential of the region of the North Eastern Council has formed a corporation known as North-Eastern Electric Power Corporation Ltd. under the control of the Ministry of Energy for the purpose of planned development of the power potential of this region. The new Corporation in its first attempt in 1976 took up the execution and construction of 150 MW Kopili Hydro-Electric Project. The Kopili Project is located on the border of Assam and Meghalaya, about 100 Km from Shillong. Though it is termed as Kopili Project, the project actually consists of two power projects. There are two dams, Khandong and Umrong and two power houses Khandog and Kopili. The project is spread over an area of about 400 Sq.Km.

During the first stage, the project will have two generating units of 25 MW each at Khandong Power House. In the second phase in Kopili Power House there are two units of 50 MW each. During the second stage two more units will be set up. Thus the project will have a generating capacity of 250 MW as per present programme. However attempts are being made to raise the generating capacity of the project to 500 MW. The estimated cost of the project was Rs. 200 crores. Four generating sets of Kopili Hydro-Electric Project started in 1976 are expected to be commissioned in the year 1983. Almost all the sophisticated equipments and other materials have been purchased and installed. The Kopili projects is expected to go on stream and that the north-eastern region would have a surplus of 700 MW by the beginning of the Seventh Plan.

It is also possible to generate 600MW of power from two power stations of Kynshi river in the United Khasi and Jaintiya hills. Another 100 MW of power can be developed from Umgri river at the site of Mawphlang including a reservoir near Laitlyngkot. The MSEB is investigating a scheme on the Myntdu river near Leska in Jaintiya hills to develop two power station of 75 MW capacity. The Garo hills Thermal Project 30 MWx4 is expected to be commissioned within the next plan period. It may be mentioned that export of electricity to other states ranged

from 79 to 84% of the State's the hydel energy of the region. However, most of the villages of Meghalaya are yet to be electrified. Till March, 1981, 700 villages have been electrified. This represents a coverage of 15'3 per cent of the villages only, and 33 per cent of the rural population of the State.

The per capita power consumption is not very encouraging in the region. It was 30.9 kwh for the North-Eastern Region as a whole, as against 130.5 kwh for the All India. In Meghalaya it was 31.5 kwh coming third, after Nagaland (with 39.61 kwh.) and Assam (35 kwh.) in 1978-79. No doubt attempts are being made to improve the per capita consumption by implementing programmes of rural electrification, but even then, the regions lags behind other states. In the country, it is an accepted fact that availability of electrical energy is one of the basic infrastructure necessary for the economic development of the region.

Industries

The North-Eastern Region is one among the most industrially backward regions 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 industrialization has been rather slow as compared to others of the country. A number of factors which have retarded the development of industries in the state may be cited as follows.

This region has been traditionally neglected one since time immemorial as it constitutes an area of repulsion due to its inaccessibility. It was further strengthened by weaker communication net work. The communication network did not allow easy transfer of raw materials for industries as well as finished product to the market. However, there is definite lack of infrastructure for a rational development of industries in the plateau. The climatic factor further discourage the setting up of certain industries in the state.

Dearth of capital, trained personnel, most of the above mentioned hurdled the pace of development. Nevertheless, most of the above mentioned hurdles can be overcome, provided there is an earnest desire by all 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 see aside all prejudice and differences.

Industrial development of the state of Meghalaya, as noted earlier was dependent on its location characterized by peripharality and remoteness from the major centres of production and market of the county. So that, at the time of becoming a state (in 1972), Meghalaya had few industries like the Cement Plant at Cherrapunji, bone meal unit in Burnihat and few small scale fruit processing unit. Traditional small scale units continued to dominate the state's industrial scenario.

Ever since then, the State Government had been directing its efforts in promoting the growth of industries in the state. In this, it received favourable response from the centre. Grants-in-aid and Centrally assisted projects became the forerunners on which the subsequent development programmes of the state were based. This was encouraged by the location of Central and autonomous institutions in the state that provided both the incentives and the market. Unfortunately, however this came to be concentrated in one district- the East Khasi Hills District and particularly in capital city of Shillong and its environs. As has been noticed the induced regional disparities and inequalities to be firmly established in the state's development efforts.

By far, lack of finance and investible capital as well as inadequate and poor cadastral surveys formed some of the

factors that inhibited development in the state. This was compounded by lack of technological skills and managerial expertise within the state's population. Resorting to assistance from outside the state, in the long run aggravated regional feelings as well. Thus, keeping all these in view, the State Government adopted a policy that aimed at creation of man power in the state and utilization of locally available resources to the maximum extent possible. It is for this reason that one is often forced to conclude that in matters of industrial development, the state has reverted this aspect to the back seat. This is clearly evident in the annual as well as Five Year Plan budgetary allocations, besides having relatively ambitious policy outlining the industrial objectives.

This discouraged a detailed survey if known natural resource potentials and reservoir. This, in turn, led to weak linkage with the development process. While the medium and large scale industries had the potential to absorb the growing manpower capacity of the state, it was the small scale and cottage industries that continued to retain their importance in the State's economy today. It has been a part-time activity in moat of the rural Meghalaya. It has been severely constrained by lack of raw materials, inadequate modernization and difficulties of marketing. The efforts have been directed to reduce the impact of these anomalies by providing the state

backing. Though such efforts spelt consolidation, they hardly encouraged progress. Development in the state has to emphasize the strengthening of the infrastructural facilities and establishments of better connectivity and linkager. Regional disparities within the state can only be reduced by developing industries based on locally available resources. The inequalities and imbalances are in built in the state,s geographical environment. Minimization of the impact of the constraints be the goal rather than overcoming them.

Animal Husbandary Livestock Productions and Horticulture

The position of the state of Meghalaya in animal husbandary and livestock as well as dairy and horticulture is encouraging. These have shown immense potential for growth and development. These are also reinforced by favourable physical attributes and bio-climatic relationships. In a state with nearly 85% of the population inhabiting the rural areas and dependent on agriculture and allied activities, this sector of the economy had indicated the possibilities of affecting the needed economic transformation of the rural areas. However, this sector remained secondary to the main activity of agriculture. For example, the state is known for its high yielding cross-bred cows (experimental station at Upper Shillong). But its impact has remained marginal and hardly percolating to various strata of rural and urban population.

There are several constraints which restricted the scale of this activity. These were common factors that not only inhibited development but also indicated the reasons for the development. Some of these constraints can be identified as -

(i) Inadequate transport networks, connectivity and linkages as well as isolation and inaccessibility of rural settlements limited the spread of innovation to few areas.

(ii) Weak financial position and inadequate institutional structure compelled the scope of this sector to specific pockets.

(iii) Problems of quality, storage and fluctuations of price of animal feed has restricted the scale of activity. This was reinforced by two priority and base minimum allocation in state's development plans.

(iv) Need absence of changes in the land use that could provide alternatives and encourage development of this sector.

However, with all these drawbacks, land, livestock and agricultural development in the state are interlinked. They contribute approximately Rs. 25 crores annually to the state's revenue.

Livestock and poultry (also Piggery) are important food substitutes in the state. The following table clearly shows the livestock position in the state in 1986-87.

Table - 3.10

Meghalaya Livestock Position in 1990-91 (in 000)

Particulars of Stock	East Khasi Hills	West Khasi Hills	Jaintiya Hills	East Garo Hills	West Garo Hills
(a) Cattle	116	109.6	9	72	160
(b) Buffalo	7	4	1.5	3.2	12.6
(c) Sheep	7.4	15.7	0.79	0.0	1.3
(d) Goat	53.5	38.9	23.4	11.7	58.4
(e) Pig	70.5	41.2	26.1	23.6	4.4

No data is available for slaughter in the state. However, sample study and market conditions reveal that approximately 90,000 cattle are slaughtered annually yielding 10,620,000 kg. (beef) 60,000 pigs yielding 1,320,000 kg. of pork and 30,000 goats. In addition to this, in 159 weekly markets in the state, where cattle and pigs are slaughtered.

Piggery is quite common in the state and nearly 6 to 8 farms have been established to cater to the needs of breeding stock in the state. Besides this, poultry farming and sheep-goat rearing is also common. However, they do not meet requirements.

Horticulture

In some details distribution of various fruit crops is discussed already. Agro-climatic conditions in the state are conducive for cultivation of different types of fruits, vegetables, plantations and flowers. The state can be divided into following district regions with different crops as shown below :

Region	Groups
1. Central Plateau	Pear, Plum, Aprecot, Potato, Cabbage, Radish, Cauliflowers, Beans, Orchids,
2. Sub-Montane Region from Central region to north	Citrus, Banana, Pineapple, Papaya, Guava, Arecanut, Sweet-Potato, Beans, Tapioca, Giner, Turmeric, Brinjal, Tomato, Chilly, Orchids.
3. Border Regions (Central Regions to south upto Bangladesh Border)	

In the horticultural field we see almost all types of fruits and vegetables growing in the state; thereby confirming

the vast potential the area possesses for the growth of horticulture. The most common and widely cultivated fruits in the region are mandarine, pineapples, banana, pears, guava, jack fruit, etc. The citrus fruits are grown in altitudes of 300 to 1000 metres on slopes of varying gradients covering 14,000 hectares with an annual production of 86,000 tonnes of fruits. However, the annual production of fruits is progressively declining because of neglect of the orchards as well as due to virus diseases in the trees. Further, many of these orchards are gradually being replaced by other plantation crops. Pineapples occupy about 20,000 hectares with a total annual production of 1.67 lakh tonnes. banana occupies 2800 hectares with an annual production of about 39 thousand tonnes.

