

**INDUSTRIAL DEVELOPMENT IN MIZORAM:
A CASE STUDY OF SMALL AND COTTAGE INDUSTRIES**

By

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**THESIS SUBMITTED FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY IN GEOGRAPHY**



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This is to certify that the thesis entitled "Industrial Development in Mizoram: A case study of Small Scale and Cottage Industries," submitted by Analkhuma Colney to the Department of Geography, School of Human and Environmental Sciences, North Eastern Hill University, Shillong, Meghalaya for the degree of Doctor of Philosophy (Ph.D.) is a bonafide study of the author to the best of my knowledge and belief. All the other academic studies referred to and cited in the thesis have been duly acknowledged.

I am satisfied that the thesis can now be placed before examiners for due evaluation.

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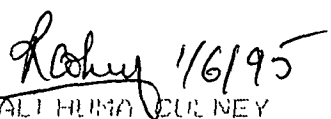
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CHAPTER I

General Introduction :

Introduction
Statement of the Problem
Objectives and research Questions
Geographical Personality of the Area
Research Design

INTRODUCTION

India is a developing country where the majority of the people still confine themselves in the rural areas. Hence, the development of the rural people, in one way or the other, would surely mean to the development of the Nation as a whole. The quick and lasting development strategy of the rural areas is sure to be 'industrialization' and since the people are poor, Small Scale and Cottage Industries would be appropriate for their upliftment.

There has been a growing emphasis on the rural industrial development as a means to tackling the problems of economic stagnation, poverty, unemployment and even under employments. The central government launched the 'Small Industries Development Programme' in 1954. Moreover, the Small Scale Industrial Sector has been playing a vital role in the country's economy in terms of employment and growth. Small Scale and Cottage Industries in India, therefore, has recorded a remarkable growth rate since 1947 in spite of stiff competition from the large and medium scale units. This is evidenced by the number of registered units which went up from 16000 units in 1951 to 36000 units in 1961 whereas it was still as big as 3.21 lakhs units in 1978, and this figure during 1979-80 has gone up to about 5 lakhs (FPO Report 1981-82, p. 18). The growth of Small Scale Industrial Units (SSI) in India, registered with State/Union Territories, Directorates of Industries, falling under the purview of Small Industries

Development Organization' (SIDO) has the following features (Table 1.1 & Table 1-2).

In the Industrial Policy Resolutions of 1948 and 1956, the Small Scale Sector was given special attention for creating additional employment with low capital investment. A new thrust was given in favour of small units by the Industrial Policy of 1977 (Tables 1.1 & 1-2). Again, the 1980 Industrial Policy had launched another important milestone for rural industrialisation. The 1980 Policy aimed to promote such a firm that can generate economic viability in the rural villages. Promotion of suitable industries in rural areas will be accelerated to generate higher employment and higher per capita income for the villages without disturbing their ecological balance. Handloom, Handicrafts, Khadi and Village Industries were given greater attention to achieve faster growth in the rural villages.

The Central Government has been following the Policy of 'Reservation' of items for exclusive manufacture in the Small Scale Sector. The number of reserved items by the end of January 1982 stands at 832 (SIDO Reports 1981-82). In order to keep abreast with technological development and competence, the list of reserved items is constantly being reviewed and the items are added/deleted from the reserved list on the recommendations of the Advisory Committee on Reservation. Thus the number of reserved items stood at 836 by the end of September 1989 (Handbook of Statistics 1989).

Table 1.1 : Cumulative Number of SIDO Units Permanently Registered with State/UT DICs as on 31 Dec. of the Year (1973 - 1988) (All India).

Year	Cumulative No. of SIDO Units
1973	1,59,321
1974	2,14,109
1975	2,27,017
1976	2,67,897
1977	2,95,720
1978	3,33,837
1979	3,91,750
1980	4,47,821
1981	5,23,185
1982	6,07,049
1983	6,87,295
1984	7,57,092
1985	8,54,843
1986	9,50,334
1987	10,48,253
1988	11,58,765

Source : Hand Book of Statistics (1989, p. 22).

Table 1.2 : Production in Small Scale Sector (Yearwise) 1973-74 to 1987-88 (All India).

Year	Production of SSI (Rs. in Crores)
1973-74	7,200
1974-75	9,200
1975-76	11,000
1976-77	12,400
1977-78	14,300
1978-79	15,790
1979-80	21,635
1980-81	28,060
1981-82	32,600
1982-83	35,000
1983-84	41,620
1984-85	50,520
1985-86	61,228
1986-87	72,250
1987-88	87,300

Source : Hand Book of Statistics 1989.

The Government of India is also assisting the Small Scale Units by procuring products manufactured by them. Items reserved exclusively for purchase from Small Scale Units was 409 during the year 1989-90 (Hand Book of Statistics 1989, p. 5). Besides, 13 items have been ear-marked for purchase upto 75 percent of the requirements from the Small Scale Sector. Similarly, purchases upto 50 percent of the requirement in respect of 28 other items reserved for the Small Scale Sector also continue during the year. Price preference upto 15 percentage in case of items procured from both Large and Small Scale Units also continued. Thus, in view of the important role of Small Scale Sector in employment generation and economic development with balanced regional growth, the government have provided a package of incentives and concessions apart from institutional support for facilitating the development of this sector all over the country.

The Small Scale and Cottage Industries fulfill two basic objectives of economic development, such as:

- (a) They facilitate the decentralization of economic power by encouraging prospective entrepreneurs to take up industrial ventures and also help in the dispersal of industries over the entire region of the country.
- (b) They facilitate the transformation of traditional technology characterized by low skill, low productivity, and low wages into modern technology characterised by improved skill, high productivity and raising wages, such suited to India or Mizoram.

Small Scale Industries (SSI) are commonly classified into traditional and modern Small Scale Industries. The traditional

Small Industries include : Khadi, Handloom, Village Industries, Handicraft, Sericulture, Con, etc. Modern Small Scale Industries produce a wide range of goods from comparatively simple items to sophisticated products such as : TV sets, electronics control system, Engineering products, etc.

