

C H A P T E R - 2.0

GEOGRAPHICAL SETTING OF THE AREA

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2.1 Physical basis

2.11 Relief and Drainage :

The Brahmaputra Valley is almost a flat level plain built up by alluvium deposit. The average level of the valley ranges from 130m. in the east to 30 m. in the west. This valley has steep slopes in its northern margin from the foothills of Arunachal Pradesh but the slope is gradual in the south from the southern hill ranges. The Brahmaputra Valley is wide in Upper Assam and in Lower Assam but it is narrow at Gauhati because at Gauhati the river flows close to the granite hillocks of Shillong plateau. On the banks of the river a number of isolated hillocks or monadnocks are seen.

In the north, innumerable tributaries run down from Arunachal Pradesh and the Bhutan Himalayas. These tributaries, form the alluvial fans due to the presence of coarse alluvial debris which have given rise to terai or Semi-terai conditions resulting in wet soil and dense forest. But the southern part of the valley is narrow and uneven and the tributaries in the south-east are considerably larger. It may be mentioned that meandering of the tributaries in the eastern part of the southern section of the valley is prominent which forms a number of beels and ox-bow lakes.

The Brahmaputra Valley is highly braided due to its low gradient. As a result innumerable riverine islands have been formed. Majuli is the largest riverine island in the world. (Fig. 3).

2.12 Climate :

The climate of the Brahmaputra Valley is mainly regulated by the following major factors.

BRAHMAPUTRA VALLEY CLIMATE

40 0 40 Kms.