The main vegetables grown in this region are potato, chillies, sweet-potato, ginger and taioca. Potato covers a total area of 58 thousand hectares with an annual production of 2.70 lakh tonnes. Chillies (both green and dry) cover 20,000 hectares with an annual production of 10,900 tonnes. Cabbage is cultivated in fields following summer potato. The growing of horticulture crops is not very profitable, particularly in the interior areas, because of bottleneck in marketing, transporting and sorting.

Thus it is evident with favourable agro-climatic conditions, many of these crops have direct bearing on the economy of the state. Yet there are identifiable constraints which have restricted the scale of horticultural operations in the state. These are :

(a) Poor cultivation practice

(b) problems of transportation and marketing

(c) Problems of processing

(d) Inadequate financial assistance.

Conclusion

It is heartening to note that the population dependent on the shifting cultivation in Meghalaya is decreasing. In 1971, the percentage was 34.58, however it decreased upto 19.23 per cent by 1981. It is perhaps due to implementation alternative farming introduced by the Indian Council of Agricultural Research , North-Eastern Hill Region. According to project report the production can be increased to 4 to 5 times more on terraces as against jhum land. It is suggested that topography can be used in three way viz. (i) hill top, (ii) foot hill and (iii) valley. On the hill top about one-third of the area could be put under natural forest or some suitable horticulture-cum-pastoral system for checking soil erosion. Another one-third of the area on foot hills can be

terraced where improved variety of seeds and technology including manures and fertilizers may also be applied. Lastly, valley can be used for, agriculture and pisciculture respectively. This way ecological balance could be maintained properly. As jhum population prevailed over whole of Meghalaya, motivation to the society to break the taboo without breaking sentiment of the jhumia is to be done delicately on priority basis. For this interdisciplinary approache is required. The integrated approaches involve the social scientists, geographer, agriculture scientists, ecological scientists and finally an implementing body to make the issue a success.

The general pattern of crops in Meghalaya portrays the influence of physiography, climate, soils and water resource conditions plus the impact of soil framework. it has the tendency of subsistence agrarian farming with indigenous type of cultivation. The pace of agricultural development in Meghalaya is rather slow and not markedly visible. It is essentially traditional in nature.

Among the regional pattern a real coverage of foodgrains, tree crops, like jute and mesta, cotton, potato, fruits, vegetables and some tree crops. The food grains are widely operated during the kharif season with the faithful practice of jhumming and terracing. Interculture is the common operation in the dry land.

The cropping efficiency is very low in Meghalaya, it is almost 100 per cent in a year. This is because of their cropping pattern is dependent absolutely on the characteristics of physical factors.

Some suggestions are :

1. Enough attention and encouragement should be given to the livestock rearing, fruits gardening and horticulture in the uncultivable waste and fallow land.

2. Distribute high yielding varieties, chemical fertilizers, pesticides and insecticide and improved seeds to the farmers in order to give good yields.

3. Establishment of some experimental and full mechanised farms in the village so that the farmer can understand the new cultivation technique (such as Japanese double triple cropping) and use of tools.

4. Advice to jhumias for avoiding shifting cultivation and instruct them to check the soil by contouring, bunding, terracing and other possible ways.

5. Instruct the farmers to plant cash crops so that agrarian economy will be developed.

6. Government should have enough facilities of measuring and testing and selecting a suitable crop.

7. Improved agriculture infrastructure like irrigation, road and communcation, marketing centres and banks.

8. Introduce the rotation crop as well as plant of leguminous crops wherever the soil is exhausted.

9. Keep the government towards achieving of intesified agricultural operation in the state.

CHAPTER IV

Identification of Potential Resources - Their Scale, Scope and Possible Alternatives

In this chapter an attempt has been made to identify the position and implications of the resource of the state which includes both natural and human resources. Meghalaya is endowed with rich natural resources (see Chapter III), but these resources have not been used to the extent that it can bring about development in the state. In the earlier chapters, we have dealt with the resource availability of the state and on the basis of available resources we will now attempt to find out the potentiality of development that the state can achieve.

The state of Meghalaya is by and large a mountaneous one. It is only 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. The bulk of the state's population live in the rural areas depending either directly or indirectly on agriculture. However the total area available for cultivation is very low. This factor coupled with the uneven distribution of rainfall has made agricultural practices in the state, subsistence in nature. Shifting culti-cultivation is also widely practiced in the state.

Rice is the dominant crop of the state. The production of food crops and cash crops, however, are not very encouraging. There has been an overall stagnation. In certain years a fall in the production of crops has been noticed. This is very significant when one considers the use of improved inputs such as hybrid seeds, application of mannures and fertilizers and the mechanisation in the present day agricultural sector. Majority of the areas within the state have conditions that are not conducive for the growth of commercial and plantation crops like jute and cotton.

Considering all these problems of the state, importance should be given to those crops that are suitable for growth in different parts of the state. The area in and around Shillong is suitable for the growth of different varieties of vegetables These should be encouraged to grow those horticultural crops on a large scale . This can, then, not only meet its own demand of these produce but also have adequate surplus that can be exported to other parts of the country.

In the Bhoi area, the agro-climatic condition favours the growth of different varieties of fruits and other crops like ginger, pepper, etc. There is ,thus, an abundant potential in this area for horticultural activities. This can to a

substantial extent form the basis on which the economy of the area can be firmly established.

Some parts of Garo Hills favours the growth of commercial crop like tea. so step should be taken that these crops are grown on a large scale.

The state has a potential to introduce the cultivation of a variety of crops like fruits, vegetables, etc., and this will add to the economy of the state. The State should encourage the people to produce these crops on a large scale. Mushroom is also an important crop that can be grown on a large scale. This has a large market. Forest is one of the most important resources of the state. The forest cover in the staie is about 42.34 per cent of the total geographical area. The forest products of the state includes sal, teak, pine, benches, beeches, bamboo, lanes, broom sticks, variety of medicinal plants, etc.

Deforestation is carried on in a very large scale in the state. The area of forest cover in the state has been decreasing very fast, largely through movement of timber. Inspite of the vast potential of forest resources in the State, the forest based industry in the staie has not developed to the extent of exploiting the potential. Steps should be taken by the State to set up forest based industry.

The availability of bamboo and canes in the state is plenty and on the basis of this, handicrafts industries can be started. This will provide job opportunity to many people in the state. Broom sticks is also available in plenty in the state, if the government encourage the people to grow broom sticks on a large scale and provide a market for selling the broom sticks. This product can earned a lot of market outside the state.

The rich medicinal plants of the state should be protected because they have a great value and it can be used for many purposes.

Meghalaya is rich in mineral resources. It 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 region to another. However, demand for such minerals is influenced by such factors as –

a. the degree of self-sufficiency and need of the users.
b. the availability.
c. technological change.
d. change in social structure.
e. change in consumption patterns, and

f. the ability to adjust to perceived shortage of or bannes to supply by domestic re-adjustment policies.

The exploitation and the utilisation of minerals is influenced by several factors such as

a. physical, ecological, economic and technological constraints.
b. nature and pattern of Land tenure
c. political bargaining or intervention,
d. the structure of industry,

These are among the chief determinants in the supply and demand of any minerals. Coal, lime-stone, silimanite and clay are the only minerals which are at present commercially exploited in the state. Of these, lime-stone is used in the cement factory and coal is exploited on a large scale that of the other two. However, till 1990, the production of limestone is 235 thousand tonnes, coal is 3464 thousand tonnes and silimanite is 1.6 thousand tonnes (for which data is available) respectively, to 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 of the state. Apart from the above four minerals, there are also other valueable minerals but their quantity and quality are not

satisfactory. However, these potential minerals have the tendency (ies) of transforming themselves into destabilising situations. Besides, they also have significant socio-environmental connotations.

One of the reasons for the slow pace of socio-economic growth in Meghalaya was the lack of power supply, inspite 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. 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 insignificantly though only a small percentage capacity have so far been generated. Table 4.1 shows the existing installed capacity in Meghalaya.

Table - 4.1

Installed Capacity of Power Projects in Meghalaya, 1990-91

Sl. No.	Projects	Installed Capacity (Megawatt)
1.	Umiam Hydel project	
	(a) Stage 1	36.00
	(b) Stage II	18.00
	(c) Stage III	60.00
2.	Umtrew Hydel Project	11.20
3.	Nangal Bibra Thermal Project	5.00
4.	Tura Diesal project	2.05
5.	Swapani (Micro-Hydel) SESU	1.51
	Total	133.76

Source : Meghalaya State Electricity Board.