The Traditional Small Scale industries are highly labour intensive whereas Modern Small scale units make use of machinery and equipment. Traditional Small Industries provide subsidiary or part time employment to agricultural and artisan people whereas Modern Small Scale units require training and a little bit of educational backgrounds.

The Mizos are borned agriculturists. In the traditional Mizo villages, agriculture was the sole occupation. Moreover, agriculture was based on traditional shifting cultivation and the land was owned by the community as a whole, there was no land ownership or land ceiling or tenant systems. There was no secondary occupation as the village pottery, blacksmithy (making agricultural tools), handicrafts, Khadi (loom looms), etc. were all done on part-time works and there was no market or buying and selling business. In other words, barter system of economy was practised.

In the mean time, slowly and slowly, they follow the line of economic development, civilization and growth as a whole coupled with increasing population. With civilization their wants increased whereas the land became more and more infertile

Due to continuous slash and cut down method of cultivation resulting into low productivity. Thus, the disturbances of traditional economy and the low productivity of agriculture coincided resulting into the introduction of modern trade, commerce and businesses.

At present, about 85 percent of the total population is still in the agricultural sector and, according to 1991 census, 65.77 percent of the total workforce is employed in primary occupations. But this workforce, which is engaged in primary occupations cannot produce food stuff sufficient for even three months of the year. As a result, rice, the staple food has to be obtained from other parts of the country. Thus, the townships are emerging rapidly on the basis of non agricultural activities and the Small Scale and Cottage Industries are developing as per the availability of raw materials and local needs.

Jhum cultivation in the state now has proved itself to be too short to support the growing needs of rapid increasing population as the farmers are now bound to cultivate the denuding plots, getting lesser and lesser yields years after years. Moreover, there are hardly plain areas where permanent cultivations can be practised excepting few patches of small and narrow river valleys of Champhai, N. Vantlaphai, Chemphai, Chitlaphai, etc. Actually, there is no big flat land for agriculture and terrace cultivation is not much practised yet. Therefore, today, people actually dare not remain in the

agricultural fields but want to shift from primary to secondary and tertiary sectors. In other words, people of the primary sector have to find a substitute occupation if agriculture remains unmechanised.

But, the rural people just all of a sudden cannot deviate from primary sector to secondary or tertiary sectors due to poverty and lack of technological know-how. At the same time, due to the geographical disadvantages like the hilly nature of terrain which hinder development of Transport and Communications, there is lack of enough raw materials and market facilities. Consequently, the state is having immense obstacles towards industrial development.

As the whole state is still under the shadow of poverty, there is no proper occupational structure even at the family level. Each member of a family will engage himself or herself with any available occupation and as such a member may be a shopkeeper or hawker; another being office goer whereas another is doing gardening or any other job. One can hardly find, thus, a family engaging in one stream of occupation or self-employing families.

While poverty is prevailing, there is lack of capital, technical knowledge, etc. which are the pillars of industrial establishments. Therefore, either Large Scale or Medium Scale Industrial Units cannot be expected at the private levels. Rather, the Small Scale and Cottage Industries are very much

suited as they require less capital, less technical training, etc.

↓ ↓

Now, it is observed here that there is a trend in shifting of occupations from primary sector to secondary and tertiary sectors in the State. And it is also true that unemployment problem is heavily felt as the backlog of unemployment is growing year by year. The fact is shown in the employment exchange that total registered and total placed are tremendously repelling each other. This fact cannot be ignored even at the Government level. We can, therefore, rightly say that :

- 1) Agriculture is no longer economically feasible so as to retain maximum workforce and so people of this sector tend to shift from it.
- 2) People who came out of agricultural activities and search for employment in government offices or other non-governmental agencies but they cannot be absorbed all there, remain unemployed. Thus, there is unemployment problem in the employment market as the people are usually uneducated.
- 3) While there is educated unemployment problem prevailing in the state and people no more want to remain in agricultural sector, a large section of the workforce is hanging around without productive job. So, for this section of the workforce, establishment of Small and Cottage Industries is most suited and that is why people in the state having no other substitute, are jumping blindly into this sector of the economy.

The State Government with following the industrial policy of the Central Government is offering many facilities and financial helps to this sector of the economy. With the result, State Government prepared its Industrial Policy with certain

incentives in 1989. Furthermore, it is observed that the people in general, do not realize the danger waiting ahead. Without technical knowledge and financially dependent, they blindly choose the trade they like and proceed to the Financial Agencies for loans. Loan received without knowledge of its proper utilization results in poor recovery. If such people do not utilize the loan and cannot repay the loan, then the financial agencies also cannot last. At this very juncture of transition from primary sector to secondary sector, an empirical study for the future Planning of balanced regional development and self - sustained growth of this sector of the economy is very much required. The people have to be educated; the government needs advice; the obstacles and bottlenecks have to be detected; markets have to be created, industries suited to the area with regards to raw materials availability, labour and capital suitabilities have to be identified.

In order to be able to have proper and concrete ideas and informations of these factors, the present piece of research is tried to highlight these facts of the economics of the state. Thus, this research is not only of academic interest, rather it would be of keen interest of policy makers, Government servants and also other non-government agencies which are engaging in the socio-economic as well as industrial development of Mizoram.

Village and Small Industries Sector :

The spectrum of industries in the country extends from the Organized Large and Medium Industries to Modern Small Scale Industries and Unorganized Traditional Industries. The last two (i.e., Modern Small Scale Industries and Unorganized Traditional Industries), known as Village and Small Industries (VSI), constitute an important segment of the economy. According to the seventh Five Year Plan, the VSI sector provides maximum employment (413.39 lakhs in the year 1989-90) next only to the agricultural sector and accounts for about 54 percent of the total exports of the country. In terms of value added, it is estimated to contribute about fifty percent of value added in the manufacturing sector. The growth in this sector, besides resulting in preponderance of self-employment and wider dispersal of industrial and economic activities, ensures maximum utilization of local resources, both human and material.

