

Chapter 1

Introduction

This work *Ecology and Society in Manipur during Colonial Period: A Study of Forest and Water Resource Management* concerns the ecology and society in Manipur particularly in forest and water resources management during the colonial period. It focuses on the interface between ecology and society in Manipur. The study examines the socio-economic activities of the people of Manipur so also the interaction between their culture and nature, which influenced to a great extent by forest and water resources. In Manipur, there was no official system of scientific forestry prior to the colonial intervention. However, the study looks into how forest was managed under the traditional method of natural resource management in order to understand the amount of change one observes in colonial period. During the colonial period some changes had been observed in the forest management system such as the coming of government 'forest reserve' system and the exploitation of forest resources. Special attention is also made on tribal forest management. It discusses how forest was part of their social life and how the whole community took part to protect and manage them. The discussions centre on *jhum* cultivation. It discusses how the tribal felt about *jhuming* in so far as forest is concerned and how the colonial state felt about the practice. The various ritual practices and other physical restraints adopted by the hill men to preserve their forest as source of livelihood are discussed in detail. Besides, this study also examines water resource management in the state before and during the colonial period. How dams, lakes and the swamps, ponds and ditches were maintained and registered, so also the steps taken to control and improve them. It discusses on how the Maharaja's administration in before colonial intervention and how this gave way to colonial ways in later period. This study also discusses on the responses of local people to the colonial intervention.

This chapter provides the theoretical background of the study on the history of environment around the world as well as that of Manipur. It introduces the

study under various sub-heading of the following: (a) Introduction (b) Geographical Location of Manipur (c) The People (Population) (d) Physical Features and Climate (e) Agriculture (f) Vegetation (g) Rivers systems (h) Forests, followed by Statement of Problem, Methodology (as already states the details in the above methodology section) and the Review of Literature part. Under this section (literature review), the study is categories into two sections. The first section is of those studies other than Indian context and the second part is of all those studies (related to my topic) within of Indian context.

The Land of Manipur (Geographical and Physical Feature)

Formally Manipur was known as '*Kangleipak*' means 'Land of Pearls or gems'. The Manipur state lies between latitudes 23.80°N to 25.68°N and longitudes 93.03°E to 94.78°E. It is one of the border States in the North-Eastern part of India, bounded by Nagaland on the north, Assam on the west and Mizoram on the south and along the east it shares a 398 km. long international boundary with Myanmar. For efficient administration Manipur is divided into portions of the valley and the hill. The valley is n subdivided into (1) Imphal West Tahasil, (2) Imphal k Tahasil, (3) Thoubal Tahasil, and (4) Bishenpur Tasih. The hill sections are divided into four subdivisions (1) Jiribam subdivision, (2) Churachandpur subdivision, (3) Tamenglong subdivision, and (4) Ukhrul subdivision. Besides these four subdivisions there are three hill circles. They are (1) Mao hill circle, (2) Tengnoupal hill circle, and (3) Sadar hill circle.

The state covers an area of (total geographical area) of 22,327 Sq. Km. (8,638 Sq. miles) of the total area, about nine-tenths constitute the hills which surrounds the remaining one-tenth valley. The valley is about 2,600 feet above sea level with drainage from North to South and the highest mountains in the hill are rise to nearly 10, 0000 feet above sea level.

Map: 1



Physiographically Manipur is characterised in two distinct physical regions an outlying area of rugged hills and narrow valleys and the inner area represents the features of flat plain topography with all associated land forms. These two areas are not only distinct in respect of physical features but are also conspicuous with regard to various flora and fauna. It ranges from 40 mile at Jiribam to as high as 2, 994 mile at Iso Peak near Mao above MSL.

The valley region would have been a monotonous, featureless plain but for a number of hills and mounds rising above the flat surface. The Loktak Lake is an important geographic feature of the central plain area. Notwithstanding diversities in the physical and economic factors above, a great deal of interdependence exists between the two, which makes them a well-knit fabric of interactions. The Manipur hill area has rich reserve of natural resources which is exploited in the central valley for economic and industrial development. In the central valley, where there is no forest wealth, there are number of industries based on forest resources. This region, therefore, depends entirely on the hill region for the supply of firewood, timber and other forest products. The shifting cultivation practiced in the hills leads to deforestation and soil erosion in the hills and silting of the rivers and lake beds causing floods in the plain. The climate of the State is salubrious with approximate average annual rainfall varying from 933 mm at Imphal to 2593 mm at Tamenglong. The temperature ranges from sub-zero to 36 °C.

The People of Manipur

Manipur is the state of ethnic plurality and the home of many indigenous communities, big or small particularly migrated in search for fortune and glory from western and eastern directions. Among them, Meiteis, Nagas and Kukis are the major ethnic groups. They settled in both and hills and valley. The people settled in the hilly region are mainly scheduled tribes whereas the valley of Manipur is inhabited by the Meiteis, Manipuri Muslims Lois, Yaithibis and people coming from other parts of the country such as Mayangs Nepalis etc. People are predominantly mongoloid, and speak Tibeto-Burman

languages. The Manipuri language which is the mother-tongue of the Meitei people is the lingua-franca of the State. English is the official language and also the language of business class. Of all these different groups, the Meiteis are the most dominant and advanced community and constitute majority of the state population. Dr. Brown and Hodson asserted, “Although the general facial characteristics of the Munniporie are of the Mongolian type, there is a great diversity of feature among them, some of them showing a regularity approaching the Aryan type. Among both men and women the stature is very various, differing about as much as is found among Europeans. Some of them are very good-looking and fair. It is not uncommon to meet with girls with brownish-black hair, brown eyes, fair complexions, straight noses, and rosy cheeks.”¹

The beginning of the 18th century led to the Manipur king to come in close contacts with the Hindu states like Ahom and Tekhao (Tripura) in the west. The king himself adopted Hinduism as the state religion in 1714 A. D. which intensified her contact with other neighboring Hindu kingdoms like Ahom, Tripura, Coach Bihar, Sylhet, Matrimonial and military alliances were forged with these Hindu states. However, she had a rivalry with the Burmese. The historical transformation Manipur from a Tribal political to a feudal structure can be traced around 33 A. D. when Pakhangba ascended the throne at Kangla and consolidated seven clans into Meitei confederacy. The beginning of the 11th century marked the introduction of the written constitution in the state. Social transformation began with the process of Hindunisation which came in full swing at the time of Garibniwaza. Consolidation of military power took place during his reign with his invasion of Burma and defeating of the Toongoo dynasty. Her defeat at the hands of British in 1891 led to the end of her sovereign power as kingdom and her annexure into the Indian Territory on 15th October 1949 led to the emergence of Manipur as a Democratic state. On 21st January 1972, the Manipur was granted statehood by the Indian Government and Meitei-lon (means the language of Meitei), the state

¹ T.C. Hodson, *The Meitheis*, Low Price Publications, Delhi, 2009, p .2. See also R. Brown, *Statistical Account of Manipur*, Mittal Publications, New Delhi, 2001 [1873], p. 28 & 29.

language was included in the 8th schedule of the constitution as one of the official languages of India.

The Meiteis are found settled only in valley of Manipur. The origins of this community are still shrouded in unknown. Different scholars produce of various views and theories of their origin. According to R.B. Pemberton the Meiteis are the decedents of Tartars colony in China who immigrated to Manipur during the conflicts for supremacy between the Chinese and the Tartars in 13th and 14th centuries.² However, this theory is dissimilar to McCulloch, that he writes, the Meitei are the descendent of the hill tribes who come from different directions. Linguistically they are of Tibeto-Burman family. They worshipped their ancestors so also the gods and goddesses. They are rich in culture also have different festivals all around the year like Yaoshang, Durga Puja, Dewali, Lai Haraoba, etc. different forms dances were perform at different festival.