Apart from the above projects the IVth stage of Umiam-Umtru Hydel Project with an installed capacity of 60 MW is yet to be completed.

The state has plenty of water resources and the physical features of the state also provide enough scope for the development of water projects in the state. So, this rich natural resource of the state should be properly tapped and should be utilized in a proper manner so that it can bring about development in the state.

Non-conventional energies like energy from the wind, sun, etc., can also be used as an alternative sources of energy in the state.

The north eastern region is one among the most industrially backward region of the country. The state of Meghalay being a part of this region, is no exception to this. Though the state is endowedwith enough raw material for the setting up of certain industries, there are no important industries worth mentioning in the state. In other words, the pace of industrialization have been rather slow when compared with other parts of the country. However, there are number of factors which have retarded the development of industries in the state. The conservatives and orthodox nature of the people who are prejudice towards any innovation. The lack of communication had never allowed transfer of raw material for industrial use as well as finished products to the market. The step-motherly treatment and indifferent attitude of the Central Government towards this state. Climate is also a determinant factors which discourages the setting up of certain industries in the state. Dearth of capital, technical manpower and nature of the terrain are other factors which reduced the pace of development in the state. Locational isolation and remediness of the state from the major production centres and market of the country plays an

important role in the slow rate of industrial development of the state.

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

Inspite of the prevailing difficulties, the State is trying to promote industrial ventures within the state based on locally available sources. Keeping this in view, the Meghalaya Industrial Development Corporation (MIDC) was established in April 1971, which has helped in setting up a number of small and medium sized units. Two areas in the state have been declared as industrial areas. They are Burnihat and Khwar in East Khasi Hills district. Small scale and cottage industry is still dominant in the state. The government is exploring all the possibilities to develop the rural economy and to ensure speedy and all round development of the state.

The industries department, Government of Meghalaya, have categorized all registered industries in Meghalaya into four main heads. They are -

1. Manufacturing industries.
2. Repairing and servicing industries.
3. Processing industries.
4. Other industries which includes tailoring, saw mill, arts and stone crushers industries etc.

Table - 4.2

Small Scale Industries by Types in Meghalaya, 1991-92

Sl. No.	Industries	No. of Units	Investment in Plant & Machinery (Rs. in Lakh)	No. of Persons Engaged
1.	Motor Repairing, Servicing, etc.	114	65.30	846
2.	Wooden Furniture	179	28.91	932
3.	Leather based Industries	18	1.66	90
4.	Bakery	166	59.02	871
5.	Flour & Rice Mills	164	92.83	774
6.	Tailoring	168	14.19	857
7.	Printing Press	34	67.94	317
8.	Cement based Industries	128	39.63	714
9.	Knitting & Embroidary	100	9.17	265
10.	Steel bases Industries	82	47.35	514
11.	Tyre Retreading Works	43	45.75	236
12.	Saw Mills	52	87.19	691
13.	Stone Crushers and Sandstone Chips	23	54.86	339
14.	Cane & Bamboo Works	81	3.30	300
15.	Weaving	44	3.71	243
16.	Lime Making	48	191.80	686
17.	Others	289	191.96	1494
	Total	1733	932.57	10169

Source : Directorate of Industries, Meghalaya, Shillong.

From the Table, it can be clearly seen that out of the total population of 17,60,626 of the state, only 10,169 persons (0.57 per cent) are engaged in industrial activities. The total number of registered industrial units in the state is 1733, but the concentration is more on manufacturing and repairing and servicing industries. So, it can be clearly seen that till present, the industrial units in the state are still very few. Efforts should be made to increase the number of small scale industries in the state, because there is still a lot of scope and potentials for the development of industries in the state. This will inturn increase the job opportunities for the people and it will also reduce the rate of dependency on government jobs.

The following Table gives the district-wise distribution of industries in the state.

Table - 4.3

District-wise Number of Registered Small Scale Industries, 1991-92

District	No. of Units	Investment in Plant & Machinery (Rs. in lakhs)	No. of Persons engaged
East Khasi Hills	891	689.46	6471
West Khasi Hills	274	58.27	1256
East Garo Hills	132	40.46	610
West Garo Hills	217	59.46	1007
Jaintia Hills	219	84.92	825
Total	1733	932.57	10169

Source : Directorate of Industries, Meghalaya, Shillong.

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 the West Khasi Hills district. It is evident that West Khasi Hills district is the most industrially backward district of the state. The other three districts, though slightly more industrialized 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 East Khasi Hills district. Thus,

judging from this, we can see that there is a marked disparity that exists in the over all industrialization in the state.

The state also has the potentiality to develop tourism industry in the state. The scenic beauty enhances the development of this industry. But this industry still lags far behind. The main reason for this is that the state has not taken the initiative to develop this industry, development of this industry will provide ample job opportunities to the people and it will also increase the revenue of the state.

Table 4.4, shows the number of tourist spots in Meghalaya during 1991.

Table - 4.4

Tourist Spots in Meghalaya, 1991

Sl. No.	Districts	No. of Tourist Spots
	East Khasi Hills	28
	West Khasi Hills	9
	East Garo Hills	4
	West Garo Hills	8
	Jaintia Hills	7
	Total	56

Source : Directorate of Tourism, Meghalaya, Shillong.

As it is evident from the table, East Khasi Hills district has a maximum number of tourist spots in the state followed by West Khasi Hills, West Garo Hills, Jaintia Hills and finally East Garo Hills. Except for East Khasi Hills, the other districts still lags far behind in this industry. There are many beautiful tourist sopts in all the districts of Meghalaya, but, except for Khasi Hills the others are left unseen or uncared by the government. The main reason for this lag of development in other districts of the state is due to lag of proper network system connecting these areas with other parts of the state. In order to bring about an all round development in the state proper network of transport should be there in order that development can take place.

In summing up, it can be said that -

- Many factors combine to determine the behavious of states. All variables such as fuel, water, minerals, food crops, population have to be considered.

- Population trends and their perceptions by decision makers are the major component of interaction. Constraints in availability of material is an important repurcussion of destabilising population growth. The relationship between population and its resource base is closely tied with population change. It

underlies a chance of events leading to greater aggressiveness in the face of liberalisation and competition. Population of the state has not been able to provide for needed organizational change. Availability of resource and improved standard of living have distanced from each other.

- Efforts to introduce value - added activity has became imperative. The traditional raw material exports of coal, limestone, forest products and select agricultural products required a different pattern and re-orientation to effect greater return.

- State's geo-ecology parameters form the development of horticulture. Fruits and Vegetables can form a basis of accelerating agro-industrial activity in the state.
- Floriculture, fisheries, dairying and poultry can form the required alternatives, if management, technology and investments are assured.

- Technology and capital inputs can accelerate the share of cottage and handloom industries.

- Customary specilisation of an administrative centre, educational and health centres can be given due encouragement. This will form a core disseminating contemporary technology inputs and understanding.

- Existing efferts in overloading administrative aspects of development may be discouraged while allowing the resultant surplus for alternatives suggested above.

- High degree of politicisation of issues, need to be toned down, in order to provide development initiative to have a visual impact.

- The state, the society and the party needs to reorient their perspectives to take advantage of liberalised context of development.

CHAPTER V

Levels of Development - Scale, Scope and Alternatives

Development in Meghalaya, like any other states in the north eastern region, had always progressed in fits and starts. Minerals, transport and industries have intimate relationship which helps in building the basic strength of the economy of any region. Pace of change was subjected to ecological and environmental conditions. As a result, the process of industrialisation was slow with the agricultural sector clearly exhibiting physical and cultural limitations. In other words, the elements of environment in the State of Meghalaya is characterised by diverse eco-systems such as mountains, plains and plateau. Lately, the degradation of the environment has been a matter of common concern to all, and has accelerated by rapid but unplanned urbanization large-scale deforestration (that has led to severe soil erosion), increasing tendency of pollution and so on.

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 indispensible for any modern economy. Prior to the attainment of a separate state, the transport system in Meghalaya was deplorable. After the attainment of its statehood, the state

allocated larger investments to strengthen, improve and extend the transport infrastructure in the state.

One of the main hurdles that retarded the development of a good transport network in the state was the distribution of relief features. Hill ranges dominate the state's physical landscape and along with dominant plateau section, the development of all forms of transport became difficult.These involved heavy capital investment.

To understand the process of development with a single indicator is not possible. Paucity of adequate data has always been a major constraint in comprehending the problems of underdeveloped hill areas. Due to the circumstances that is common to the north eastern region as a whole, the researcher has used the data and informations mainly from the secondary sources. As a result the analysis has been possible at the district level only.

Indicators have been chosen to measure the levels of development in the state. These indicators have been divided into four groups, each to measure the sector-wise level of development.

Both physical and human resources are important for the development process of any region. Forest and their products

form an important component of the economy of the tribal region. The extent of land under forest is a good indicator as far as the resource endowment of the area is concerned.