The VSI sector has been divided into different sub-sectors for the purpose of administering assistance programmes and the specialized institutions have been created to look after each of the sub-sectors at national level. The sub-sectors of the VSI sector and the concerned agencies are listed in Table 1.3.

The first five sectors (Table 1.3), comprise what is termed as 'Traditional Industries'. The last two, namely, Powerlooms and the Small Scale Industries are now known to manufacture a wide range of over 7400 products and account for

about seventy percent of the gross output of the industrial sector. The Office of the Development Commissioner, Small Scale Industries, under the Ministry of Industry at the centre along with its offices at the state level is the nodal agency for promotion of the Small Scale Industries. The modern Small Scale Industries (SSIs) under its purview are, therefore, also known as SIDO industries. State/UT Governments are primarily responsible for the promotion and development of the Small Scale Sector under over-all policy guidance from SIDO.

Table 1-3 : Sub-Sectors of the Industries.

Sl. No.	Sub-Sectors	Implementing Agencies
1.	Khadi & Village Industries	Khadi & Village Industries Commission (KVIC Boards in the States)
2.	Handlooms	(All India Handlooms Board) Development Commissioner, Handlooms.
3.	Handicrafts	(All India Handicrafts Board) Development Commissioner, Handicrafts.
4.	Sericulture	Central Silk Board
5.	Coir	Coir Board
6.	Power Looms	Textile Commissioner.
7.	Small Scale Industries	(Small Scale Industries Board) Development Commissioner, SSI.

Source: Second All India Census 1980, p. 1.

ROLE OF SMALL SCALE INDUSTRIES (SSI) IN OVERALL ECONOMIC DEVELOPMENT

The importance of Small Scale and Cottage Industries in economic development has been a matter of great concern to policy makers, researchers, national and international level developmental Agencies. The overall economic growth process and the causes of sectoral shift of the occupational structure can be understood by describing the contribution of the various sectors of the economy. Thus, the role of Small Scale and Cottage Industries in the overall economic growth of Mizoram can be examined by describing the contribution and share as well as the growth in this sector to the state's economic growth process. While examining the role of this sector to the economic development and growth of the state's economy the following aspects are to be taken into consideration : (1) The product contribution or output (in Rs. Lacs) of the sector, (2) Industrial production factors contribution or the contribution of inputs of this sector to the state economy, (3) The market contribution, and (4) The foreign exchange contribution.

Production Contribution :

Industrial products are the indicators of a nation's economic standard. The survival of a nation today is greatly depending upon its industrial set up and products. It helps a country to survive at the national level as well as in the international level. Growth of agriculture and tertiary sectors

are also largely depend upon the industrialization of a country.

The industrial production contribution to the economic growth is the function of two attributes, namely share and growth of Net Product of industries. For measuring these attributes of the sector, Fuzrels (1964) formula for Agriculture Product Contribution to economic growth and development is adopted with the help of which the relationship between Industrial share of Net Domestic Product (NDP), its growth and changes in the share of industrial sector is studied (Table 1.4). The Table 1.4 clearly shows that the industrial net product is far behind other sectors or non-industrial sectors in relation to NDP. Accordingly, the industrial sector's share of NDP is almost negligible even though a significant growth has been observed in the industrial sector in Mizoram during 1986-87 to 1988-89. In detail, it is observed that the annual rate of Industrial Net Product is recorded higher during 1987-88 i.e. 42.204 percent whereas the other years it has low rate of growth, i.e. 13.414 percent in 1985-86, 0.507 percent in 1987-88 and only 0.697 percent in 1989-90. Thus, the changes in share of Industrial sector reveals fluctuating conditions over years (table 1.4).

Table 1.4 : Contribution of SSI & CI to the Overall Economic Growth in Mizoram.

Years	Total		+ Magnitude (Rs. In Lakhs)		P ₁	P _n	r ₁	r _n	P ₁ r ₁	P ₁ r ₁ /dNDP	
	TP ₁	TP _n	NDP	dNDP							
1985-86	328	15395	15725	-	.02085	.9790	-	-	-	-	-7
1986-87	372	19041	19413	3688	.01916	.9808	.13414	.23683	.00257	6.960x10	-6
1987-88	529	25357	25886	6473	.02044	.9796	.42204	.33171	.00863	1.333x10	-5
1988-89	574	25433	26007	121	.02207	.9779	.08507	.00299	.00188	1.155x10	-8
1989-90	578	27498	28076	2069	.02059	.9794	.00697	.08119	.00014	6.700x10	

N.B. (1) Total Industrial Production figures are calculated from the Directory of Industries (As on 31-3-90)

+ at 1985-86 prices

Source : 1. Statistical Hand Book of Mizoram 1992, p. 119.

2. Directory of Small Scale Industries, Mizoram.

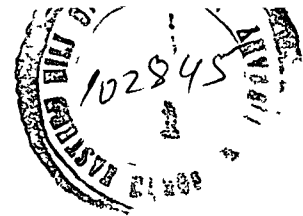
Abbreviations : TP₁ = Industrial Net Product,
 TP_n = Non-Industrial Net Product.
 NDP = Total Net Domestic Product,
 P₁ = Industrial Sector Share of NDP
 P_n = Non-Industrial Sector Share of NDP
 r₁ = Annual Growth Rate of Industrial Sector Product
 r_n = Annual Growth Rate of Non-Industrial Sector Product
 P₁r₁/dNDP = Ratio of Industrial Sector Growth to NDP Growth.

Kuznets formula :

Industrial share of GDP growth = $P_1 r_1 / dNDP$

changes in share of Industrial sector = $P_1 r_1$

$P_1 r_1 / dNDP = 1 + (P_n \cdot r_n / P_1 r_1)$



Factors Contribution :

By establishing one's own industrial unit, a job seeker becomes employer. Besides, Small Scale and Cottage Industries can enter into rural people thus not bringing employees to it but the unit itself go to the workers. Thus, it creates employment to rural unemployed people and simultaneously help in balance regional development.