The Manipur state has a population of lakhs (2001 Census provisional), of the total population, 61.54% live in the valley and the remaining 38.46% are in the hill areas. The hills are inhabited mainly by the tribal and the valley by the Meiteis (including Meitei Muslims) and other smaller groups. The distributions of area, population and density, literacy rate, etc. as per the 2001 and 2011 Census provisional figures are as below:

Table:1

Description	2011	2001
Approximate Population	28.56 Lakhs	22.94 Lakh
Actual Population	2,855,794	2,293,896
Male	1,438,586	1,161,952
Female	1,417,208	1,131,944

² R.B. Pemberton, *The Eastern Frontier of India*, Delhi, Mittal publication, 1997, p. 36.

Population Growth	24.50%	30.02%
Percentage of total Population	0.24%	0.22%
Sex Ratio	985	974
Child Sex Ratio	930	957
Density/km ²	128	103
Density/mi ²	331	266
Area(Km ²)	22,327	22,327
Area mi ²	8,620	8,621
Total Child Population (0-6 Age)	375,357	326,366
Male Population (0-6 Age)	194,484	166,746
Female Population (0-6 Age)	180,873	159,620
Literacy	76.94 %	66.61 %
Male Literacy	83.58 %	75.71 %
Female Literacy	70.26 %	57.29 %
Total Literate	1,908,476	1,310,534
Male Literate	1,039,858	753,466
Female Literate	868,618	557,068

Source: Census Report of Manipur for the corresponding year

The density of population of Manipur as per 2011 census was 122 persons per sq.km. as against 103 persons per sq. km. in 2001 census. The sex ratio for the state as a whole has improved from 947 females per 1000 males in 2001 to 987 females per 1000 males in 2011. The population growth rate of Manipur in 2011 is 18.65 per cent as against 24.86 per cent in 2001 and 29.29 per cent in 1991. While the population growth rate of India in 2011 is 17.65 per cent as against 21.56 per cent in 2001 and 23.85 per cent in 1991. In terms of literacy, Manipur ranks fifth among the North Eastern States of India as per 2011 census. The literacy rate has increased from 70.53 percent in 2001 to 79.85 percent in 2011. Among the males, it has increased from 80.30 percent in 2001 to 86.49 percent in 2011, whereas among females, it has increased from 60.50 percent in 2001 to 73.17 percent in 2011.

Agriculture and Allied Sector

Agriculture sector has a vital place in the economy of the state. It contributes a major share to the State Domestic Product. 52.19 percent of the workers in Manipur are engaged as cultivators and Agricultural labourers. However, the performance of agriculture in the state mainly depends on timely rainfall and weather conditions. Permanent cultivation is generally practised in the valley districts while terrace cultivation is practised in some pockets of the hills where *jhuming* or shifting cultivation is widely adopted in most of the hills. Rice is the staple food and is grown in hill and plain areas and it accounts for about 95 percent of the total foodgrain production of the State in 2009-10. The production of rice in 2009-10 is estimated at 3.54 lakh tonnes which is less than the preceding year's rice output of 3.97 lakh tonnes. In case of maize, production in 2009-10 is estimated to be 11.71 thousand tonnes as against 11.50 thousand tonnes in the preceding year.

Horticulture

Manipur is suitable for the development of horticulture. Besides, there is ample scope for bringing more land under fruit cultivation in the hill areas. Even in the plains, soil conditions are conducive to production of citrus fruits, banana, guava, peaches, apricot, papaya etc. There is sufficient scope for cultivation of pineapples in the medium high range of the hills in Manipur.

The major fruits grown in the state are pineapple, orange, lemon, banana, guava, peaches etc. Now-a-days apples are grown in the hills of Manipur. For the promotion of healthy growth of horticulture in Manipur, it is essential to develop horticultural marketing. The average annual productions of fruits and vegetables during the year 2008-09 were 3.48 lakh MT and 1.74 lakh MT respectively.

Livestock

According to the livestock census conducted in 2007, there were 7.87 lakhs livestock in Manipur. Of these 3.42 lakh were cattle, 0.62 lakhs were buffaloes and 3.14 lakhs were pigs. The poultry population was recorded to be 22.89 lakhs. The main livestock productions in the state are milk, egg and meat. The total milk production in 2009-10 was 77.59 thousand tonnes which was 1.13 percent less than the production of 78.48 thousand tonnes in 2008-09. The estimated production of eggs in 2009-10 was numbering at 1107.66 lakhs showing an increase of 31.56 percent over the production of 841.92 lakhs in 2008-09. The estimated meat production for the year 2009-10 was 18.41 thousand tonnes which is the same with the production of 18.41 thousand tones in 2008-09.

State Domestic Product

The State Domestic Product and the per capita income reflect overall performance the state's economy during a given period. The growth in State Domestic Product of Manipur is largely dependent on agricultural productions. The Gross State Domestic Product (GSDP) of Manipur for 2009-10 at current prices is estimated to be Rs.8, 638 crores as against Rs.7,649 crores for the year 2008-09 registering an increase of 12.93 percent. At constant (2004-05) prices, GSDP in 2009-10 is estimated at Rs.6, 798 crores as against Rs.6, 234 crores in the previous year showing an increase of 9.05 percent. The average annual exponential growth rates between 2004-05 to 2009-10 are worked out to be 10.41 percent and 5.62 percent for current and constant prices respectively. The Net State Domestic Product (NSDP) at current prices for the year 2009-10 is estimated at Rs.7, 693 crores as compared to Rs.6, and 819 crores for 2008-09 registering an increase of 12.83

percent over the previous year. Per capita income at current prices is worked out to be Rs.28, 276 in 2009-10 as compared to Rs.25, 539 in 2008-09 indicating an increase of 10.72 percent. And the Net State Domestic Product (NSDP) at constant (2004-05) prices for the year 2009-10 is placed at Rs.6, 066 crores, which is higher than that of the preceding year by about 9.06 percent. The per capita income at constant (2004-05) prices for the year 2009-10 is estimated at Rs.22, 296 which is higher than that of the preceding year by about 7.03 percent.

Sericulture

Manipur has 4 (four) varieties of Silk viz., Mulberry, Eri, Muga and Oak Tasar. To provide employment particularly to womenfolk, Manipur Sericulture Project was initiated with the assistance of the Government of Japan through Government of India, 94.71% plantation was achieved. With the help of Central Silk Board, the Catalytic Development Programme (CDP) has been implemented since 2003-04. During 2007-08, Catalytic Development Programme is being implemented with financial assistance of Rs. 1.12 crore from the Central Silk Board and Ministry of Textiles.

Fisheries

Though the state has no marine fishery, it has vast inland fishery resources like pond, tanks, natural lakes, marshy areas, swampy areas, rivers, reservoirs, submerged cropped land, low lying paddy fields etc. The target source of fish is the Loktak Lake. The production of fish in Manipur for the year 2009-10 was estimated to be 19.20 thousand tonnes as against the 18.80 thousand tonnes in 2008-09.

Education

Education, being the base for the development of human resources, improving those infrastructures related with it continued to be one of the main objectives of the state Government. Implementation of various programmes, schemes/projects has been taken up to achieve overall quality education. The total number of educational institutions (Schools, Colleges, Universities) in the state during the year 2002-2003 stood at 4284 showing an increase of 2.41

percent over that of the previous year. The enrolment of school students has increased by 17.09 per cent during 2002-2003 over that of the previous year. While the overall literacy rate was 59.89 per cent in 1991, 70.50 per cent in 2001, it has increased to 79.85 per cent in 2011 census. The teacher pupil ratio was 1:19 during the year 2002-2003.