For any kind of developmental activity, good transport and communication net work is a basic pre-requisite. Development is meant for the people. In Meghalaya, a few decades back was considered as an area of relative isolation the density of population clearly reveals the trend of resource exploitation in its different parts. Percentage of workers to the total extent of the people's physical involvement in the developmental process. Areas undergoing more developmental activities facilitate the involvement of more people giving rise in a higher percentage of work force in the demographic structure of that particular area.

Education play an important role in the socio-economic development of the people. The level of educational attainment shows the level of socio-economic development of any region. In the absence of this sort of data, another indicator, i.e., literacy rate which is surrogate in nature has been taken into consideration. Like other hilly regions of the north-east, Meghalaya was also exposed to the process of modern education relatively late and thus the basic education is an important component which reveals the trends of development process.

Table 5.1, shows the different indicators of resource development in the state mentioned above in different districts of the state.

Table - 5.1

Indicators of Resource Development

District	% of Area Under Forest to Total Land Area	Average Road Length (Km/100 sq. Km)	Density of Population per 100 Sq. Km.	% of Workers to the Total Population	% of Literate to Total Population
East Khasi Hills	37.47	33.77	126	41.67	43.73
West Khasi Hills	33.02	13.53	41	41.94	31.97
East Garo Hills	42.77	21.34	73	43.77	33.51
West Garo Hills	41.25	21.15	86	43.70	25.91
Jaintia Hills	24.38	26.75	57	46.35	24.51

As mentioned earlier, about 70 per cent of the state's population is dependent on agriculture whereas, only about 8.60 per cent of the total land area in the state is utilised for the cultivation of crops. So, to get a clear picture of the level of development, development of agricultural sector must be taken into account, percentage of agricultural area to the total land area and percentage of irrigated area to the total agricultural area show on what scale agricultural activities

are carried out in the state. In an economy where the agricultural sector is a core of subsistence in nature, higher percentage of agricultural labourers show higher level of agricultural development. Similarly, higher consumption of fertilizers can be considered to be an important indicator of higher level of agricultural development.

Table 5.2, shows the indicators of agricultural development.

Table - 5.2

Indicators of Agricultural Development

District	% of Agri Area to Total Geographical Area	% of Irri- to Total Geographical Area	% of Ag. to Total Main Workers	Consumption Fertilizer per 100 ha. of Agricultural Land (MT.)
East Khasi Hills	7.72	18.40	13.63	4.12
West Khasi Hills	3.85	31.70	16.36	7.00
East Garo Hills	10.96	32.75	16.18	0.24
West Garo Hills	7.81	26.10	5.36	0.31
Jaintia Hills	13.71	24.61	13.21	0.22

As far as industrial development is concerned, Meghalaya is relatively a backward state. The physical features of the state, climate, lack of aequate transport and communication net

work, lack of finance, availability of technical and managerial skills have retarded the growth of industries in the state. The industries found in the state are linked with agriculture. Thus, both agricultural and non-agricultural enterprises must be considered to understand the level of industrial development in the state. Coal is the major mineral produced in the state and a large number of industrial unit do depend on it for operation.

Table - 5.3

Indicators of Industrial Development

District	No. of Agricultural Enterprises	No. of Non-Agricultural Enterprises	% of Workers in House-hold Industries to Total Main Workers	Production of Coal (1000 tonnes)
East Khasi Hills	13573	1384	1.17	8
West Khasi Hills	2625	160	0.83	35
East Garo Hills	8606	3606	0.86	8606
West Garo Hills	7340	346	1.15	4
Jaintia Hills	2713	379	0.36	-

The level of development of basic amenities which are often meant for the society to be benefitted at large are known as ' Social Amenities '. Social Amenities are an important in duration of the overall development of any region. It is seen

that economic development leads to the development of social amenities in certain areas whereas in some other areas where economic development is not expected to take place as fast as in economically developed areas, the development of Social Amenities are generally done by the government. With higher level of economic development, the aspirations of the people of a particular region afterwards turned into political demand and the development of these amenities reflect how far their demand have been catered too. Percentage of villages electrifies, number of vehicles, number of hospital beds, number of banks and number of post offices per unit number of persons have

Table - 5.4

Indicators of Development of Social Amenities

District	% of Villages Eletrified	No. of Vehicles (per 1000 Persons	No. of Hospital Beds (per 1000 Persons)	No. of Banks (per 1000 Persons)	No. of Post Offices (per 1000 Persons)
East Khasi Hills	41.04	19.86	1.67	0.10	0.23
West Khasi Hills	26.20	0.65	0.19	0.07	0.35
East Garo Hills	30.64	1.98	0.16	0.06	0.21
West Garo Hills	16.21	2.16	0.30	0.05	0.81
Jaintia Hills	51.24	7.24	0.52	0.08	0.31

been taken in the present study as indicators of development of such 'Social Amenities' in the state.

The above mentioned are the indicators selected for measuring the levels of economic development at the district level in Meghalaya. Attempt has ben made to maintain consistency in the selection of variable. Due to the paucity of data, selection of more indicators was restricted.

Composite value of all the indicators is most important to understand the overall levels of development in the state. The data used in the study was of a different scales, this provided a serious limitation in comparing the levels of economic development in the different parts of the state. In order to minimise the apparent limitations, a simple statistical method have been used, where all the variables in each set, viz., resource, agriculture, industry and social amenities have been made scale free by using the formula,

$$(X - \text{Mean}) / \text{S.D.}$$

where X is the unit variable.

The scale free units in case of each district were summed up to find out the composite index for the districts.

$$\Sigma\ (X-\text{mean})/\text{sd.} = \text{Composite Index.}$$

"This method was found suitable because it retained the magnitude as well as the relative range which were compared on scale"[1]. This method is found suitable when the number of observations are few. The variables when converted to free unit scale are often accompanied by ' - ' sign, but this sign does not mean negative development. But on the other hand, it shows the magnitude of differences between variables on free scales. Similar is the case with composite index.

Composite indices for all the set of variables were computed by adding the scale free values of the indicators to find out the respective levels of development of each district in their respective category.

In the next stage, the composite indices for all the four nets were taken as single variables and were added to find the overall levels of development of each district in Meghalaya.

---

1. Gopalakrishnan, R. : " Levels of Development and Urbanization ", Geography of Meghalaya , Rajesh Publications, New Delhi, 1989, p. 96.

Table - 5.5

Levels of Resource Development

COMPOSITE INDEX

District	% of Area Under Forest	Average Road Length	Density of Population	% of Workers	% of Literate Persons	Composite Index
East Khasi Hills	0.26	1.56	1.71	-1.08	1.73	4.18
West Khasi Hills	-1.42	-1.46	-1.23	-0.92	-0.005	-4.035
East Garo Hills	1.06	-0.29	-0.12	0.16	0.23	1.04
West Garo Hills	0.83	-0.32	0.33	0.125	-0.88	0.085
Jaintia Hills	-1.72	0.51	-0.68	1.70	-1.09	-1.28

Table - 5.6

Levels of Agricultural Development

COMPOSITE INDEX

District	% of Agricultural Area	% of Irrigated Area	% of Agricultural Labourer	Consumption of Chemical Fertilizer	Composite Index
East Khasi Hills	-0.327	-1.598	0.17	0.633	-1.122
West Khasi Hills	-1.489	0.96	0.853	1.68	2.004
East Garo Hills	-0.3	-0.117	-1.898	-0.753	-3.068
West Garo Hills	1.471	-0.404	0.065	-0.785	0.217
Jaintia Hills	0.646	1.162	0.808	-0.778	1.838

Table - 5.7

Levels of Industrial Development

COMPOSITE INDEX

District	No. of Agricultural Enterprises	No. of Non-Ag. Enterprises	% of Workers in HH. Industry to Total Main Workers	Production of Coal	Composite Index
East Khasi Hills	1.616	0.162	1.024	-0.591	2.211
West Khasi Hil	-1.064	-0.788	-0.137	-0.543	-2.532
East Garo Hills	-1.043	-0.618	-1.741	_	-3.402
West Garo Hills	0.090	-0.732	0.956	-0.598	-0.248
Jaintia Hills	0.040	1.887	-0.034	1.732	3.985

Table - 5.8

Levels of Development of Social Amenities

COMPOSITE INDEX

	% of Villages Eletrified	No. of Vehicles	No. of Hospital Beds	No. of Banks	No. of Post Offices	Composite Index
East Khasi Hills	0.659	1.896	1.930	1.500	-0.506	5.479
West Khasi Hills	-0.568	-0.806	0.667	0.000	1.469	0.762
East Garo Hills	-0.201	-0.619	-0.719	-0.500	-0.719	-1.183
West Garo Hills	-2.897	-0.594	-0.474	-1.000	-1.183	-6.148
Jaintia Hills	1.503	0.121	-0.088	0.500	0.844	2.880

Table - 5.9

Levels of Overall Development

District	Resource	Agri-culture	Industry	Social Amenities	Over all Level
East Khasi Hills	4.180	-1.122	2.211	5.479	10.748
West Khasi Hills	-4.035	2.004	-2.532	0.762	-3.801
East Garo Hills	1.040	-3.608	-3.402	-2.758	-8.188
West Garo Hills	0.085	0.217	-0.284	-6.148	-6.130
Jaintia Hills	-1.280	1.838	3.985	2.880	7.423

Analysis of Data

Resource-wise, the East Khasi Hills district indicated the highest composite index (4.18), followed by East Garo Hills district (1.04), West Garo Hills (0.085), Jaintia Hills (-1.28) and West Khasi Hills (-4.035). From this we can see that the district of East Khasi Hills, with Shillong as the capital and also the district headquarter, has a great potential for rsource development. This development can be partially explained by the accessibility factors, where the average road length is (35 Km. per 100 sq. Km) provides a better infra-structure for economic development. West Khasi Hills exhibit the lowest level of resource development and this can be attributed to low level of accessibility in the district. The high density of population and the high literacy rate in the

case of East Khasi Hills seem to provide the scope for better development (Fig. 5.1).