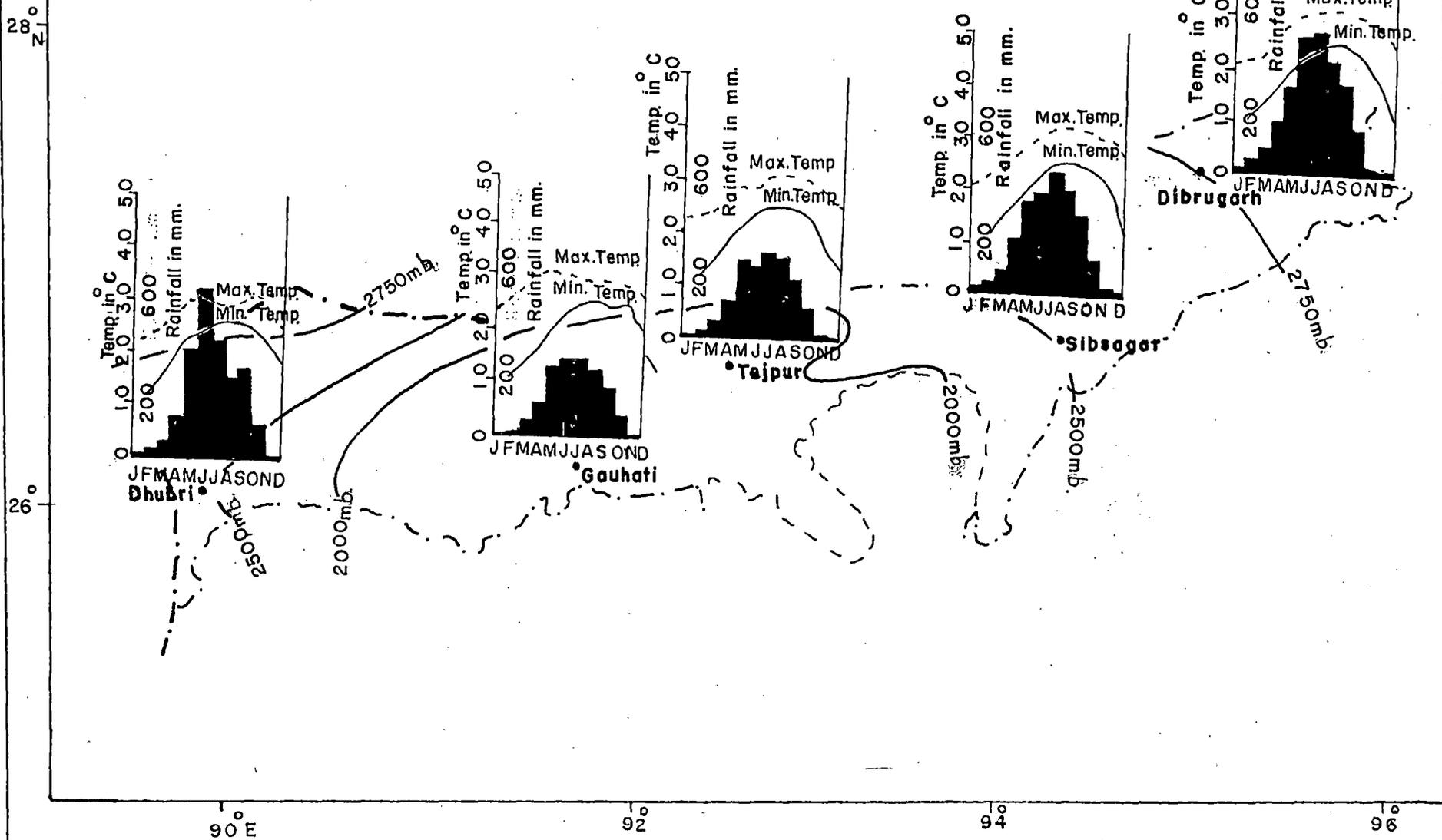