Vegetation

The natural vegetation occupies an area of about 14,365 sq. km. which is nearly 64% of the total geographical area of the State. The vegetation consists of a large variety of plants ranging from short and tall grasses, reeds and bamboos to trees of various species. Broadly, there are four types of forests below:

1. Tropical Semi-ever Green
2. Dry Temperate Forest
3. Sub-Tropical Pine and
4. Tropical Moist Deciduous.

Teak, Pine, Oak, Uningthou, Leihao, Bamboo, Cane, etc. are important forest resources growing in plenty. In addition, rubber, tea, coffee, orange, cardamom, etc. are also, grown in hill areas. The forests offer avenue of livelihood and employment to large section of the hill population. Food and cash crops occupy the main vegetation cover in the valley. Paddy occupies about 86% of the total valley area. Other important crops include sugarcane, potato, tobacco, mustard and pulses. Horticultural pineapple, banana, lemon, pears, peach, etc. constitute other vegetation cover.

Rivers

“The principal rivers flowing through the valley, are the Kongba, Eeril, and Thobal, which all take their rise in the hill to the North and North-East. In the rains their volume of water is considerable, but in the dry weather, they contain scarcely sufficient to float the small canoes in use in the country. The Eeril and Thobal rivers fall into the Kongba, which forms the drain for all the

waters flowing into the valley, carrying them off by Shoogoonoo through the Southern hill into the Ningthee.”³

The principal rivers in the state are the Imphal river (valley) and the Barak river in the hills, with the tributaries draining the valley, the hills immediately surrounding it and the Southern hills and the latter draining the Northern and Western Hills Imphal rivers flows through the Hills and the valley into the Chindwin river of Burma and the river flows through Cachar and the Surma valley.

The valley of Manipur is dotted with lakes and marshes many but there are a number of large lakes which retain water throughout the year. The Loktak is the largest lake in Manipur which is of 8 miles in length and 5 in breadth after the annual rains. The rivers are named the Imphal, *Eril*, *Thobal*, *Nambul Napol*. The first three, rising in the hill to the north, flow eastward to the Loktak and do not fall into it; the other two, which rise to the north, and north-west fall into the Loktak and eventually joins with the river Sugunu, which flows south, and eventually falls *Ningthi* river in Upper Burma. *Khongba* river, which flows through the capital to the north of the Manipur Valley. The *Iril* of *Khongba* river, which flows through the capital, rises in the hills to the north of the Manipur Valley. The junction of the rivers of the valley south of the Loktak lake forms one river by name Maithi river or Manipuri river. It flows neatly due south, and enters the hills at *Sugunu* to the difficulties of the valley.

Rivers in Hills Districts

Most of the rivers of hills Manipur state provides a well stocked with fish, and the fishing ground below the ford is remarkably good for a considerable distance. The principal rivers in the hills district of Manipur state is Barak river also beautifully and clear which run across the hill district Tamenglong, about 18 miles below the point at which it is crossed by the road from Kachar. It's about 45 yards broad it is easily fordable in the dry season; the bottom is

³ W. McCulloch, *The Account of Valley of Manipore and Hill Tribes*, Mittal Publications, New Delhi, 1980, p. 2.

of large pebbles and round water-worn stones; the water about knee deep. Barak now makes a sharp bend and flows nearly due north until it receives the water the Jiri, after which the one river thus constituted, still named the Barak, enters British Territory and flows west through the Radar Valley.

Figure:1



Photo: The Barak River in dried Season

The Barak River can be navigable for about a day above its junction with the Tepai River. This river is fordable in the dry weather, with the water thigh deep; the bed of the river is of small boulders, and the stream at the ford is about 60 yards wide, with a moderately strong current. Immediately above the fort the river expands into a wide pool, and above this again contracts between high banks. The forest Jungle at this part is heavy and dense; below the ford of the Barak, in its right bank, the hill is almost perpendicular and densely clothed with trees; so high and steep is this hill, that it is sunset on the river one hours before the sunshine fades away from the summit of the hill.

The river *Makru* that flow along the valleys and carry off the drainage of the slopes on either side are of sufficient size. In the dry season hill river consist, as a rule, of still deep pools linked together by shallow rocky reaches. The *Lokchao* another important river found in the hills lying between Manipur and Burma. This hill stream drains into the Kabow Valley, and is of inconsiderable size and quite navigable. The rivers are fordable at any time during the year, and at such a distance from the sea are not affected by tide or bore.

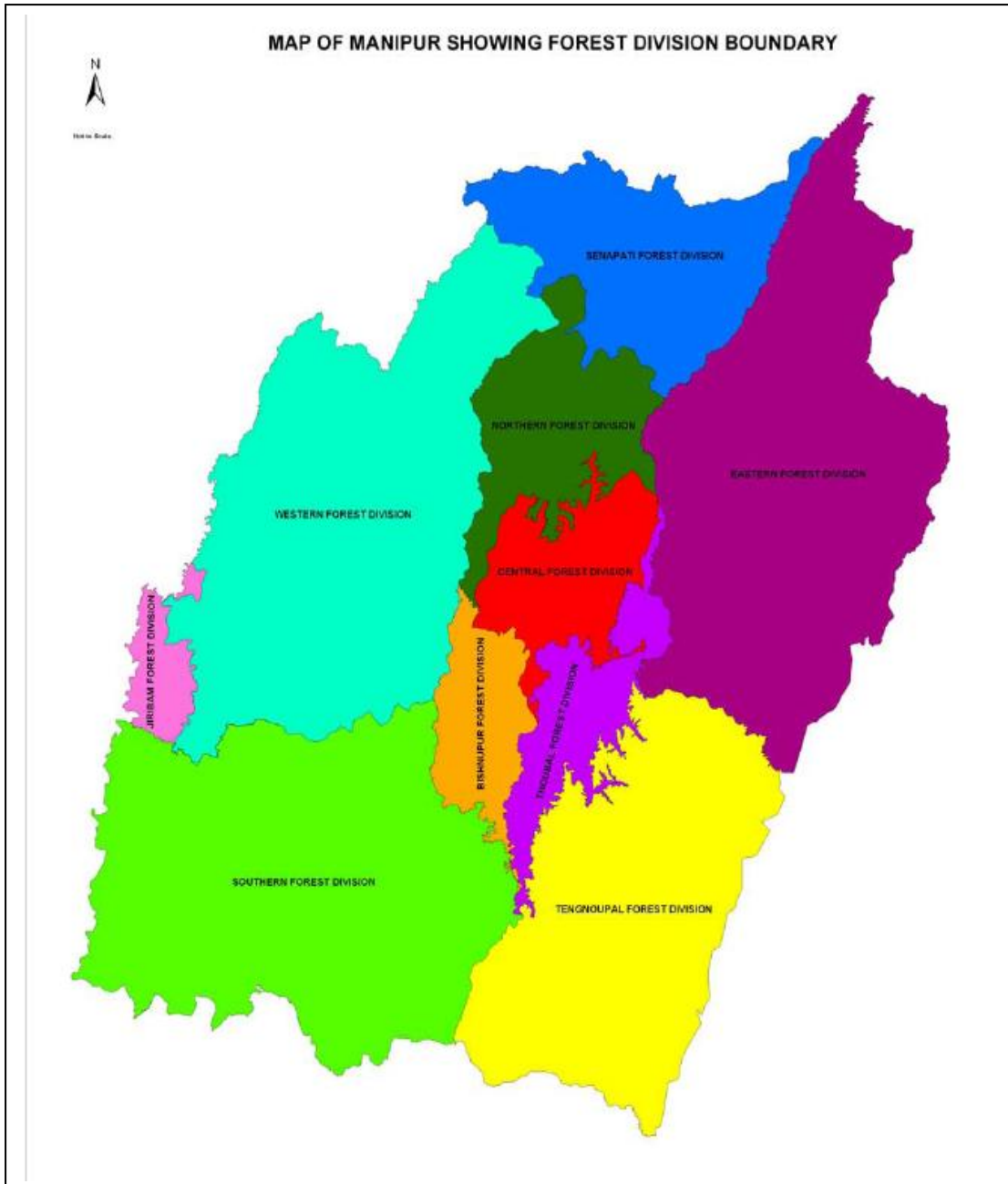
Forests

The word “forest” comes from Middle English Forest, from Old French forest (also *forès*) “forest, vast expanse covered by trees” first introduced in English as the word for wild land set aside for hunting without the necessity in definition for the existence of trees (James 1981; Muir 2000,2008). Possibly a borrowing (probably via Frankish or Old High German) of the Medieval Latin word *foresta* “open wood”. Forest form the most important renewable natural resources of India which form an essential component in this immense biodiversity. The forest cover India has been estimated to be around 637,293 sq km. which occupies 19.39 percent of the total geographical area. The following are the types of forest found in India:

- i). Tropical evergreen and semi-evergreen forests which found in western slopes of the Western Ghats, hills of the north eastern region, coastal Tamil Nadu, Lakshadweep and Andaman and Nicobar islands where climate is characterized by high temperature and heavy rainfall.
- ii). Tropical deciduous forests, the most widespread forests found in India which are found in the foothills of the Himalaya, eastern slopes of the Western Ghats, Orissa, Jharkhand, Bihar, Chhattisgarh, Uttar Pradesh, Maharashtra, Karnataka, Andhra Pradesh and Tamil Nadu.
- iii). Thorn forests and shrubs, these types of forest are found in Gujarat, Rajasthan, Madhya Pradesh, Chhattisgarh, U.P, and Haryana.
- iv). Montane forests, which found in Himalayas in the north and high hills of the south and

v). Mangrove forests, these types of forest are found in Sundarbans of West Bengal, Mahanadi, Godavari, Krishna and Andaman and Nicobar islands.

Map: 2



Map: Forest Division Boundary

Historically, forests in India in general and Manipur in particular during the pre-British period were managed by communities living in and around the forests and by people dependent on them for their sustenance and livelihood.

Forestry in India is different to that of any other country.⁴ Every kind of climate and every type of vegetation from, the alpine forests of the Himalayas to the tropical evergreen forests of the West Coast, from the desert forests of Sind and the Punjab to the bamboo clad hills which form the eastern most frontier between India and Burma.⁵ The entire forests of Manipur are included in the Himalayan system. It is suggested that zones of the region of Sub-motane, Montane or Temperature zone, Sub-Alpine Zone and Alpine zone. The forests of Manipur state possessed great natural resources of the state. Manipur state is popular of her richness of forests. The surrounding mountains in most instances, covered with the noblest varieties of trees common to both tropical and colder climate forests are more varied and magnificent.⁶ In this connection, E W. Dun noted:

The whole of the hill ranges lying between the valleys of Cachar and Manipur, and far to the north and south, are densely clothed to their summits with tree-jungle.... The tree-forest presents a great variety; and in the ranges a lying west of the Manipur valley there are large forest tracts of trees comprising nagesar, jural, India-rubber, tun, oak, ash, etc.⁷

Statement of the Problem

Forest and water are the most chief living resources of the human being or living being. The most important roles which fewer are noticeable to the common man is the ecological role of forests, that influence the wind, temperature, humidity, soil and water. In Manipur, king Garibniwaj (1709-1748), concerning the important of forest and water, with the separate department called *Urungba Loishang* with the officers *Urungpurel Achouba Umang-loi Hanjaba, Umangloi* and the *Khoirungba* also the department called *Pukhranba* and *Lakpas* to manage the water in Manipur. However, all these programmes and policies earlier to the British advent were no more mentioned during the colonial period (though the system may not of scientific the forest or talk about of environmental conservation).

⁴ NAI (hereafter NAI), *File . No .4, Diary No .41/F*, Delhi, 1937, p. 1.

⁵ NAI, *File. No .4, Diary No. 41/F*, p. 1.

⁶ R.B. Pemberton, *The Eastern Frontier of India*, pp. 13-14.

⁷ E.W. Dun, *Gazetteer of Manipur*, p. 6.

Deforestation gives birth to several problems encompassing environmental degradation through accelerating the rate of soil erosion, increasing sediments' load of the river, siltation of reservoirs and river bed, increase in the frequency and dimension of flood and drought, change in the pattern of precipitation, intensification of greenhouse effect, decreasing agricultural production. Also, loss of soil fertility led to extinction of wild life and social problem in the form of economic poverty and increased crimes and legal litigation in the society. Considerably the British conquest of India brought about a plunder of Indian natural resources coupled with a little indifference towards environmental protection. Impact of constructing, dams start clearing the forest for shifting cultivation in catchment areas. Agricultural expansion and discouraging of shifting cultivation during the colonial period, steadily clearing the forest leads to depletion of vegetation cover and land degradation. These produces encompassing environmental degradation through accelerating the rate of soil erosion, increasing sediments load of the river, siltation of reservoirs and river bed, increase in the frequency and dimension of flood and drought. Geographically, the land of Manipur is divided into hills and valley respectively. As of the hill region, since time immemorial and hitherto, the practice of *jhum* cultivation or their (main sources of their income) culture of depending on nature, also a factors of eco-degradation to some extent at play. The British colonial intention instead of putting an immediate stop to further devastation, only encourage forest clearance. Atleast in the beginning the colonial power works for the increase of area under cultivation and extraction of timber at the cost of the still existing forest for the revenue receipts, (Malthusian agenda, the British colonizers looked upon the forest 'rather as impediments to agriculture than as source of wealth').

Despite the fact that, trees cannot be substituted by anything else to balanced our environment. Poverty the principle causes of environment destructions for they are the victims as well as agent of environmental damage. Mostly the rural areas are environmentally more sensitive as their livelihoods mainly depend on natural resources for survival. The new study of history (environmental) came into born in south-east in particular, globally speaking, environmental history may be said to have come of age in recent year, in

South Asia it remain by and large in its adolescent. The region (Manipur) has yet developed a firm intellectual base, a solid scholarly foundation.

Methodology

This work is based on both primary and secondary sources. For primary data, I have collected various documents from different selected archives in India (which is more availability of related materials) from National Archive of India, Delhi, Manipur State Archive of Imphal, and Assam State Archives of Guwahati). Besides, I have visited the fields for personal interview of some knowledgeable persons in the state. Secondary sources consisted of various books and research paper from different libraries of India and Internet sources such as www.jstore.org. etc. The study used the different tools (pen/pencil, paper and camera).

Review of Literature

The Social Sciences pertinent the subjects, Applied Sciences is briefly discussed in the above paragraphs and the importance to trace the development of ecology in the field of social sciences research and how ecological research was introduced in social sciences research. Thus to form the theoretical background and understand of the proposed theme, some secondary sources of the past studies on environmental history in and around the world and in Manipur are selected and reviewed in the following:

H. Hawley in his work *Human Ecology: A Theory of Community Structure* tried to develop a full coherent theory of human ecology. His argument begins with the contribution of plant and animal ecologies which have a sociological bearing in the development of the fundamental aspects of community structure. Very often ecology is viewed as an all-inclusive point of view- a study of all of life in relation to all of environment. This is no less true of its application to human social phenomena than of its use in the study of similar matters to other forms of life. A view elaborated that the application of concept from plant and animal ecology to the human community carries the implication that community is essentially a natural phenomena. This means that it has developed independently of plan or deliberation. Thus, human

ecology was interpreted as the study of the biotic or sub-social aspect of human social organization.

Raymond F. Dasman in his work "*Environmental Conservation*" discuss the need for an integrated approach to the problems of human environment. He says it has become apparent to the various specialists in environmental management, and is being demanded from many quarters. Consecration has become popular, and been the word "ecology" appears in the daily press and is heard on commercial television. Is there a cause then for rejoicing? Unfortunately, no. The reason for the acceptance of the concept of conservation lies in the rapid deterioration of the human environment. It, therefore expresses the opinion that in any planning for the future of man on his earth, we must also plan for the wild land and wild creature which have been a part of his heritage and which remain a part of life if such life is to have much meaning. This book is an attempt to look at our environment and human problems from viewpoint of conservation. It is an attempt to provide a factual basis on which action to improve the environment can taken. Action without information usually leads to a worsening of the situation.