In the case of agricultural development the highest level is found in the West Khasi Hills district (2.004), this is followed by Jaintia Hills (1.838), West Garo Hills (0.217), East Khasi Hills (-1.1 122) and finally in the East Garo Hills (-3.068). West Khasi Hills district has a relatively higher percentage of agricultural labourers to total main workers, higher percentage of agricultural area under cultivation and very high consumption of chemical fertilizers. However, the district has the lowest percentage of area under agricultural operations compared to the other four districts. Thus it can be said that in order to overcome the limitations of agriculture in the district more inputs are used to minimise agricultural output. As a result of which the district has attained the highest level of agricultural development. Except in East Khasi Hills and West Khasi Hills districts the consumption of chemical fertilizer in the other three districts is low. West Garo Hills also poses the highest percentage of agricultural land but land under irrigation and also the consumption of fertilizer is low in this district and this has put the district in a lower level inspite of its vast potential for agricultural development (Fig. 5.2).

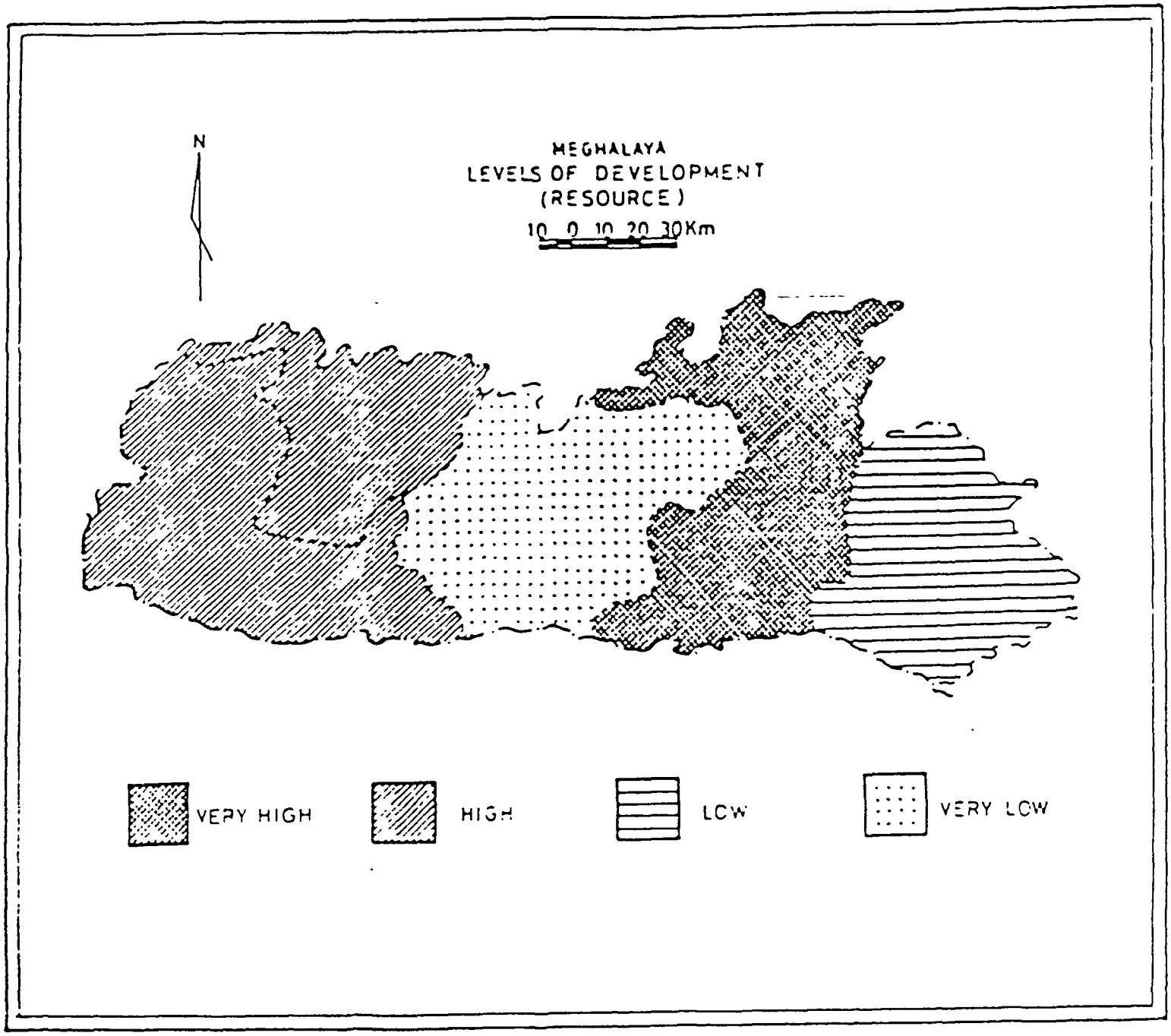

N
MEGHALAYA
LEVELS OF DEVELOPMENT
(RESOURCE)
10 0 10 20 30Km
VERY HIGH
HIGH
LOW
VERY LOW

Fig. 5.1

When it comes to industrial development, the figures clearly shows that Jaintia Hills district showed the highest level of development (3.985), which is followed by the East Khasi Hills (2.211), West Garo Hills (-0.284), West Khasi Hills (-2.532) and Last Garo Hills (-3.402). Higher level of industrial development in the two districts of Jainti Hills and East Khasi Hills may be attributed to the transport facilities that these two districts posses (Fig. 5.3).

In regards to the development of social amenities, it can be seen that the district of East Khasi Hills by virtue of its location and by the location of the state's capital at Shillong had the maximum number of factors conducive to economic development. Shillong being one of the largest urban centres in the state tend to attract most of the allied and economic activities to be concentrated around Shillong, this give rise to the increse in the social amenities in the district. For example, the industrial area of the state have been set in this district. Jaintia Hills follows East Khasi Hills in the distribution levels of social amenities, which is followed by West Khasi Hills, and then East Garo Hillsand the lowest level of development of social amenities is in the West Garo Hills district (Fig. 5.4).

After having seen the levels of development in turns of the four set of variables it is equally important to find out