FIG.- 4

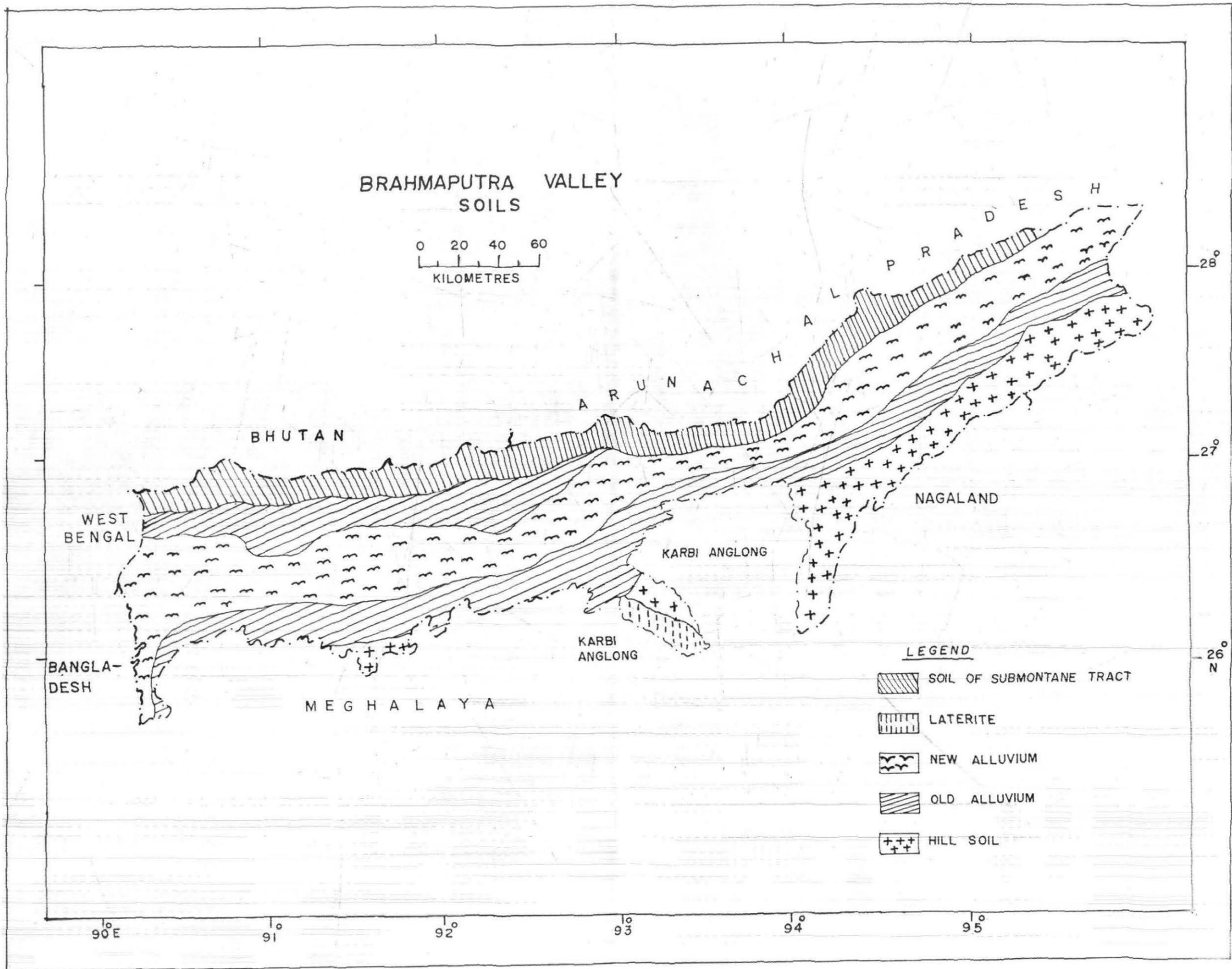