S. Sangwan, *Making of the popular debate: The Indian Forester and the Emerging Agenda of State Forestry in India, 1875-1904* express grief over the Mughal in medieval India that the Mughal state derecognized the prescriptive right in forests, yet for the convenience of administrative records forests were considered to be 'waste'. Such 'waste' though in theory a property of the state, remained only a potential property, something that might become 'property' only when appropriated by grant, cleared and cultivated. Under the circumstances people continued to get what they wanted from the forest, to graze their cattle, and to clear jungle growth for cultivation.

Pinata and S.C. Dye *Role of Fisheries in the Water Shed Development and Management* discussed the impact of ecological imbalances directly affects the eco-system of the environment and also speaks of the significant of the fishes mostly of the north-eastern part of India. Since time immemorial fish has been the important items of food protein particularly for the rural poor. As

on today the people of eastern and north-eastern region of the country depend solely on fish as a source of protein in their regular meals, the availability of which in the market is rather scarce particularly the quality fish. Due to dearth of inland water like low lying depressed areas with accumulated water and low lying depressed area which gets connected with some rivers in the rainy seasons couldn't produce the fishes abundantly in the market and meet the demand in low price. And also says the lack of resources, are losing their potentialities particularly due to ecological degradation and lack of proper management in the past.

David Hardiman, exert the impacts of construction of large dams and small dams in India in his works *Small-dam Systems of the Sahyadris*, that one of the criticism made today of large dam project in India, that irrigation needs are served better and more equitably by a large number of small dams rather than by a few big dam. Small dams, it is argued, change the environment less drastically and encourage more suitable and environmentally friendly forms of agriculture.

C. R. Palamar, in his work *The Justice of Ecological Restoration: Environmental History, Health, Ecology, and Justice in the United States* discussed the need to focus on health ecology, along with an expanded understanding of the term 'environment' and to emphasis on ecological restoration has the potential to strengthen the environmental movement for the 21st century- and beyond. He further states, although environmental problems continue to worsen, the mainstream environmental movement seems to be losing strength. Part of this declination rests on the movement's historical roots in and elevation of conservation, preservation, and wilderness protection as the headlining goals of environmentalism. These goals were promoted at the expense of other, perhaps more popular, motivators such as health ecology and environmental justice. In addition, such goals have not taken seriously the deleterious effects of environmental contamination on women, the poor, people of color, and residents of urban areas. Despite a somewhat diverse history, the mainstream environmental movement chose to most vigorously promote the protection of wild species and places, utilized a very limited

understanding of the term ‘environment’ and has not promulgated a way of dealing with environmental destruction’s concomitant shame. Taken together, these failings could be part of the movement’s waning social significance. Beginning with an historical investigation of health ecology and environmental justice, the mainstream movement could be reinvigorated by contemporaneous attention to health ecology, environmental justice, and ecological restoration, all of which remain on the borders of the movement, and all of which have ample precedent within the sidelined history of American environmentalism.

Thomas R. Detwyler points out in his work, *Man’s impact on Environment* that man environment research has been neglected since 1930s, when the flaws of “environment determination” became widely recognized. For the preceding several decades the occurrence of many of man’s cultural characteristics were largely attributed to the nature of the environment where they were found, often without much evidence. This idea, promulgated by Friedrich Ratzel, Ellsworth Huntington, Ellen Semple, and others, became firmly entrenched in anthropology and geography before it was gradually discredited and replaced by other determinism, these disciplines dampened all kinds of physical geography. This book squarely focuses on answers to the question “what is man doing to environment?”- revealing the wide spectrum of environmental changes brought by man. In his book, *The Ainu Ecosystem: Environment and Group Structure (1972)*. Hitdshi Wantabe discusses the system of social solidarity between man nature where it starts from Radcliff Brown’s theory of totemism, and worked out an important basic concept of the subject of relation in myth order (Radcliffe-Brown, 1952:130-3). The recognition of concept leads to that of various processes by which the natural order is brought within the social order. The subject which has been discussed here is the degree and of interest taken by a people in spatial orientation of natural phenomena around them, and its role in the process of brings the natural order within the social order.

Robert A. de. J. Hart in his work *Ecosociety: A Historical Study of Ecological Man (1984)*, discussed one of man’s main hopes of surmounting the basic

challenges of this most crucial era in world history must lie in an international program of comprehensive resource development schemes, designed to meet essential human needs and to solve the problems of environmental pollution. Those people have built up a vast capital of survival techniques, based on personal observation local soil, climate, crops and livestock which has been almost entirely ignored by the urban intellectuals who provide most of the administrator in the 'developed' and 'under developed' nations alike. Far sighted people admit the need to build up more ecologically adopted societies than the urban conglomeration, often with their squalid fringes of ' thirty towns' which are mushrooming in countries where the dominant objectives are those of economic growth (1984). Despite disasters of all kinds due to actual causes, wars, oppression and exploitation, it has been the family farm, the village, clan or tribe ' hefted' to its own pieces of land, which, by its endurance, perseverance, skills, ingenuity, impoverisation and continual creativity has maintained the fabric of human existence and the essential basis of civilization. Every major achievement of mankind can, in fact, be traced directly or ultimately, to the influence of an organic community, that is, a community whose people are united by biological links or by common culture, tradition and ideals to each other, and who have ecological 'roots' in the land whence they derive their means of subsistence.

There is an age-old peasant philosophy, derived from direct experience of natural laws, from the necessity of finding means of subsistence out of often-intractable soil and from overcoming the ordeals of drought, flood, fire, wild animals and human aggression. The two has been of this philosophy and self-reliance and mutual aid. The earliest agricultural communities were groups of kinfolk, member of extended families, clan or tribe and the people of family responsibility remain the backbone of all vital peasant communities today. The orphans, aged and afflicted are not left to fend for them or become wards of the State, but are cared for by the community as a whole Mutual aid is, in fact the basic law of life,. Every living being –micro-organism, plant, animals, man-comprise a complex of cells, all fulfilling their individual tasks in co-operation with thee each other. When one group of cells ceases to act co-operatively or seeks to assume a dominant role, there ensure decease,

disintegration and death. Ecology studies the operation of this law within natural communities. An ecological community has innate design, which seeks to sustain the laws, energy and processes of life. If allowed to develop its potentialities unhindered, it progresses from simplicity to complexity. The ecological climax to which most plant communities aims, where soil s and climate conditions are favorable , is the mixed forest, whose trees and other forms of vegetation provide ‘niche-structures’ – stable wombs in which mobile entities, animals and human being the wild exuberance of the mixed forest is transformed into simplified and disciplined systems of agriculture and horticulture. Where these efforts have been carried out with wise husbandry and understanding of ecological laws and relationship, maintaining a wide variety of plants and livestock, the energy and productivity of nature has been conserved and enhanced, but where wholesale destruction has been followed by monoculture, as has been the fate of so many wild areas subjected to Western technology, the result has too often been desolation, erosion and land-death. It is sometime possible to detect plant, animal and human forces, and they are believe symbolize the complex interrelationships between natural organism and to re3present an ecological view of man’s place in nature. The author explains it by giving the example that, the science of ecology dates back a little more than a hundred years, but the peasant, living in the midst of nature and almost operating as a natural force himself, has always had an understanding of ecological relationships, derive from intuition, observation and experience. He has been, and is, the true ecological man. In these days of ‘Women’s Lib.’ It is of interest that, from the earliest times, women have generally enjoy full equality, if not taken the lead, in peasant and tribal communities living in close ecological relationship to the soil. Their material instincts and commonsense have given them special aptitudes for recognizing the nutritional and curative value of wild plants, for horticulture, for the rearing of animals, and, above all, for dealing with the psychological tensions of implicit in organic, communal living. A notable example from modern China was the achievement of a Mongolian woman named Bolortol in leading a successful reclamation project in areas of shifting sand-dunes in the Maowusu Desert. Ecology and conservation, caring and sharing, are essentially feminine concepts, in contrast to the masculine instincts of

domination and exploitation which have been responsible for so much of the exploitation of natural resources with which the Western world and much of the rest of the world too is faced today.