Market Contribution :

The industrial products are not only for direct consumption but also act in many cases as raw materials to ancillary units. Thus, with industrialization, there can develop a systematic backward and forward linkages to the units themselves thus creating good markets over time and space.

Foreign Exchange Contribution :

Industrial goods dominate the international markets at present. Thus, the sector helps a country in earning foreign exchange also. Actually, with the foreign exchange contribution of this sector, the industrially advanced nations are ruling international/ Political power these days.

The very abnormal flow of share and contribution of the sectors to the overall economic development of the study area will have their own reasons, the first and foremost important would be the fact that the Small Scale and Cottage Industries in Mizoram have not been well organized from government during the period and before as the state government pronounced its

industrial policy only by 1989. Till then, the vulnerability of the sector was acute enough. Other factors like uncertainty of marketability of the products, raw materials scarcity, lack of power and transport and communication, high transport cost, management inefficiency of entrepreneurs etc. may also lead to the regularly irregular features of the sector in Mizoram.

STATEMENT OF THE PROBLEM

Mizoram still has to create its place in the industrial map of the country as it is still declared "No Industrial Area". Among the existing Small Scale and Cottage Industries, Handloom, Handicrafts, Carpentry, Blacksmithy, Tailoring, Bakery, Repairing and Servicing units, etc., are popular. There is no Large Scale Industry in the entire state. Recently some Medium Scale Industries under the industry department of state government have come up. These industries are now looked after by the Mizoram Food and Allied Industries Corporation (MIFCO Ltd.). They are : (1) Fruit Preservation Factory at Vairengte, (2) Ginger Oil and Oleoresin Plant at Sairang, (3) Ginger Dehydration Plant at Sairang, and (4) Maize Milling plant at Hawthawl. Another one project, Fruit Juice Concentrate plant at Chhingchhip Village (Aizawl-Lunglei Road) under the same corporation is yet to start functioning. Besides, a mini sugar mill at Saitual, under Mizoram Hand and Village Industries Board (MHVIB) has been commissioned during December 1993.

This small state, lying in the extreme corner of the North-East India, remained as a district of Assam state and as such economic development of the then district walled at the snail's pace till 1971. By 21st January 1972 when Mizoram become Union Territory, the full fledged Industry Department came into existence with its Director at the head. The Directorate of Industries, Government of Mizoram, carried on its industrial development activities under many obstacles. Development towards industrialization of the state was not an easy task for a newly borned department. Lack of expert technical staff, managerial skills, concrete policies and lack of good leadership are the obvious technical problems from the administrative set up.

The Industrial backwardness of Mizoram is also due to many other obvious factors. The hilly and rugged topography which do not allow construction of good roads and communication networks, lack of technical know-how from the part of entrepreneurs, raw material deficiencies, remote geographical locations and limited market facilities are equally responsible for the industrial backwardness of the state. Above all, the two decades of insurgency in the state was also retarding developmental activities over the state.

By April 1989, the Industries Department, Government of Mizoram announced her Industrial Policy with some incentives. This Industrial Policy is expected to be implemented along with the 8th Five Year Plan. With the declared policies and

incentives, the Industries Department can be expected to achieve the goal of industrial development in the state, sooner or later.

Another acute problem of industrial development arises from the industrial entrepreneurs in the state, i.e. the inefficiency of the entrepreneurs to run their units successfully because of ignorance and incompetiveness. Agricultural sector alone could not feed the hungry Mizoram whereas unemployment problem has already been felt. At this very juncture, the sectoral shift tends to move or focus to the secondary sector. Accordingly, educated unemployment (without technical background) as well as jobless people from all sections of the society tend to rush to establish their own industrial units.

Government and other financial agencies provide with loans, grants, subsidies etc. to these industrial entrepreneurs, but it is observed that many of the loan applicants never establish their own units or on the way they give up with desperation.

It is therefore, observed at the present moment that the industrial entrepreneurs are ignorant of the functions and management of such sensitive undertakings as industries. This sector requires hard labour, skill and intelligence, research ideas and that from beginning to the end, the sector is full of competitions.

Due to the above reasons, growth in this sector has been very slow in terms of both employment generation and revenue to the state. As per the 1991 Census, the secondary sector share only 2.82 percent of the total labourforce in the state whereas the other two, primary sector and tertiary sector shared 65.77 and 31.41 percent respectively (Table 1.5). It is clear from the Table 1.5 that Aizawl District has a little higher percentage share of industrial labourer to the total labour force, the other two districts are still far behind Aizawl District.

Table 1.5 : Districtwise Work Force Distribution in Mizoram (1991).

Name of State/ District	(Figs in %)		
	Primary	Secondary	Tertiary
Mizoram	65.77	2.82	31.41
1. Aizawl District	61.15	3.66	25.19
2. Lunglei District	72.62	1.27	26.10
3. Chhumbupui District	78.98	0.75	20.27

Source: National Informatics Centre, Mizoram State 1991.

To pursue research project in such a neglected and unorganized sector of the economy is found to be a really difficult task. It becomes doubtful, whether the paper or secondary information received from administrative agencies and the actual ground realities will tally each other; whether units assisted with loans, grants, etc. are really industrial proprietors or not. Under such conditions, it is very much possible to receive wrong or bias information. Therefore, there

Rather, it is therefore, of a great necessity and importance to still pursue research work on the industrialization aspects of the state. At this stage, it is the crucial need for the state to search for available resources, study of the existing Agro-based, Forest-based, and Mineral-based industries with regards to geographical constraints and find the way to future development. Thus, bearing in mind these statements of problems of the existing industrial set up of Mizoram, the objectives and research questions of the present study are highlighted accordingly.