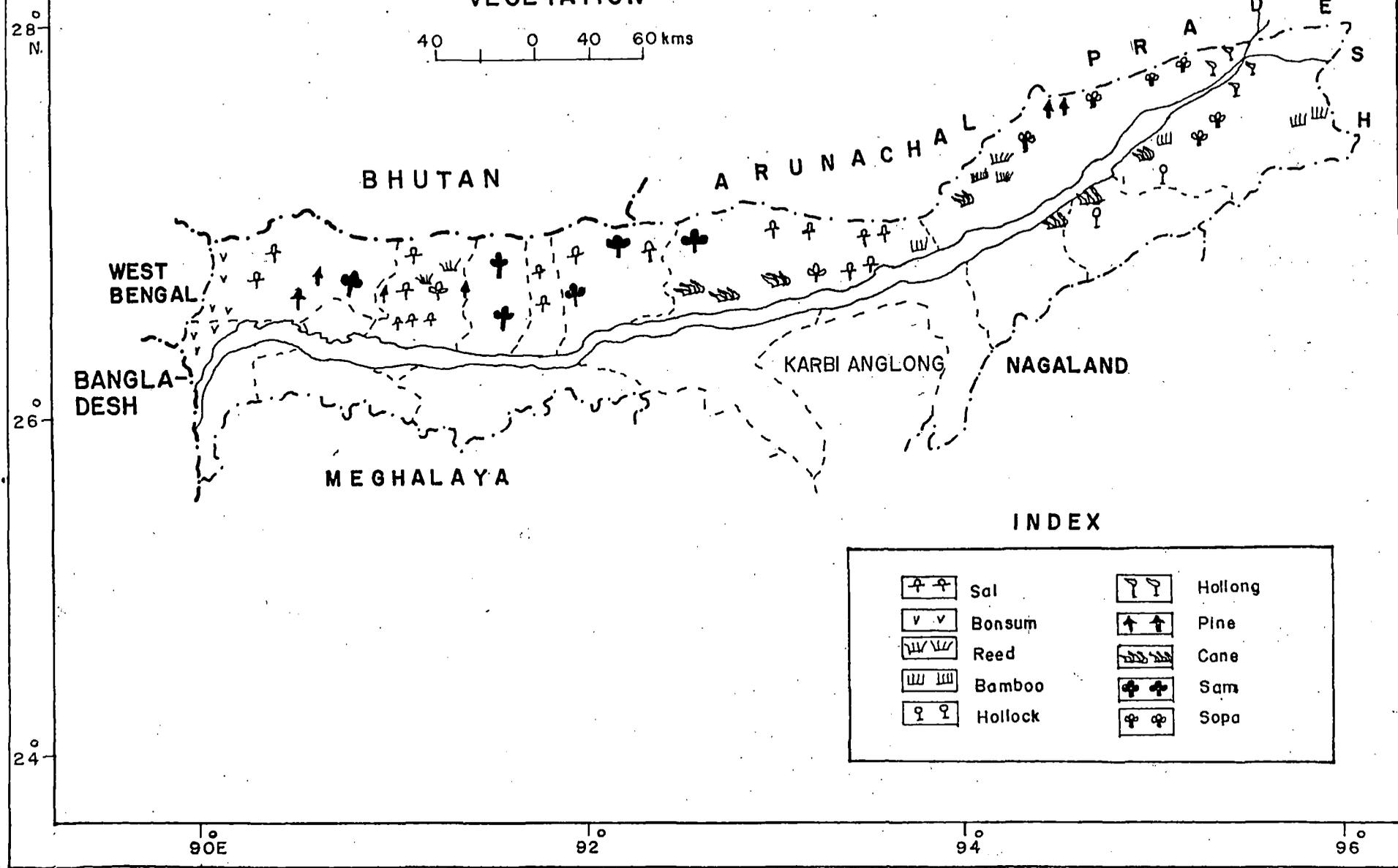