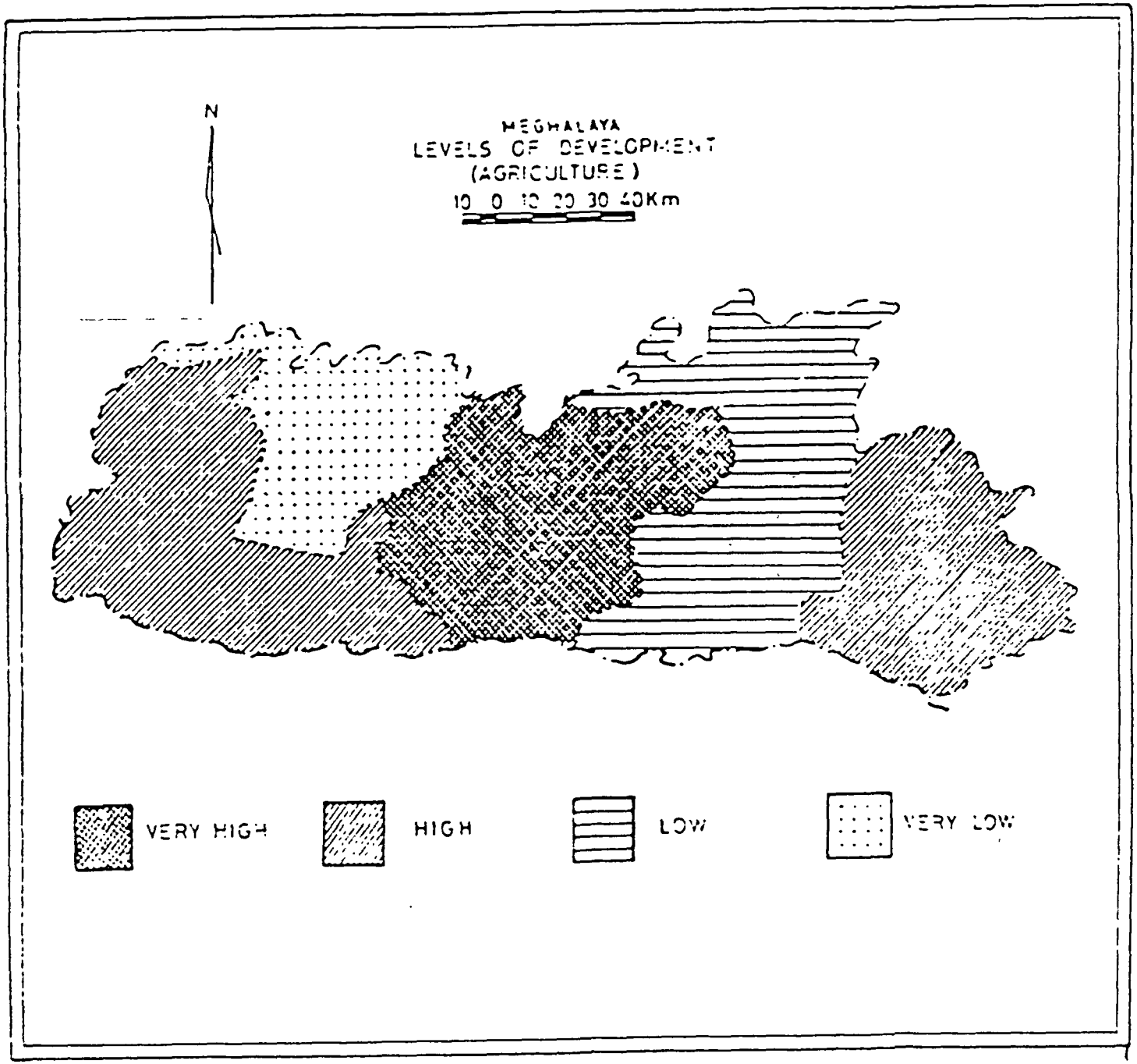

N
MEGHALAYA
LEVELS OF DEVELOPMENT
(AGRICULTURE)
10 0 10 20 30 40Km
VERY HIGH
HIGH
LOW
VERY LOW

Fig. 5.2

the overall levels of development or to comprehend the development in totality.

When we look at the overall levels of development in the state we can clearly see that the East Khasi hills district have achieved the highest level of development in the state. It has also been mentioned earlier that East Khasi hills district because of the early exposure and better communication facilities and because of other socio-economic factors in this district has made it possible for this district to achieve high levels of development in comparision to other districts. Jaintia hills district follows East Khasi hills in the overall levels of development in the state and this can be attributed to the availability of minerals in large quantity, its nearness to the state capital and its location has helped Jaintia hills districts to achieve high levels of development. The other three districts ie, West Khasi Hills, East Garo Hills and West Garo Hills are the backward districts of the state.

From this study it can be clearly stated that physiography, climate, transport and communication, availability of social amenities and other socio-cultural factors clearly shows their influence on the development process in the state. In most cases the hurdles, which prevents development in the state have been able to overcome in some ways or the other but more

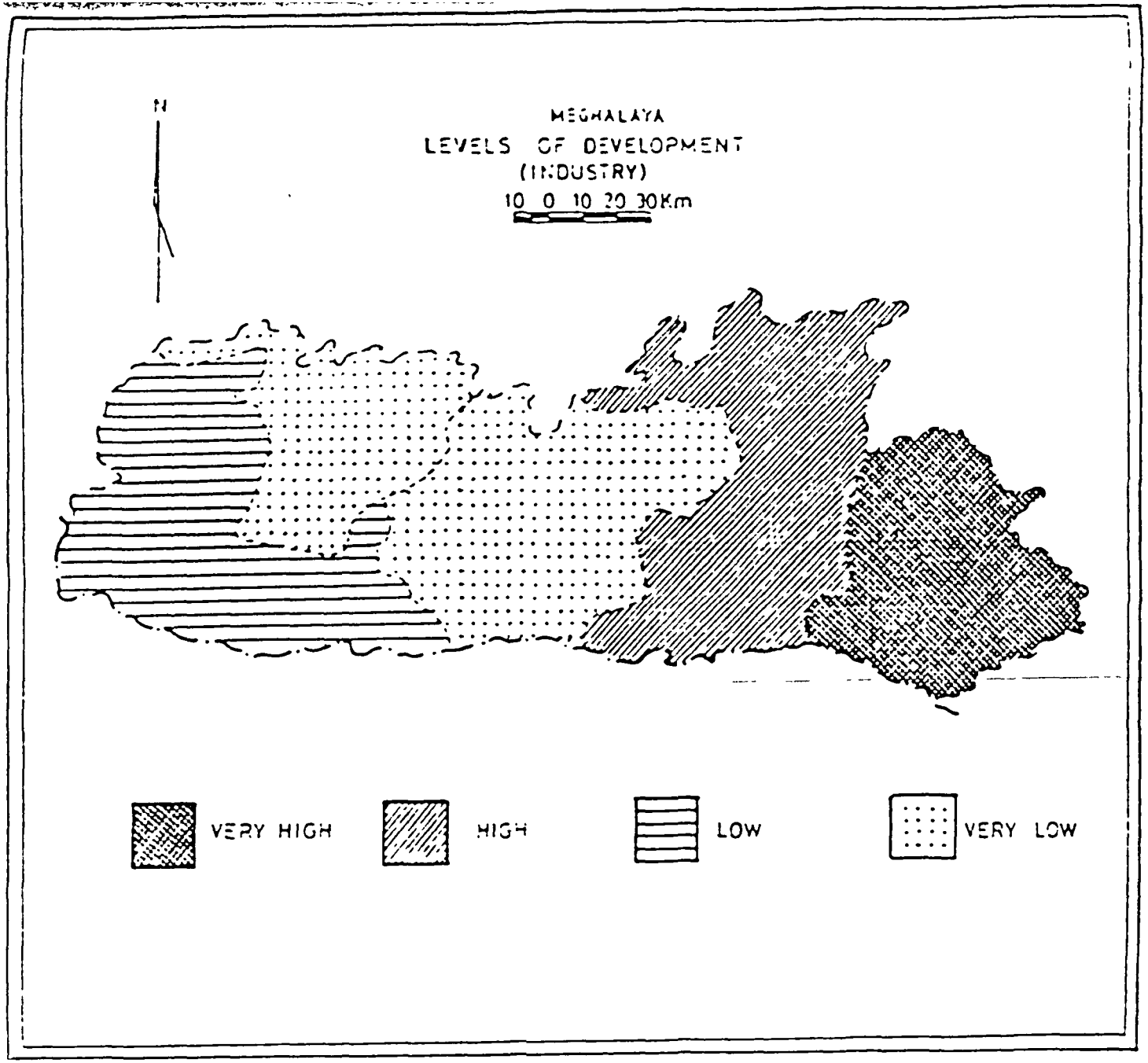

N
MEGHALAYA
LEVELS OF DEVELOPMENT
(INDUSTRY)
10 0 10 20 30Km
VERY HIGH
HIGH
LOW
VERY LOW

Fig. 5.3

efforts need to be made in order to achieve an all round development in all the districts of the state (Fig. 5.5).

Levels of Urbanisation in Meghalaya

The pattern of Urbanisation in Meghalaya has been unique in the sense that it was the form of functions that determined the emergence of urban nodes in the state. This is clearly illustrated by the existence of seven urban nodes in the state - of which five were the district headquarters and the rest the sub-divisional headquarters. Of all these urban centres, Shillong Urban Agglomeration is the biggest and is classified as class I town (1991 census) with a population of 222273 (1991). Other towns in the state fell within the range of class III to class V towns of the census classification of towns. This suggests that the urban pattern in the state is subject to a lot of variations and stress faction.

The growth of urban population in the state has been rapid. At present 18.69 per cent of the population lived in urban areas.