OBJECTIVES AND RESEARCH QUESTIONS

The industrial policy of Mizoram (1989) is to be implemented from the 8th Five Year Plan, which is going on now. This policy gives priority to the Small Scale and Cottage Industries in the acceleration of the process of socio-economic development of the State. In fact, the processes of overall development in general and industrial development in particular should be in its integrated manner. Therefore, raw material availability and utilization, weaknesses of existing industrial setup and its locational components should be interpreted for integrated industrial development of the State. Keeping all these aspects in mind, attention is mainly focused on the following objectives as

- a) to evaluate the nature of locally available resources of the area which are raw materials for industrial development.

- b) to study the distributional patterns and trends of growth of the existing Small Scale and Cottage Industries in the study area.
- c) to analyse the existing industrial structure and its change over time.
- d) to study the locational setup of SSI and Cottage Industries in its geographical setting.
- e) to evaluate the existing programme of Industries Department and their problems for proper implementation, and
- f) to suggest appropriate measures for self-sustained growth and well balance development of the industrial sector of the study area.

Due to lack of technical knowledge, skilled labour, and limited facilities, the SSI and Cottage Industries are always facing problems in improving their productivity, profitability and proper marketing of their output. Moreover, the entrepreneurs are always unable to recover their loans or delay payment tremendously so that the financial institutions are hesitant to extend financial help to new entries. In order to meet the above problems, the following are some of the research questions which would be kept in mind throughout the study. They are :

- a) How far the poor infrastructural facilities are responsible for the industrial backwardness of the study area ?
- b) How can household industries be transformed into Small Scale and Cottage Industries in relation to infrastructural facilities available in the area ?
- c) How can production processes be accelerated in the less productive units of the state ?

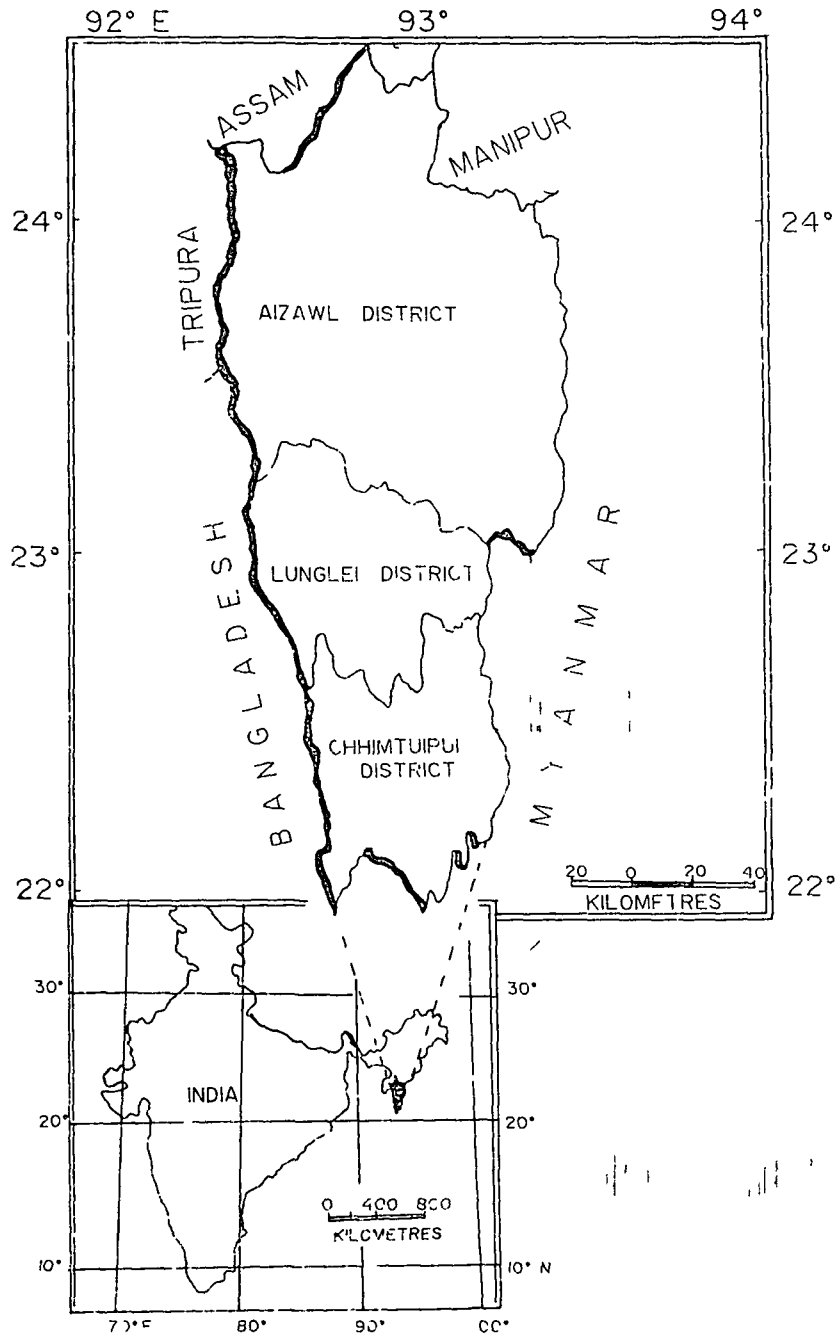
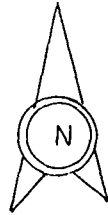
- d) Among the various categories or individual trade, what type of such Small Scale and Cottage Industries are suited to the area and prospectively of such categories ?

LOCATION OF STUDY AREA

Mizoram is one of the seven states of the North-East India located in the North-Eastern corner of the Indian Union. Mizoram's Global location is from 21° 56' N to 24° 31' N latitudes and 92° 16' E to 93° 26' E longitudes (Pachua 1991, p. 2-6). The state is cut by the Tropic of Cancer into merely two equal halves. The width of the state from the western most point to the eastern most part is 121 km and from the northern most point to the southern most point is 277 km with its total geographical area of 21081 sq. km. (Clement 1991, p. 84).