Carolyn Merchant in his edited work *Key Concept in Critical Theory: Ecology*, states that domination is one of our country's most faithful concepts for understanding human-humanism and human-culture relationships. The theme of domination and its reversal through liberation unites critical theorist and environmental philosophers whose work spares the twentieth century. When the dominion of nonhuman culture is integrated with the domination of human beings and the call for environmental justice, critical theory instills the environmental movements with ethical fervor. This book brings together the Frankfurt school's analysis of domination with insights of today's deep, social and socialist, ecologist, eco-feminists, and people of color, spiritual ecologists, and postmodern scientists. There is much disagreement over why and nature and humans are links and what to do about changing those linkages. From the 1920s, the institute for the Social Research in Frankfurt had attempted to develop a multidisciplinary theory of society and culture that would bring together critiques and alternatives to mainstream social theory, science and technology and address social problems. They expanded on Marxism by extending its analysis of political economy to the interconnections between and among the spheres of nature, economy, society, politics, psychology, and culture. They characterize their approach as a comprehensive, totalizing theory of dialectical interaction among the various aspects of society. They were deeply concerned about the problems they associated with modernity-the period from the Renaissance and Reformation to the era of state capitalism in the twentieth century- and the concept of enlightenment that epitomized the modern world. Horkheimer and Adorno exposed the Greco-Rome roots of individualism, Science, and the domination of nature that reached a crescendo in the eighteenth century's Age of Enlightenment rather than seeing the progressive aspect of modernity in which science, technologies, and capitalism increasingly improve on the human condition, they emphasized modernity's dehumanizing tendencies, in

destruction of the environment, its potential for totalitarian politics, and its inability to control technology (1994:2).

Per A. Lindskog and Benoit Delaite in their work, *Degrading Land: An Environmental History Perspective of the Cape Verde Islands* discusses changes in land and vegetation cover and natural resources of the Cape Verde Islands since their colonisation. This isolated group of islands in mid-Atlantic was first colonised by the Portuguese around 1460. Also it discusses both physical and human causes of land-cover changes, including changes in climate, land-use, land tenure, economic, political and social systems. The actual consequences of the first centuries of European colonisation of the Cape Verde Islands were very different from the idealised view of tropical islands as Gardens of Eden that was current in Europe during the early colonial period. It also provides evidence of catastrophic degradation of the land and vegetation of the islands: from a dry but 'well-wooded' savanna with 'great quantity of grass', and 'streamlets of water' at the time of colonisation to a near desert landscape today, especially at the lower altitudes. The major cause of the degradation, perhaps indirect but still decisive, may have been a political and economic system that permitted an appallingly shortsighted exploitation of the land. The major direct mechanism of this process was probably overexploitation of the vegetation-cover by people and their goats.

Despite the evidence for human causes behind this ecological disaster, the possibility cannot be excluded that there has also been a change in climate purely due to physical causes. If, however, the first colonisers had been conscious of the fragility of the ecosystem they came to occupy, these islands could still have profited from the advantages of a dry savanna with trees and a continuous grass cover, as do the Bermudas, which have remained a 'terrestrial paradise' thanks to the protection of the cedar forests since their first settlement in 1622. The reason why the 'fortunate' islands of Cape Verde should be reforested thus becomes evident. Human beings frequently have a good perception of the symptoms of environmental degradation, but they rarely perceive the causes of such changes. In particular, they do not see themselves as agents in relation to nature. Instead they attribute environmental

degradation either to God, destiny, etc., or to more earthly powers, which results in resignation relative to environmental problems.

Benjamin Kline. *First along the river: a brief history of the U.S. environmental movement* in his work as written a concise, read-able overview of the US environmental movement that can be used as a primer for more detailed study. A Bibliography and Suggested Reading list at the end provides direction for readers desiring more detail. Kline also uses bold text to highlight topics (people, places, etc.) that are significant enough to be defined in the glossary. Although I occasionally encountered significant facts and figures for which I found no references, numbered notes at the end of each chapter provide readers with references to major points. Despite a trite introductory statement ("If we ignore history we are bound to repeat the mistakes of the past"), the Introduction sets the book's tone of historical overview, coupled with occasional editorial comment by Kline. Chapter 1 covers the environmental movement's philosophical foundations, beginning with a discussion of western religion's role in shaping the way Europeans, and then Americans, considered the environment as the dominion of humankind. From my 1st college classes in ecology and environmental science, I remember how important this perspective was to understanding our relationship with the environment. This chapter also places the New World's expansion in the context of Western Europe's need for expansion as population increased and resources became scarcer. Chapters 2 through 9 span 500 y of history, from North American colonization to the Clinton administration. The book's core chapters begin by describing the contrasting perspectives of Native Americans and western Europeans regarding humankind's relationship with the environment. Kline paints a picture of rapid exploitation as European settlers pushed west, distributing non-native plants and animals, depleting the natural re-sources, and domesticating the wilderness-completely consistent with their view of the environment as "God's bounty" In orderly, chronological fashion, the book documents significant eras of exploitation, and actions by the newly established government that encouraged even further exploitation of the land, particularly in arid and under-used locations. The Industrial Revolution, beginning in the last part of the

19th century, is presented as the precursor to modern patterns of urbanization and mass consumption, and emergence of the US as a world leader. Readers are led through the evolution of the conservation movement, beginning with the Romantic era, followed by a listing of individuals that Kline believes were influential, including George Perkins Marsh, Carl Schurz, and John Wesley Powell. While informative, these annotated lists seem out of place with the chapters' chronological flow. The lists then focus on political leaders, especially presidents, who positively or negatively influenced the growing conservation movement. Occasionally, I took issue with Kline's descriptions of certain individuals. In particular, Kline describes Gifford Pinchot as an environmentalist in the Preface, yet later as a progressive conservationist in Chapter 5. This contradiction is significant, because early-1900s progressive conservationists believed that preservation of natural resources was not for aesthetic reasons, but only for the eventual exploitation by humans-this is not my definition of an environmentalist. Similarly, Kline might have taken greater care in placing the word "conservation" in the appropriate chronological context. For example, this word meant very different things to Pinchot in the early 1900s than it did to Aldo Leopold in the mid-1900s, yet that distinction is not made consistently. On the other hand, Kline brought me new perspectives throughout the book. For example, he makes a compelling case of the linkage between environmental decay and the Depression in the 1920s. The linkages between chapters, and in some cases, between consecutive sections of the same chapter, were not always solid. For example, Kline first refers to Rachel Carson as a marine biologist, yet in the following section on the next page, appears to introduce her again for the first time as "a former researcher for the Fish and Wildlife Services". These inconsistencies have the impression of text sections written at separate times by the author, yet not edited to flow together in the final product.

Ecological analysis has been further focused by a classical and pioneering Indian social scientist Prof. Radhakamal Mukherjee. His pioneering work, *Man and His Habitation: A Study in Social Ecology* (1963) defines that, the methods of plant and animal ecology "greatly help toward a scientific study of spatial, occupational and temporal relationships of human beings". He further

says that “symbiotic relationships between the different groups of people with their different modes of exploitation of resources and social habits develop so that the region becomes an assemblage of ecological patterns.” Here exclusively he has dealt with “the study of the human individual in his reactions to the environment, physical and organic, his adaptation to soil and climate as well as his reactions to the environment, physical and organic; his adaptation to soil and climate as well as his structural and behavioral responses to his habits and occupations, and to his relations with other individuals of his own or other communities” the interchange between man his habitations, resource and technology and his social habits and values is reciprocal and intimate. Mukherjee gives the example of crowded plains of India and South-East Asia, as it is “subject to intensive, one-sided exploitation and depletion for successive generations.” He further shows his concern that the new technology and new economic and ecological planning will have to be aided and reinforced by the human community’s recovery of its ancient sensitiveness and responsiveness to Mother Nature and Mother Earth. Therefore, social ecology has tremendous practical significance for modern urban-industrial culture that has as a global pattern in East and West. Ecology being a comprehensive science, it open many approaches to the study of man’s social orientation and behavior.