FIG.-5

BRAHMAPUTRA VALLEY VEGETATION



INDEX

	Sal		Hollong
	Bonsum		Pine
	Reed		Cane
	Bamboo		Sam
	Hollock		Sopa

FIG.-6

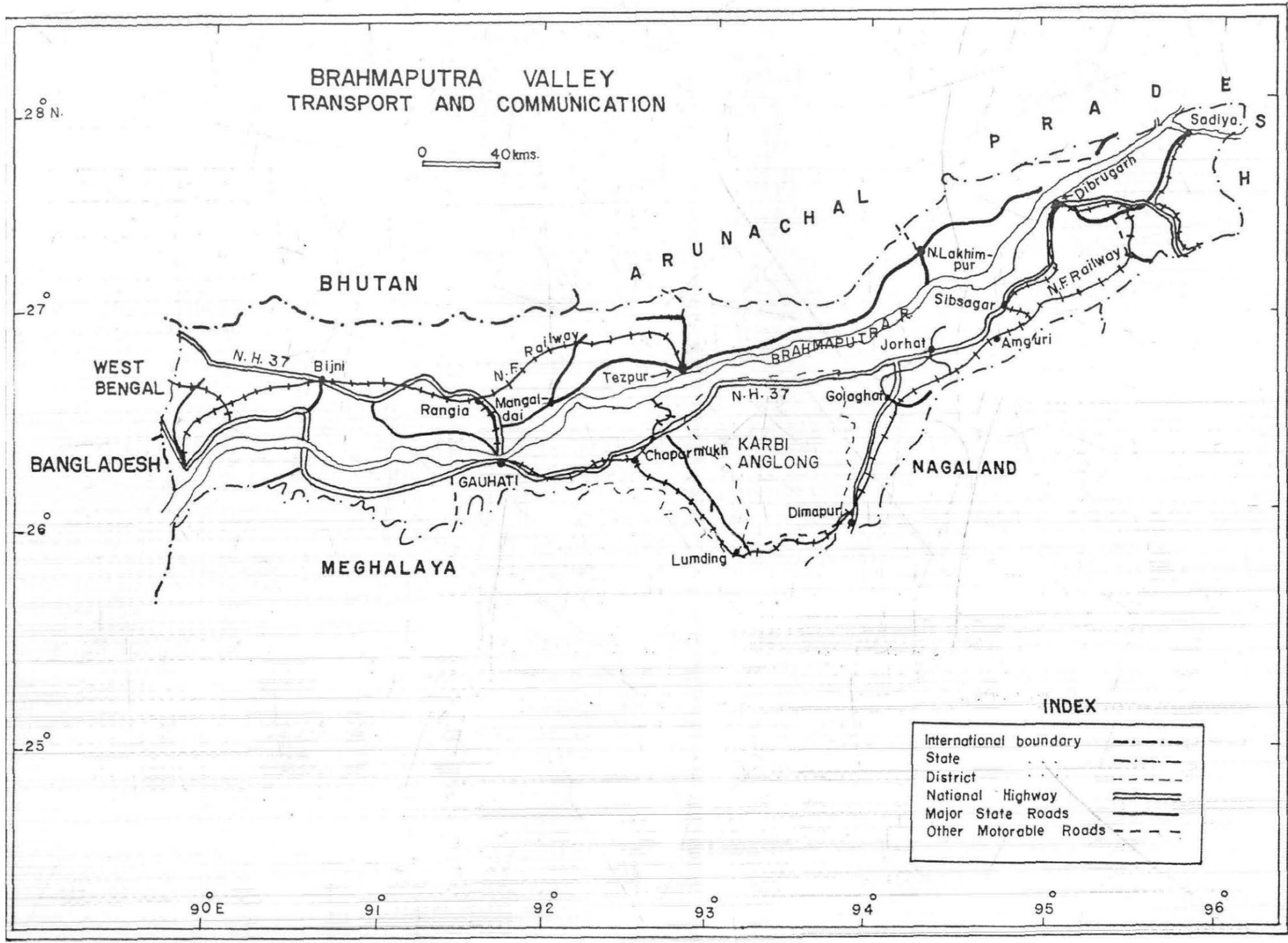


FIG.-7

a) the location, b) the physiography, c) the alternating pressure cells of North-West India, and the Bay of Bengal, their eastern and north-eastern periodic oscillations, d) the predominance of maritime tropical air-mass (mT), e) the periodic western disturbances, f) the local mountain and valley winds.

The sub-tropical location with raised border rim on the north, east and the south and flat open to the west are particularly contributive to its climatic character. The northern mountain protects the Brahmaputra Valley from the cold air masses of Central Asia and Tibetan Plateau in winter.

On the basis of variations of temperature, rainfall and winds this region has been divided into four seasons :

a) Winter b) Pre-monsoon or Summer, c) Monsoon and d) Retreating monsoon.

a) Winter Season (Dec - Feb) :

This season is characterised by cold air and running fog. Fog occur due to the moisture evaporated from the river, swamps and marshes of the valley. During this time the fogs are found almost in all places in the valley for a period of 60 to 70 days. Temperature remains above 12.8°C . January is the coldest month. Average amount of rainfall is 11.4 cm. The eastern regions are cooler than the western region.

b) Pre-monsoon or Summer season (March - May) -

Dust-raising winds are found at the beginning of the pre-monsoon season. As the season advances the rainfall increases with thunder-

showers with hail-storms in the afternoon. These thunder showers are called Nor wester, locally known as Bardoichila.

Total rainfall during this season is 51.87 cm. The average temperature of this season is 23°C .

c) Monsoon season (June - Sept).

This season in the valley is characterised by very high humidity. The average temperature during this season is 27.17°C . August is the hottest month. There are about 18-20 rainy days each in June, July and August, thereafter the rainfall decreases. The average rainfall is 180 cm.

d) Retreating monsoon season (Oct. - Nov).

With the coming of this season the temperature falls and morning mist and fog appear. The winds become northerly in November and are fed by north-westerly winds from the Ganga Valley. The rainfall does not exceed 15.2 cm. The weather clears up and fair, sunny days prevail till the end of November. This is the shortest season but the most pleasant period of the year (Fig.4).

2.13 Soil :

The soil of the Brahmaputra Valley is mostly alluvial in character. The lateritic soil is found in limited areas in Kamrup, Lakhimpur, Nowgong and Sibsagar districts.

The new alluvial soils are found due to annual floods in the riparian tracts of the valley. They are less acidic and rich in phosphate

potash and calcium. This type of soil is suitable for the cultivation of rice, jute, pulses, mustard, potato and vegetables.

The old alluvial soils are found above the annual flood level. The soils are more acidic and suitable for tea plantation, particularly in the Assam Valley. This type of soil is also suitable for sugarcane, fruits, rice and vegetables but not for pulses and mustard.

The lateritic soils are found in the valley are poor in plant nutrients and generally of limited agricultural value (Fig.5).

2.14 Vegetation :

The vegetation of the valley may be classified as follows:

a) Tropical evergreen and semi-evergreen, b) Sal, c) Riverine forests, d) Mixed deciduous, e) Savanah and f) Bamboo and canes and miscellaneous varieties (Fig. 6).

a) Tropical evergreen and semi-evergreen forests are found in the eastern most part of the valley particularly in Lakhimpur and Sibsagar districts. The common trees of evergreen forests are Hollong, Nahor and Mekai.