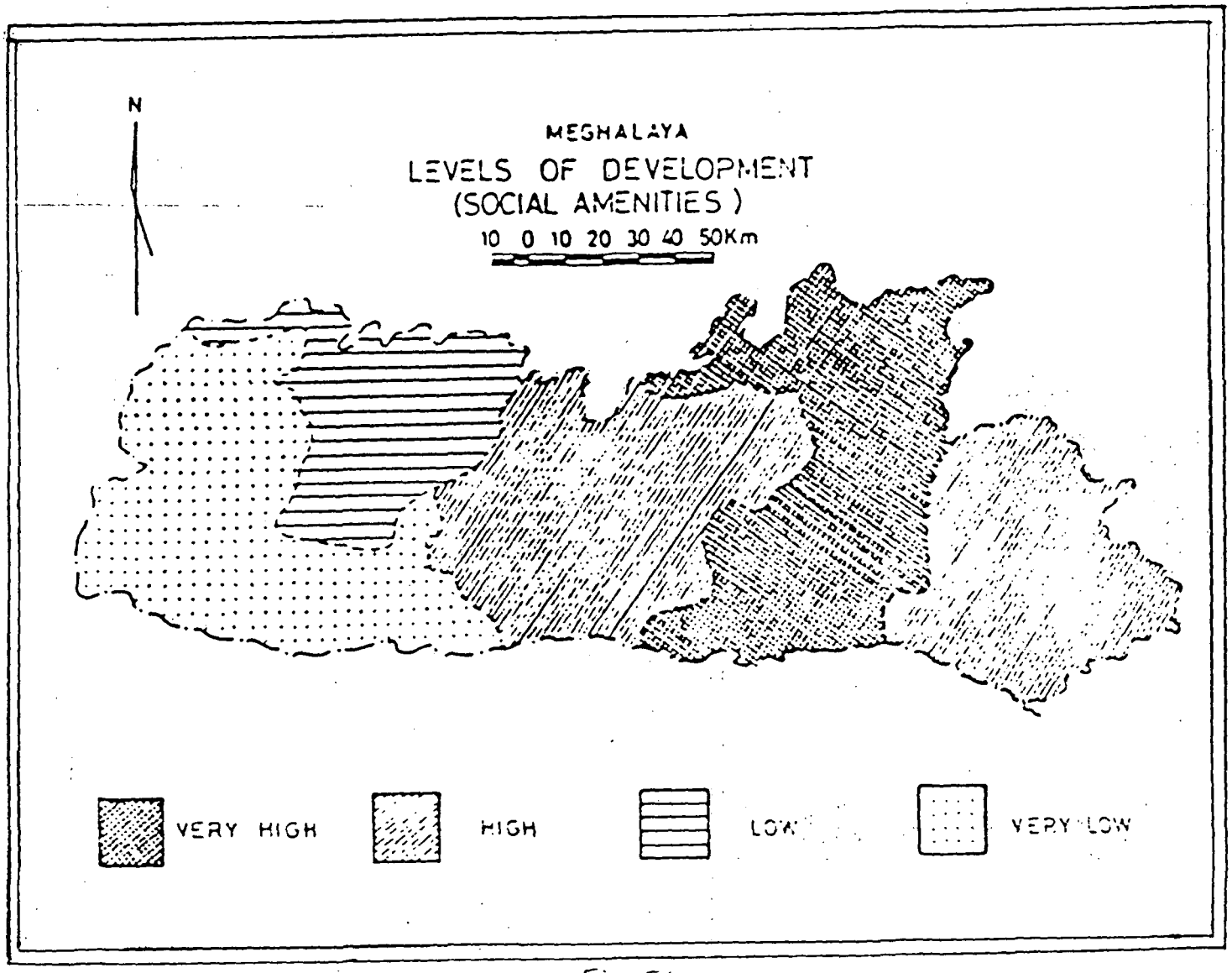

N
MEGHALAYA
LEVELS OF DEVELOPMENT
(SOCIAL AMENITIES)
10 0 10 20 30 40 50Km
VERY HIGH
HIGH
LOW
VERY LOW

Fig. 5.4.

Table - 5.10

Population of Towns in Meghalaya, 1981 & 91

Sl. No.	Towns	1981	1991
1.	Shillong Municipality	107673	130691
2.	Shillong Cantonment	6653	11075
3.	Madanrting	6160	8927
4.	Mawlai	20280	30442
5.	Nonthymmai	21563	26816
6.	Pyntherumkhrah	10735	14322
	Shillong Agglomeration (1-6)	173064	222273
7.	Sohra	6104	7833
8.	Nongstoin	3876	14378
9.	Jowai	12908	20713
10.	Tura	35131	45677
11.	Baghmara	4290	6220
12.	Williamnagar	4290	11985
	Total	239501	329079

Source : Census of India, 1991.

Shillong Urban Area has the highest urban population and this area is not only fast growing but it has already grown in magnitude and size. This invited the immediate attention of planners. The growth of the urban area has not been uniform in all direction. The area has grown in a haphazard way due to the absence of well defined framework for physical development and

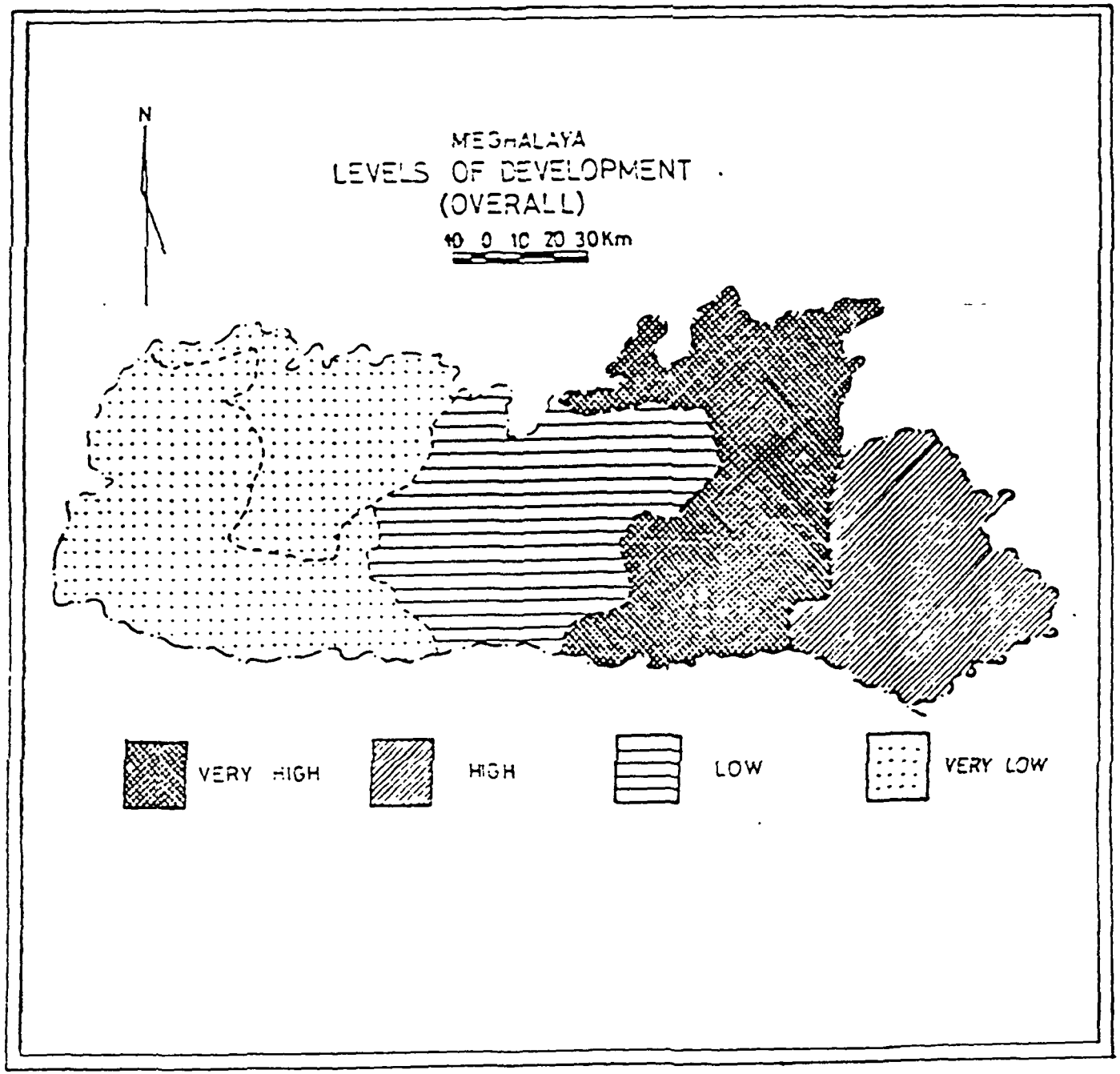

N
MEGHALAYA
LEVELS OF DEVELOPMENT
(OVERALL)
40 0 10 20 30Km
VERY HIGH
HIGH
LOW
VERY LOW

Fig. 5.5

directions of investments on development works, and this has resulted in congestion, overcrowding, over burdened utilities and services and other related problems.

Tura and Jowai towns have also grown rapidly. According to their population, these these two towns falls under the class III category of census towns. Nongstoin and Williamnagar falls under the Class IV towns and Sohra and Baghmara falls under the class V towns.

In the state, there are three urban local bodies, namely, Shillong Municipality, Tura Municipality and Jowai Town Committee. The functions of these local bodies are to promote the proper development of the urban centres and to provide and maintain civic amenities in their respective areas.

In the state, the schemes or programmes for urban development were taken up by the concerned departments of the government like Public Works Department, Public Health Engineering Department, Town and Country Planning Department, etc.

CHAPTER VI

Observations and Findings

The present study, in spite of its limitations have been able to reveal some observations and findings. These are stated below –

The state of Meghalaya is small both in terms of its area and population in the national context. It is located in the peripheral (north-eastern region of the country) and its remotness is due to the fact that it is a hilly land locked state with inadequate and underdeveloped transport network and communication facilities.