Ramachandra Guha in his work *The Unquiet Woods: Ecological Change and Peasant Resistance in the Himalaya* raised the important issue of whether the rule marks an important watershed in the history of environmental history of the subcontinent. He proved in o uncertain term how the British by virtue of formulating a forest policy, which was detrimental to the traditional rights of the people to forest resource use ‘marked a radical break in the history in the history of Indian forestry’. Further collaborative work with Madhav Gadgil’s *The Fissured Land: An Ecological History of India* firmly laid the foundation of environmental history in South Asia. Since then not less than a dozen full-length monographs were completed on the history of forest use or not. In 1990s, two important collections of essays came out namely David Arnold & Ramachandra Guha(eds) *Nature and the Orient: The Environmental History of South and South-East Asia* signifying the fact that environmental history

has come of age as not only forests but other ecological aspects were also taken up for study. But still the emphasis was more on forest than on any other area.

Pinata & S.C. Dye in the *Role of Fisheries in the water shed development and management* discussed the impact of ecological imbalances directly affect the eco-system of the environment and also speaks of the significant of the fishes mostly of the north-eastern part of India. Since time immemorial fish has been the important items of food protein particularly for the rural poor. As on today the people of eastern and north-eastern region of the country depend solely on fish as a source of protein in their regular meals, the availability of which in the market is rather scare particularly the quality fish. Due to dearth of inland water like low laying depressed areas with accumulated water and low laying depressed area which gets connected with some rivers in the rainy seasons couldn't produce the fishes abundantly in the market and meet the demand in low price. And also says the lack of resources, are loosing their potentialities particularly due to ecological degradation and lack of proper management in the past.

K.M. Tiwari in his work *Social forestry as an Aid to Environmental Conservation* (a president, forest research institute and colleges, Dehra Dun) reflects the social forest as a concept, a programme and a mission which aims at ensuring/providing ecological, economic and social security to the people particularly to the rural and masses, more to the tribal and those down trodden who live below the poverty line, particularly by involving the beneficiaries right from the planning stage to the harvesting stage but not only as wage earners. It envisages use of community land, individual holdings and other public loads for producing what the dependent communities need and for environmental purposes (social forestry is that plantations will be created primarily to meet the day to day demand of firewood, grass, fodder etc. of the village).

S.C Saxena in work, *Conservation of Natural Resources & its Implication* (Toxicology Laboratory, Department of Zoology, university of Rajesthan,

Jaipur) the most important to this present decade is the people's concern about the environment. Never before the people were so alarmed about the deterioration environment, which is a store house of all livings on this planet. The depletion of the stock of our requirements in the environment, indeed, may prove fatal to life, one day. The right approach should be the preservation along with the utilization, thereby implying the discriminate use of a resource in proportion to its availability. There should be balance between production, protection and utilization. To maintain this balance another very important factor, the biotic population growth will play a vital role. If any of the factors is let loose the balance will be disturbed and the resource will leading towards depletion. He further says, natural resources are not an independent unit but an inseparable part of our environment.

Gopal Bhurgava in his work, *Environmental challenges and ecological* (disaster Vanishing Forestry Resources and ecological Disaster) forests were there before human beings appeared on the earth and forest can exist without people, the converse is not true. He looked back the past of our ancestors who were very conscious of the importance of the forest. And he surprised to see the modern society for not given any much care to forest, indifferent to our ancestors. This indifference stems from the first Forest Policy commenced during the colonial rule in 1894 where forestry was made subservient to agriculture. The British colonial rule blamed their colony as; "Claims of agriculture are stronger than claims of forest preservation" as forest resources was regarded as a revenue generating factor. He further observed the importance of forestry that besides the forest's products for cooking, timber, cellulose and pulp for paper, the forest is playing much an important role in controlling the ecological environment (influence the wind, temperature, humidity, soil and water). Also he explores the population explosion in a global perspective as a challenging threat towards the deterioration of quality of life. The ruthless destruction of forests causing serious ecological disaster and India's afforestation programme with the excessive stress on eucalyptus cultivation.

Vinita Damodaran's work *Famine in a Forest Tract: Ecological Change and the Causes of the 1897 Famine in Chotanagpur, Northern India* addressed one of the most under-researched areas of resource use and management in rural India, that of 'wild resources', and explores the links between ecological change, famine and poverty. It is argued that once deforestation started to take place (in the context of the exploitation of the indigenous people by an outsider landlord class, aided by the colonial state), and the forest department denied people access to traditional famine foods, the Chotanagpur region found itself for the first time subject to the kind of vulnerability to famine that had affected lowland populations for a much longer period.

Michael Mann in his work *Ecological Change in North India: Deforestation and Agrarian Distress in the Ganga-Jamna Doab 1800-1850* pictured categorically and he mentioned that, the British were not the only foreign rulers to bring ecological catastrophe to India. Large areas of forest had been destroyed under the Moguls in the 17th century. The Moguls' former hunting grounds west and south west of Agra had disappeared by 1800. That the residency in Fatehpur Sikri was deserted after the wells had silted up was a further clear indication of this deterioration. Also, yet the reasons for this overexploitation differed greatly from those of the British rulers.

Assumedly he opined that it was of demographic pressures which led to forest clearances in the 17th century. Timber was needed to build new houses and even towns, whose citizens in turn needed firewood, and land to cultivate. In the context of the transformation of Indian agrarian structures by the colonial rulers, totally different mechanisms were in operation. The market for land created by the British laid a value upon the soil making it a tradable commodity. Whilst there had been some limited private property in pre-British times, land had not been a marketable asset. These two prerequisites put in place by the colonial rulers set the ecological catastrophe in motion. For the peasants, a vicious circle of revenue and debt payment, cash crop plantation and permanent acquisition of new land was created just to meet the new demands. Forests were cleared to gain new land for cash crops, whilst cultivation of food was increasingly marginalized. Ever greater demands were

put upon the soil, hardly leaving time for its regeneration and in many parts of the Doab, but particularly in the Agra Division in the second half of the 19th century, it was totally exhausted. This change was completed within more or less 25 years (1805-1830). The devastation of the ecology of the Doab, which manifested itself so appallingly in 1837-38 led to the impoverishment both of large sections of the population and of the region.

J.B. Ganguly in his work (article), *Some misconceptions about shifting agriculture* the colonial Government's policy on shifting agriculture: - Since the colonial period shifting agriculture has been deride as an unsustainable system. It entails deforestation, erosion of soil in the hills and hill slopes that cause floods in the plains. Such floods occur as the river beds rise on account of the eroded soil in the hills carried by the hill streams into the rivers down below. It is also claimed that slash and burn agricultural leads to deterioration of the vegetative cover and barren land space. It is contended that this system of agriculture is unsustainable and economically impoverishing of the tribal people dependent on it. In the colonial period various restrictions were imposed on the practice of shifting cultivation and the hill people's rights to forests and lands were regulated and curtailed for resorting to commercial exploitation of timber and other forest products that yielded increased revenues. Forest department was created and so structured as to manage forest wealth accordingly and implement restrictive

Ambekar (Yadav), in his article, attempts to discover link-between environment and health with a broader perspective on development sustainability. He begins by stating that "quality of life is inseparable from the quality of environment", and focuses on three conceptual components of health, namely, (i) biomedical/generic, (ii) ecological, and (iii) psychosocial and cultural. Then, he dwells at length on environmental deterioration and health problems with special emphasis on infant mortality, malnutrition, and other diseases (including communicable diseases and epidemics) arising out of degradation of the habitat and pollution of land, air and water.