The state is bounded by Myanmar on the Eastern and Southern parts with 274 km international boundary, Bangladesh bounded it on the West with 214 km international boundary and also Tripura state with 61 km state boundary on the west; on the north it is bounded by Assam with 118 km state boundary line and Manipur with 87 km inter-state boundary line. (Clement 1991 p 84). Therefore the state is occupying a great strategic location within the North-Eastern Corner of Indian Union due to its long international boundary with Myanmar and Bangladesh (Fig. 1.1).

LOCATION OF MIZORAM



SOURCE: PACHUAU (1991)

FIG 11

The Mizos :

The Mizos belong to the Mongolian race. But regarding their origin, place from where they came, no Mizo historian is able to tell, with evidence or confidence. This is mainly because the forefathers or ancestors did not know the art of reading and writing and therefore, there could not be any proper record of their past. History was told through memories and the fact that even the aged could not recollect their history beyond their days in Run valley of Myanmar and Thampat Bung (the great Banyan Tree of Thampat) in Myanmar, told to be planted by their forefathers, while they were there.

In around 1250 AD, the ancestors wanted to shift from Thampat and before leaving the place, they planted the Banyan Tree to show : 'This is our own land and we will come back here someday when its branches touch the ground'. The fact that the other tribes in and around Thampat also believed and remembered this to be true (Zawla 1964, p. 17).

As the forefathers never keep history in black and white, it is obvious that to trace their historical past, deep into it, is to hazard a guess into the unrecorded past. Actually in older days, history was handed over to younger generations through legendary tales and memories, folk-tales, songs, signs or symbols etc.

" " " "

The First group who left Thampat settled at Dudim (Tidim) whereas some of them went towards the northern part of the Than

mountain ranges. Those were Meitei, Raleng (Nagas), Mraawng, Thado, Paite, and Zoho, etc. The second migration wave went towards the southwest. They were believed to have settled in and around the Than mountain ranges for about centuries there. While they were in these mountain ranges as they lived and settled in the higher altitudes, they were known as and called by other tribes around them Zomi which literally means 'Man of the higher altitudes' (Zawla 1964, p. 17).

The word mizo includes all the tribes like Lusei (other people call them Lushai), Ralte, Paite, Hmar, Fawi, Ithangte, Chawngthu, etc., who live in Mizoram, the land of the highlanders (Clement 1991, p. 95).

The Mizos came over to this land, Mizoram, around 1700 AD. Even before they came to this land, they had their own chiefs. Even after they come and settled in Mizoram, villages were ruled by their own chiefs independently and there was no super power to rule over the chiefs. That period was supposed to last for about two centuries i.e., 1700 AD - 1889 AD, when the British government happened to interfere in the chiefs affairs (Siama 1953, pp. 23-25). The Mizos in olden days were not exposed to the outside world. Moreover, the Mizos themselves also did not know about other worlds except their immediate neighbours in the adjoining plain areas. They were, thus, confined within their territory.

This land, a wide stretch of mountainous terrains, covered with thick virgin jungles, which offered plenty of games, sparsely populated by jesse, and undeveloped¹ tribes/clans whom they quickly ousted or absorbed, soon became the land of the Sailo Chiefs. The Sailo Chiefs tamed the wild country and established their Empire here. Thus, for years, (about 200 years), they were settled down quietly and reigned supreme in these hills, hardly known to the outside except their immediate neighbours (Elly 1990).

Administrative Divisions :

Mizoram remains to be Lushai Hill till the end of August 1954. The union parliament however, by an Act called the Lushai Hills District (Change of Name) Act, 1954 (19 of 1954) changed the Name Lushai Hills District to Mizo District with effect from 1st September 1954 (District Gazetteers 1989, p. 1).

The next year, 1955 saw the abolition of the traditional Chieftainship, soon to be replaced by village councils. Around this time, the political consciousness began to manifest itself among the Mizos (District Information & Public Relation 1992, p. 4)

The then Mizo District Council continued to be a part of Assam till January 1972, when it was made a union territory with its name. Mizoram vide section 6 of the North Eastern Area (Re-organization) Act, 1971 (Act No. 10 of 1971) (District Gazetteers 1989, p. 2)