The geology of Meghalaya is composed of the Archean rock believed to be the oldest in the geological age. The periphery of the state, however, has alluvium deposits. This spatial arrangement could have enhanced the flourishing of agriculture in the periphery and establishment of industries in the central parts.

Diverse physical features provide scope for diverse economic activities like shifting cultivation, permanent agriculture, pisci-culture, horticulture, animal husbandry, timbering etc.

The drainage system as well as the relief of the state does not allow the setting up of any large scale irrgation

projects in the state. Most of the water resources in the state remained untapped. Water transport in the state has very little prospect and scope for development.

The rugged terraces and the presence of numerous rivers are favourable to establish micro-hydel power generating stations.

The land management in the state is not scientific. Under the existing land system the government has no right over the land. This result in under utilization of the land and other related resources.

The rich flora of the state like Cylionella plant, Teak, Sal, Bamboo, Medicinal plants, and others could encourage the setting up of forest based industries.

Agriculture based industries and horticulture based industries could also be setup in the state, which will help in reducing the rate of unemployment and it will help in the economic development of the state.

The agricultural produces in the state is on a subsitence level. Commercial farming should be encouraged in order to increase the living standard of the people and to bring about development in the state.

There is a lot of scope for the development of horticulture, flower-culture (orchid) and animal husbandry in the state.

Development in these fields will also lead to the overall development of the state.

Food processing industries could be developed in the state on the basis of fruits and vegetables that are available in the state - like Orange, Pine Apple, and other citrus fruits that are locally available in the state and vegetables like beans, carrot, tomato, cabbage, cauliflower, green leafy *vegetables etc.*

The lack of a good network of transport and communication system is the basic cause of industrial stagnation in the state.

The state also lacked in adequate skill labour force, scientific extraction of its mineral resources and capital investment. All these attract technologically skilled immigrants and capital investment outside the state which leads to inter-conflicts and various complex issuesof socio-economic, including political adjustment.

The possibilities of having large scale industries in the state is ruled out and there is also a very limited possibi-

lities of setting medium scale industries in the state. The only types of industries that can be set up in the state is small scale industries on which the concentration can be more on the agro-based industries.

There are also possiblities for setting up processing industries for the minerals that are available like coal, lime stone, and silimanite, this will increase the value of the minerals and this can fetch aid from the by-products that we get from these minerals. We can set small scale industries to process these products.

The present study reveals that the geo-political situation and the different locational perspectives and strategies have to a sbstantial extent negated the efferts made so far towards economic development.

Although the state was the earliest recipient of change introduced after colonial consolidation, it was not able to overcome the talent inertiawhich continously eroded the development efforts.

State's politico-geographical landscape exhibited a complicated scenario of the function of economic, social and political processess. These processess remained dynamic and volatile, and in terms of economic development were perhaps stagnant.

Existing resources and the pattern of their utilization suggests inherent contradictions. As such, today they do not indicate any coherent direction other than of maintaining a quasi status quo. However, the state has the potential to translate the resources into a highly favourable asset and acceleration in development.

As a corollary, both the potential resources and alternative locational strategies in terms of development exist. This seem to have been left out of development considerations. Geographical limitations continue to exert their dominating impact in retarding the limited efforts.

It emerges from the present study that Meghalaya has the potential for development, but initiative should be taken both by the State and the people for bringing about this development. More industries should be set up on the basis of locally available raw material. At the same time, there should also be a conscious effort to utilise the existing trained and skilled manpower, as far as possible. Thus, directing the planned effort in bringing out the development in different sectors of the State's economy. This has become all the more important, when economy as a factor has emerged to dominate all levels of transactions and relationships, both within and between the various population groups that inhabit the state's territory.

BIBLIOGRAPHY

REFERENCES

Alag, Y. P. : Regional Aspects of Indian Industrialisation, Bombay, University Press, 1972.

Agarwal, A. P. : Economic Problem and Planning in North East India, Sterling Publishers Pvt. Ltd., New Dehil, 1987.

Alexander, P. C. : Industrial Estates in India, Bombay, Asia Publishing House, 1962.

Balkrishnan, G. : Financing Small Industries in India 1950-52, Bombay, Asia Publishing House, 1961.

Bharat Hasari, R.: The Structure of the Indian Economy, Macmillan Co., 1980.

Chandna, R. C. : A Geography of Population, Kalyani Publ., New Delhi, 1986.

Chaudhuri, M. R. : The Industrial Landscape of West Bengal - An Economic Geographic Appraisal, Oxford, 1971.

: Economic Geography, Calcutta, 1969.

: Indian Industries-Development and Location, Calcutta, 1970.

Dhar, P. N. : Small Scale Industries in Delhi, Bombay, Asia Publishing House, 1958.

Dutta, B. : The Economics of Industrialization, Calcutta, The world Press, 1953.

Fielding, G. J. : Geography as Social Science, Harper and Row, New York, 1974.

Hayes, D.A. : Investment - Analysis and Management, New York, The Macmillan Company, 1961.

Hodder, B.W. & Lee, Roger : Economic Geography, Methuen and Co. Ltd, London, 1974.

Bhagwati, J.N. & Desai, Padma : India - Planning for Industrialisation - Industrialisation and Trade Policies Since 1951, Oxford University Press, Delhi, 1976.

Jain, P.C. : Industrial Finance in India, New Delhi, Sunejа Book Centre, 1960.

Khan, N.A. : Problems of Growth of an Underdeveloped Economy - India, Bombay, Asia Publishing House, 1961.

Lahiri. T.B.(Ed) : Balanced Regional Development, Concepts, Strategy and Case Studies, Oxford and India Book House, 1972.

Leibenstein, H. : Economic Backwardness and Economic Growth, New York, John Wiley and Sons, Inc., 1960.

Lokanathan, P.S. : Industrial Organisation in India, London, George Allen and Unwin Ltd, 1935.

Mandal Baum, H. : The Industrialisation of Backward Areas, Oxford, Basil Blackwell, 1961.

Mehta, M.M. : Structure of Indian Industries, Popular Book Depot, Bombay, 1961.

Mendiratta, K.C. : Geology of India, Pakistan and Burma, Atma Ram & Sons, Delh, 1967.

Nanjundan, S., Robinson, H.E. & Stanley, E. : Economic Research of Small Industry Development, IIlustrated by India's Experience, Bombay, Asia Publishing House, 1962.

Oldham, Thomas : Geology, Meteorology and Ethnology of Meghalaya, Mittal Publishers & Distributors, Delhi, 1984.

Ramkrishna, K.T. : Finances for Small-Scale Industry in India, Bombay, Asia Publishing House, 1962.,

Rao, R.V. : Cottage Industries and Planned Economy, Bombay, Vora and Company, 1957.

Rosen. G. : Industrial Change in India, Bombay, Asia Publishing House, 1958.

Singh, Baljit : The Economics of Small-Scale Industries, Bombay Asia Publishing House, 1961.

Sinha, B.N. : Industrial Geography of India, The World Press PVt. Ltd., Calcutta, 1972.

Singh, R.L. : India - A Regional Geography, National Geographical Society of India, Varanasi, 5, 1971.

Spate, O.H.K. & Learmonth,A.T.A. : India and Pakistan - Land, People and Economy, Methuen & Co. Ltd., London, 1967.

Sundram, J.D. : Rural Industrial Development, Vora and Co., Publishers Pvt. Ltd., Bombay, 1970.

Surendar, V. : Indian Industries, B. R. Publishing Corp., Delhi, 1986.

Thakur Shrinivas : Rural Industrialisation in India strategy and Approach, Sterling Publishers Pvt. Ltd., New Delhi, 1985.

Wadia, D.N. : Geology of India, Tata McGraw-Hill Publ. Co., New Delhi, 1975.

Research Papers, Government Publications, Journals etc.

Barua, J.N. : "Assam, Soil" (Unpublished), Agr. Res. Stn, Bhorbila, Jorhat, 1964.

C. S. O. : Annual Survey of Industries (ASI) (Census Sector), 1961, 1966, 1971, 1978-79.

C.S.O. : Census of Manufacturing Industries (CMI).

Das, N.N. : Activities of District Establishment at a Glance, Department of Industries, Government of Meghalaya, 1980.

Datta, Pulakesh : "Spatial Structure of Small Scale Industries in Shillong", Department of Geography, NEHU, Shillong, 1979,(Unpublished).

G. S. I. : Misc. Publication No. 30, (1974), Part IV.

Government of Meghalaya : Minerals for Industrial Use, Directorate of Minerals Resources, Shillong, 1973.

Khadi and Village Industries Commission : Pattern of Assistance - The Handbook, Bombay Khadi and Village Industries Commission, 1968.

Ministry of Finance : Economic Survey for the Year 1977-78 to 1982 - 83.

Ministry of Industry : Guidelines for Industries, Part - I, Policy and Procedures, Department of Inddustrial Development, January, 1982.

North-Eastern Council : Geology and Mineral Resources of North Eastern Region, NEC Publication, No. 24, Shillong.

Society for Economic Studies : Capital for Medium and Small - Scall Industries, Bombay, Asia Publishing House, 1959.