In opposition to those who considered 'population' as primary factor in low quality of life and degradation of environment (as Gaikwad, in his paper, had suggested), Ambekar (Yadav), following Barry Commoner and other scholars, Fearing that the global population may reach an alarming magnitude of 14 billion, Gaikwad pleads for the following three urgent interventions to rectify the balance between population and resources: (i) a shift to a cleaner technology, energy efficiency and resource conservation; (ii) a massive effort to alleviate poverty; and (iii) reduction in overall rate of population. He refers to such critical factors in India as per capita availability of land, poor productivity levels in agriculture and pronounced pressures on India's land-based resources as negative indicators. Signalling a warning that "the needs of the rapidly growing population are likely to overtake the ability of nation to provide essential services", Gaikwad favours effort towards integrating environment and development through balanced attention on environmental and natural resource concerns, economic and social dimensions of sustainable development such as poverty, consumption, demographic dynamics, health and nutrition, etc. He advocates a distinct check on unsustainable consumption and production patterns and views this as the basic step to the goal of meeting "the needs of current generation without compromising the ability of future generations to meet their own needs". Further he recommends more (and not less) investments in providing clean drinking water, sanitation, transport and shelter with basic minimum facilities. He also pleads for integration of traditional and modern medicines to draw upon the past social legacies and health-seeking behaviour of traditional groups and communities. He also stresses on mass mobilization and conscientization, both in health and environment sectors.

Shukadeb Naik and N.K. Mahakud, in their paper, Need for an Ecological Model of Development and Rabi Narayan Mohanty in his Environment and Development: Search for an Alternative Paradigm, concentrate on theoretical breakthroughs for more equitable and just balance between societal needs and environmental systems. (Pleading for a holistic conception of reality, Naik and Mahakud demonstrate the viability and community-rootedness of ecological model as advocated by Indian environmentalists Vandana Shiva

and Bandopadhyay. Essentially, this model is not anti-development, but would like to direct and govern development path and strategies from the van-dynamics, and an urge for an aggregate, integrated perspective on the environment question by linking local and global issues and concerns.

In three papers of, *Population and Environment* by John S. Gaikwad, *Environment and Health: Towards a Sustainable Approach* by Jayawant B. Ambekar (Yadav), and *Improvement in Environment through Biogas Technology* by B.X. Chavan and S.N. Pawar, address the specific sectorial dimension crucial to our understanding on the interface between society and environment. Gaikwad first analyzes the global scene on the parameters of finite resource base and the ever-expanding demand of increasing population. He also refers to modalities of human exploitation of the environment and the resulting destruction of natural system putting the human species at risk. Following the theoretical position of an international scholar Nafis Sadik, Gaikwad outlines such global tendencies as degradation of the soils and forests of developing countries, and global warming. Such tendencies essentially emanate from increasing population pressures on finite global resources he take point of community welfare and growth. Other properties of such holistic perspective are: scientific knowledge based on ecosystems linkages, nature's capacity building through science and technology, resources renewal, comprehensive view on cost-benefit analysis, regulation and control on resource use by the rich, etc. Naik and Mahakud compare and contrast the merits of the 'growth model' and 'ecological model', and argue that the latter is far superior, both in term of economy and social ethics.

In the four papers, viz., *Forest and Tribal: An Exploration into Relationship* by Sangita Gujrati, *Forest in Koyana Catchment Area: Some Observations* by S.N. Pawar and Rajendra B. Patil, *Problems of Tribal: Environmental Issues* by S.G. Deogaonkar and *Raising the Productivity of Tribal Holdings* by G.M. Gare, mainly focus on the symbiotic relationship between tribal and the forests and dwell on issues of environmental disturbance mainly caused by disturbed relationship between tribal and their ecosystem. Sangita Gujrati criticizes India's prevailing development path with its heavy emphasis on

veiling development path with its heavy emphasis on industrialization and commodification of animate and inanimate resources within the country. This growth model has neglected the ecological imperatives, and thus contributed to destabilization of the life-support systems of the indigenous communities, mainly tribal inhabiting the forest landscape. She forcefully articulates that the traditional relationship of the tribal with their forest ecosystems was one of amity and reciprocity, leading to conservation and maintenances of forest cover.

Sangita Gujrati maintains that tribal dependency on forests led to socio-economic and cultural practices which were regenerative in nature and eco-friendly. It was the inroads of imperial science and technology, buttressed by commercial and industrial interests, which has caused the immense damage to the ecosystems of the tribal. She also concentrates on the sporadic but determined struggles waged by the tribal to protect and preserve their habitat and environment. She lays stress on to alter the present crisis situation through modalities of partnership with local people in the development process and initiating confidence-building process. He calls for protecting the traditional rights of local communities and soliciting their participation in forest management.

V.P. Agrawala's (1985) work (book) deals with Environmental and Production Frontiers of Forest in India. It traces the pattern of land use and forest area in our country, especially during the period of 45 years. The book reveals the relation of forests with climate, temperature, soil erosion and the climatological situation in our country. The book provides some useful concepts related to management of forest, social forestry and agroforestry. Important aspects of wild-life and life of tribal communities in relation to forests have also been discussed. Significance of minor forest produce and medicinal value of forest have also got proper attention in the book. The book discusses in detail about forest research and education and the policies related to Indian forest. The book is useful for planners, economists, environmentalists, administrators, geographers, forest officials, etc.

Sajal Nag in his work *Pied Pipers in North-East India: Bamboo –flowers, Rat Famine and the Politics of Philanthropy (1881-2007)* (New Delhi: Manohar, 2008) had dealt with the issue of Famine in Mizo Hills due to increase in number of rats which is again related to the amazing ecological phenomenon of bamboo flowering. This book narrates the politics of colonial, evangelical, nationalist and post-colonial state around an environmental catastrophe. It's a path breaking and pioneering effort as it's the first publishes work of its kind in NEI, which deals historically with a natural calamity called famine and how the different stakeholders negotiate it.

N. Lokendra Singh in his paper entitled '*Management of Manipuri Forest during the first half of 20th century: Aspects of Ecological History*' (Proceedings of North East India Association [PoNEIHA], 19th session, Kohima, 1999) pointed out how as a result of consistent British encroachment over the traditional and customary rights of the tribal people unrest in society not only became widespread but the destruction of forest resources ultimately threatened the entire rich ecological base of the state. In other article '*Some Aspects of Management of Naga Hills Forest during the Colonial Rule and Beyond*' (PoNEIHA, 21st session, Imphal, 2001) however puts the blame on post colonial Indian state depletion in Nagaland. Further in his book, '*Land use System in Manipur Hills*' blamed the neglected attitude of the colonial rule towards the forests of Manipur as the forest resources of the state were commercially exploited to the maximum advantage of the colonial rulers. Most of the resources were extracted in the form of timbers and teak logs of different sizes. Till 31st December, 1936 the Cachar border forest was absolutely no investment in the conservation of bio-resources of the state. The forest was thus left to the ruthless exploitation of the of the timber traders. Likewise, the management of the Burma border teak trees was also handed over exclusively to the Bombay-Burma trading corporation which cut down even all the undersized teak trees causing a complete thorough denudation of the vegetative coverage of the area. The forest overlooking the valley, most of the extractable resources were exploited by creating a number of services which were again leased out to the different contractors.

Conclusion

Therefore, the above related literature review contributes to understand the growth and development of environment history, also understand about human interaction with the natural world or the interaction between culture and nature since of the long past and the changes and transformation in the ecosystem of a geographical region or a biosphere over a length of time. Hitherto, very few studies on environmental history mostly of resources management been done so far in the case of Manipur. Hence, irrespective of academic subjects, governmental organizations & non-governmental organizations the entire scheme of environmental preservation is the essential duty based to every person.

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