The semi-evergreen forests are widely spread in this valley but mainly found in Sibsagar and Darrang districts. The name of the species are - Sam, Dhup, Outenga, Guti-jam, Gamari, Hollock, Silikha etc.

b) Sal

Sal trees are grown in Kamrup, Goalpara and western part of the Nowgong district. The important species of Sal is Makri Sal, - an

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important material for making ply wood of Lower Assam.

c) Riverine

This type of forest comprising with Khair, Sisoo, Simul, Karai and Kadam are mainly grown along the river banks in the alluvial tracts which are inundated by flood.

d) Mixed deciduous forest is found in the Lower Brahmaputra Valley. The Main species are Odal, Sidha, Bajau, Gareya arborea, Pariviflora makri-Sal.

e) Savanah type of grass-land occur in the well drained high altitude areas. The species found are Cayera, arborea, wrightia tomomtosa, Zizyphus and Randia. Lowland Savanah growing Saccharum spontanium as the main grass is found on the banks of rivers.

f) Bamboo, canes and miscellaneous varieties :

Bamboo is grown throughout the Valley, but is more concentrated in Upper Assam. The species are Jati, Bhaluka, Makul and Kotoha. Canes occur all over the valley in the swampy areas.

Among the other varieties such as Kher, Ekara and Kahua are found in the riverine and Savanah tracts of the valley (Fig. 6).

2.2 Economic and Social condition

The Brahmaputra Valley is an agricultural area, which provides most of the food requirements and gives employment to an overwhelming proportion of the population. It also produces certain raw materials such as tea and jute which constitute the back-bone of the regional economy in trade and commerce (Das, 1971).

Various efforts are being made in order to increase agricultural out put per hectre and to remove inter regional as well as intra-regional imbalances in agricultural productivity since the inception of the Five year plan in 1951. There still exist significant regional variations in the levels of agricultural productivity in the Brahmaputra Valley. On the basis of productivity three different meso-regions may be identified:

i) The Upper Brahmaputra Valley -

Consisting of seven sub divisions, viz. Tinsukia, Dibrugarh, Sibsagar, Jorhat, Golaghat, North Lakhimpur and Dhemaji has 39 percent of the total area and 32 percent of the total population of the Valley. The region shows medium to very high level of agricultural productivity. The agriculture of the region is dominated by rice cultivation, especially winter rice.

ii) Central Brahmaputra Valley Region -

with 26 percent of the total area, this region supports 27 percent of the valley's total population. This region comprises of Tezpur, Mangaldai, Nowgong and Marigaon sub-divisions. Agricultural productivity here is found to be of low to medium level.

iii) Lower Brahmaputra Valley Region -

This densely populated region accounts for 35 percent of the total

area and 41 percent of the valley's total population. The net sown area in this region shares 44 percent of the total area. Rice, rape and mustard, jute and wheat are the major crops of region (Bhagabati, 1984). Rice is the principal crop throughout the region occupying more than two-thirds (72.8 percent) of the total sown area since it is the staple food crop of the people in the region. Next to rice, comes tea which occupies 6.7 percent of the total cropped area. More than four-fifths of the tea plantation area is concentrated in the districts Lakhimpur, Sibsagar and Darrang while the rest is distributed in the other districts of the region.

2.21 Forestry :

Upper Brahmaputra Valley is rich in forest lands with high timber value including the vaneer species for ply wood and tea-chests and famous 'iron wood' (Nahor) for constructional purposes. The tropical wet-deciduous forests of the Lower Brahmaputra Valley abound in high grade timber including Sal and teak. Ply wood factories and many timber mills have been developed in this region.

2.22 Industrial Economy :

The valley appears to be industrially important in the North-East India with its relative industrial supremacy, which is limited to small pockets around Gauhati in Lower Brahmaputra Valley and around Dibrugarh in Upper Brahmaputra Valley. Only 8 percent of the active workers earn their livelihood from industries with the majority (5.8 percent) engaged in house hold industries and only 2.2 percent in manufacturing industries. In addition, 19.2 percent of the active workers are engaged

in mining, plantation and other occupations. The existing industries of the region may be classified as :

a) Agro-based, b) Mineral-based c) Forest-based, and d) Miscellaneous.