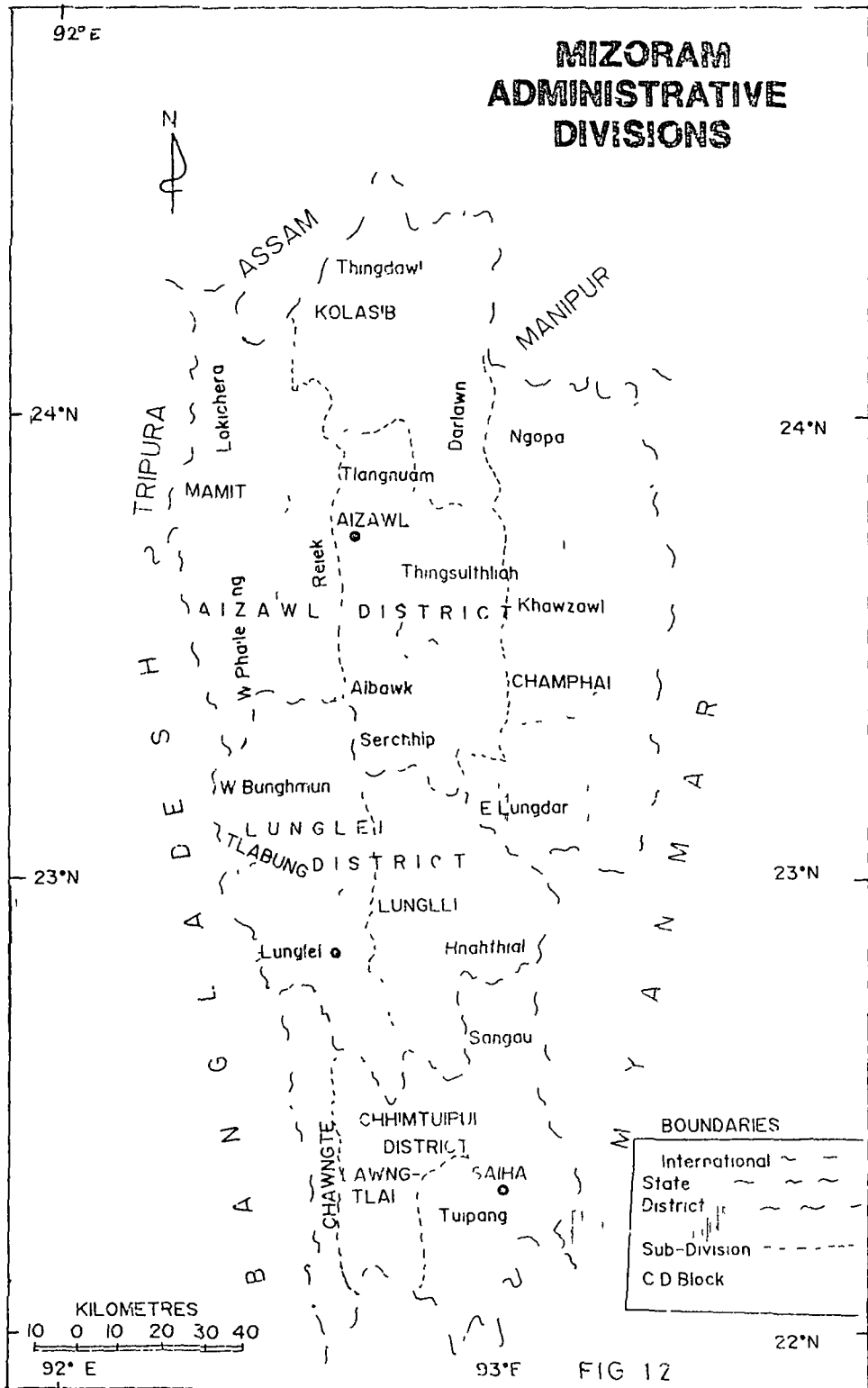
Virtually, on the 7th August 1986, the Union Parliament passed the 53rd Constitution Amendment Bill 1986 and the Mizoram State Bill 1986. Accordingly, the Bill of Mizoram State made changes to the schedule, 1 and 4 of the Indian Constitution and then Mizoram became a full fledged state, the 23rd State of Indian Union on the 20th February 1987 (Clement, 1991, p. 92).

Administratively, Mizoram is now divided into three Districts : Aizawl, Lunglei, and Chhimituipui, with Head Quarters at Aizawl, Lunglei and Saiha respectively. Among the Districts, Aizawl is the largest with 12588 sq.km., i.e., 59.71 percent of the total geographical area of the state. Lunglei District shares 21.52 percent area of the state (4536 sq. km.) whereas Chhimituipui District shares only 18.77 percent (3957 sq. km.) of the total geographical area of the state. The population distribution over the three districts is shown in Table 1.6.

Table 1.6 : District-Wise Breakup of Population, Mizoram, 1991

Sl. No.	Name of District	Total Population	% Share of Population
1.	Aizawl District	478465	69.37
2.	Lunglei District	111415	16.15
3.	Chhimituipui District	99876	14.48
	Mizoram State	689756	100.00

Source : NIC, Mizoram State Unit, 1991.



Aizawl District is again sub-divided into four sub-divisions viz., Aizawl (Sadar), Polasib, Champhai, and Mamit; Lunglei District is sub-divided into Lunglei and Tlabung sub-divisions; Chhimiupui District is again divided into three sub-divisions of Saiha, Lawngllai and Chawngte. Thus, the whole state is divided into nine sub divisions. For smooth and better functioning of developmental works, the whole state is further divided into twenty Community Development Blocks. The administrative divisions at the Block level is shown by the Fig. 1.2.

GEOGRAPHICAL PERSONALITY OF THE STUDY AREA

Indeed, geographical personality influences directly or indirectly to the resource structure of an area/region which are the raw materials for industrial development. The distributional patterns of raw material would be studied separately, however, there is a need of detail study of the geographical phenomena of the study area for understanding the background of resource structure. Through geographical factors, the integrated view of industrial development may also be highlighted. The geographical personality can be studied by classifying broadly the geographical phenomena into three : Physical Conditions, Economic and Socio-cultural Heritage of the area which are given below in detail.

- (1) Physiographical Conditions: (a) Topography, Drainage Pattern and Geology, (b) Climate, and (c) Soils and Minerals.
- (2) Economy: Economic Sectors and General Landuse.

(3) Social and Cultural Heritage.

(a) Topography, Drainage Pattern and Geology .

Mizoram is composed of predominantly Mountainous terrain of tertiary rocks. The mountain ranges are inclined north to south direction in parallel series. The range are separated from one another by narrow deep river valleys, with only very small patches of flat lands.

The terrain of Mizoram is young and immature. It shows prominent relief features with steep slopes and is still undergoing denudation in response to various exogenetic (Isostatic gravity) processes. Since the terrain is young, the geomorphic features of the state do not show much diversified in the formation of land forms. Most of the landforms observed are erosional in nature. The most dominant process of evolution of these landforms is the actions of running water which is operating from upper tertiary period onwards till the present.

Based upon drainage, relief, lithologic and structural set up, the landforms of Mizoram can broadly be classified into the following units (Pachua 1991, p. 40).

- (i) Mountainous terrain province, constituting almost the entire eastern half of the state where prominent ranges lie and where the high peaks like Phawngpu, Lengteng, Mawmrag, etc., are located.
- (ii) Ridge valley province, constituting the entire western parts of the state, nearly half of the geographical area of the state.

(iii) The third province, the flat lands, constitute the scattered valleys and plains all over the state. The prominent ones are Champhai, (the largest flat land in the state), North Vanlaiphai, Thenzawl, Thatsen, Chhimluang, Chite, Barrabi, Hoihlo, Zawipui, and Tuisen-huar etc. (Fig. 1-3).