The agro-based industries can be sub-divided into a) Food processing and sugar, b) Tea processing and c) Textiles. The food-processing industries consist of rice and flour mills, fruit canning, oil-crushing mill, bakeries which are mainly concentrated in the urban centres of the valley. Rice mills are largely concentrated in Nowgong and Kamrup districts. The Sugar factory is located at Baruabamungaoñ near Dergaon in Jorhat district.

Tea industry is confined mostly in Dibrugarh, Sibsagar and Darrang districts. There are 636 tea gardens and factories out of which Dibrugarh and Sibsagar alone have 491. This region produces about 45 percent of the total Indian tea.

The textile industry having one jute mill at Silghat and one spun-silk mill at Jagirood, both in the district of Nowgong. A power loom unit has been established at Gauhati.

The spinning and weaving of cotton and silk is, in general a house hold industry in the region where Assamese womenfolk do it as a part time job. There are three varieties - Eri, Muga and Pat. The production of Assamese handloom silk, Eri, Muga and Pat on a commercial basis is rather limited to the Kamrup district.

The mineral-based industries of the valley are limited to the coal-mining and oil and gas production both in Upper Brahmaputra Valley and a fertilizer factory at Namrup in Dibrugarh district. The various mineral-based industries in this region include manufacturing of bee-hives, coke-making, oil refining, filling in and distribution of gas cylinders for industrial and domestic purposes, railway workshops and engineering works. About half of the workers in the metallic mineral-based industry are employed in the railway workshops. The majority of the engineering works are small-sized and mainly for repairing services. But there are two fairly big engineering workshops at Tinsukia and Digboi in the Upper Brahmaputra Valley. There are two plants producing rods and bars one at Gauhati and the other at Dibrugarh with an annual capacity of 18000 tons. One big bicycle manufacturing unit has been established at Gauhati with a licensed capacity of 60,000 units per year. In addition, many small and medium-sized units, manufacturing various products such as aluminium utensils, cycle parts, trunks and buckets etc. are also in operation in the urban centres.

The non-metallic mineral-based industry of the region mainly comprises the oil-refinery at Digboi producing 0.50 million tons of oil per year, the oil refinery at Noonmati (Gauhati) producing 0.75 million tons. Another refinery has been set up at Dhaligaon, New Bongaigaon in Bongaigaon district of the Lower Brahmaputra Valley.

A cement factory has been established at Bokajan in the Upper Brahmaputra Valley which uses the locally available raw materials. The major centres of plywood industry are at Margherita, Mariati and Tinsukia in the Upper Brahmaputra Valley. A paper mill has been set

up at Jagiroad in Nowgong district.

The miscellaneous industries of the region comprise printing presses, ice manufacturing, distilleries, electric light and power. These are distributed in the urban centres (Das, 1971).

2.23 Social condition :

The population of the Brahmaputra Valley is composed of various racial elements. "Many people coming from different regions with different racial and cultural backgrounds and at different points of time (and hence different degrees of socio-economic development), have given rise to a complicated society. The marginal location of the region in the context of Indian society with feeble mainstream characteristics, and the state's geographical conditions with the hills and plains hinder easy communications. This has, however, been reduced to minimum by the catholicity of the Vaishnavism preached by the great social reformer of Assam Sri Sankardeva in the late fifteenth and early sixteenth centuries. Despite this region has now 78 major socio-cultural and religious communities in the form of castes, tribes and religions. The Hindu caste system with the four main divisions of Brahmin, Kshatriya, Vaisya and Sudra hold good for whole of India but the local castes of one region can hardly be equated with those of another region. This has made the complicated social set up of this region. The migrants to this region, since protohistoric days are mainly Hindus and have come from different linguistic and regions like Bengal, Bihar, Uttar Pradesh, Rajasthan, Nepal etc. Besides these groups the Brahmaputra Valley itself has a number of indigenous tribes and castes.

According to 1971 census, the indigenous population may be divided into four broad linguistic groups, viz. Assamese (60.88 percent), Bengali (19.70 per cent), tibeto-Burman (10.20 percent) and Siamese-chinese (0.15 percent). Each of them can be sub-divided into six religious groups, viz. Hindu (72.51 percent) Muslim (24.56 percent), Christian (2.61 percent), Sikh (0.08 percent), Buddhist (0.15 percent) and various tribal religions (10 percent). 26 major castes are found among the Assamese Hindus of which eight are regarded as high, twelve as backward and six as Scheduled Castes.

In the Brahmaputra Valley three major social groups are found among the Muslims. They are the Assamese Muslims, the immigrant peasant Muslims from East Bengal and a small group of Urdu speaking Muslims living in the towns and service centres engage in trade and commerce. The Assamese Muslims are divided into the Syads, the Sheikhs and the Marias.

The tribal population of this region account for 10.20 percent of the total population (1971). They belong to fifteen tribes of the Tibeto-Burman linguistic groups, of which nine major plains tribal-groups are found in the Brahmaputra Valley. Of the plains tribals, the Bodo-Kacharis numbering more than six lakhs (1971), is followed by the Mishings (2.6 lakhs), Rabhas (1.4 lakhs), Kachari including Sonowals (1.93 lakhs), Mech (1,77,194), Tiwa (95609), Deori (23080), Barman (13210) and Hojai (2293).

Among the indigeous societies important socio-economic and socio-cultural characteristics have been noticed. This is due to

1) the number of castes is less because division of labour was never enforced rigorously. 2) the number of Scheduled castes among the Assamese Hindus is comparatively less. In 1971 the Scheduled Caste was only 4.6 percent, but due to immigrant Scheduled Caste people it is now over 6 percent. 3) with the introduction of industrial economy, the professional castes had to yield to the factory produced goods and slowly turned to other avenues of livelihood. They are now socially moving to their immediate higher caste" (Taher, 1987).

2.3 Transport and Communication -

The transport and communication system as a whole is not well developed in this region. Within the region the development of roads and railways have been hindered by the existence of numerous rivers and streams (Fig.7). However the region has a much more efficient transport and communication system than the surrounding hilly areas.

The region has about 1718 kilometers of railways with a density of 3 Km. per 100 km.² It includes 269 Km. of the Broad gauge line. The main line from Gauhati to Tinsukia on the south bank of the Brahmaputra Valley does not pass through the main towns like Nowgong, Jorhat, Sibsagar and these towns are connected with minor branch lines. The Broad Gauge railways has been extended from New Bongaigaon to Gauhati, this extension considerably removes the transport problem in the region. The railway line along the northern bank of the Brahmaputra Valley touches almost all the important towns and the section from Rangapara to Murkongselek (about 300 km.) also eases transport and communication to Arunachal Pradesh (Deka, 1986).

There are about 13155 km. of roads including P.W.D., District and Village roads with 1140 km. of National Highways and 714 km. of state Highways accounting for a density of 23 km. per 100 km.² of area. The two Trunk Roads, North Trunk Road and South Trunk Road, run almost parallel to the river bank. The South Trunk Road or National Highway 37 is very important and it passes through Goalpara, Gauhati, Nowgong, Jorhat, Sibsagar and Dibrugarh. There are regular bus services run by Assam Transport Corporation and private organisations over 2934 km. of roads. Gauhati is the main transport centre of the region not only by roads but also by other means as well (Das, 1971).

This region possesses an extension of navigable waterways of 4098 km. which is about 22 percent of India's total navigable waterways. Two public sector organisations viz. The state Directorate of Inland Water Transport and the Central Inland Water Transport Corporation are presently providing navigational facilities on a commercial basis. The Central Inland Water Transport Corporation is extending cargo services between Calcutta and Pandu. In 1983-84 the total volume of cargo and passengers handled by the ferries at different points on the bank of the Brahmaputra were 4.18 lakh quintals of cargo and 25 lakh passengers respectively. During the same period IWT also handled 16 thousand vehicles, 73 thousand motor cycles/bicycles and 25 thousand animals. It shows the necessity of bridging the river Brahmaputra at several points for quick transit of traffic.

The region is regularly served by the Indian Airline services. These services are operated through five civil air ports viz. Borjhar (Gauhati), Saloni (Tezpur), Rowroyah (Jorhat), Lilabari (North Lakhimpur) and Mohanbari (Dibrugarh). There are regular services to Calcutta

and Delhi from Gauhati. Gauhati is served by all three levels of air services viz. Air Bus, Boeing and Vayudoot. The 'Vayadoot' services connect several places of the North-Eastern Region (Deka, 1986).