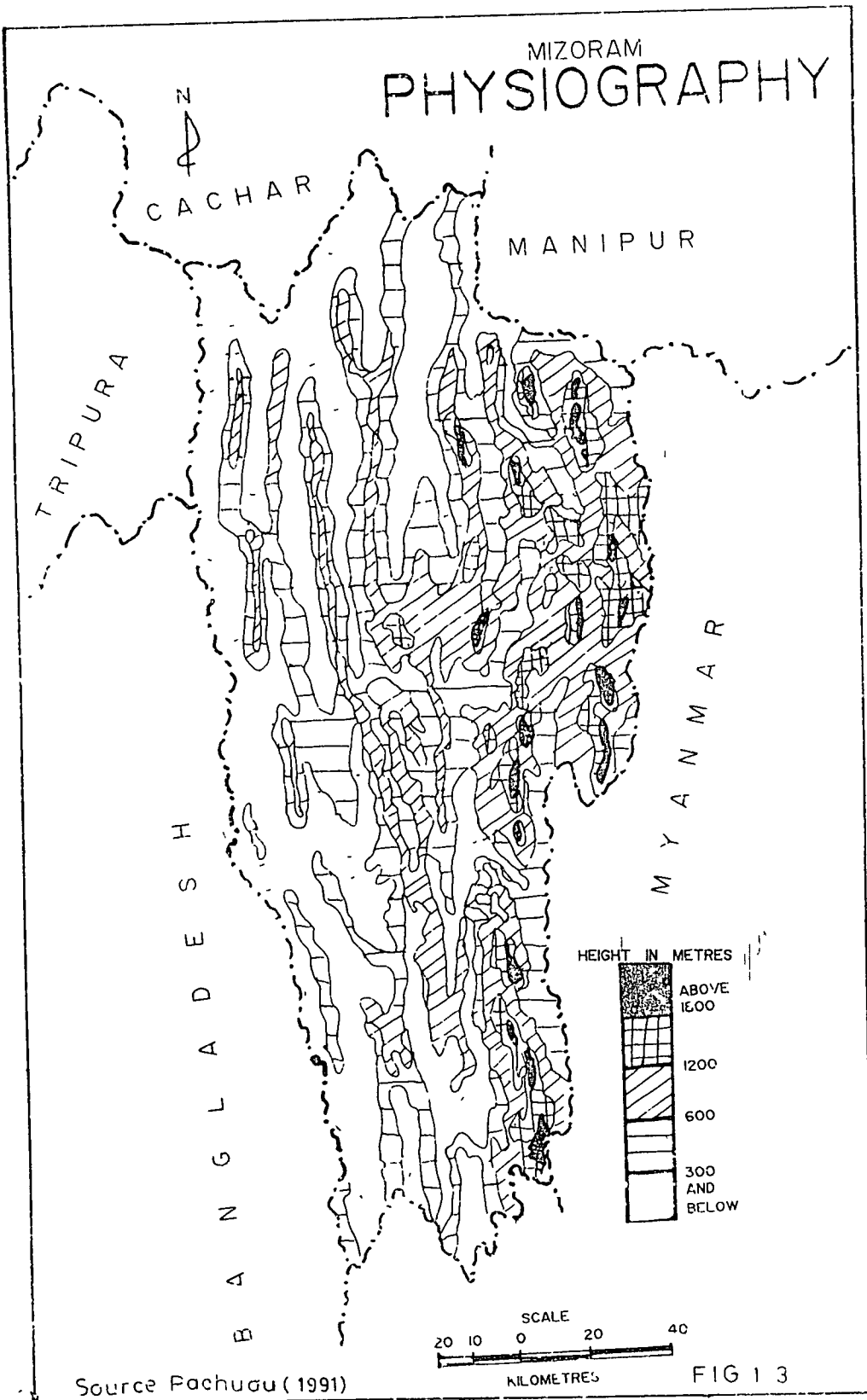
The vast flat land 'Chamduy' in the western part of Chhimtuipui District, so far not properly exploited, is now under active exploitation for wet rice cultivation.

It is firmly believed that if all the available flat lands in the state are used for wet rice cultivation, there are enough flat plains to feed the state with rice, the staple food. But, in area-wise, share of flat lands in the state is negligible.

The Geology of Mizoram has not been studied in detail due to rugged inaccessible terrain, thickly vegetated, etc. Few works on geological exploration of the region have proved that the hills of Mizoram consist of sandstone and shales of tertiary age, thrown into folds, the rocks are the continuation of those rocks forming Patkai Range and Cachar Hills, and were probably laid down in delta or estuary of a large river issuing from the Himalaya in the tertiary period. Marine fossils of that period/age are found near Lunglet, Loush, which were embedded in nodular dark grey sandstone (Fachue 1971, p. 33).

The Geology of Mizoram is represented in general by repetitive succession of arenaceous and argillaceous sediments which were later thrown into approximately NNW-SSW trending

MIZORAM PHYSIOGRAPHY



Source Pachau (1991)

FIG 1 3

Longitudinal Flanking anticlines and synclines (Satellite Remote Sensing Survey of Natural Resources 1979, p. 20)

The generalised stratigraphic succession based upon the work of Geological Survey of India is shown in Table 1.7.

The rocks of the Surma group are exposed in the western part of the state and exhibit ridges and valley features, and trellis drainage pattern. Coupled with the dominance of trend lines, this unit could be separated from the Barail group of rocks which are exposed in the eastern part of the state, showing dendritic drainage pattern and denuded hills oriented in different directions.

In the North-Eastern corner along the border with Burma, the rocks show North-South linear trend and sub-parallel mountain ranges and valley type of topography. This is due to the alternation of hardstone and soft shale beds, grouped under Barail group (Sarkar and Nandy 1976, pp. 141-145).

The drainage system of and area influences the locational pattern of industries and it is true for Mizoram state also. The state is drained by a number of small rivers, streams, rivulets and brooks. As the state receives heavy rains during summer months, these rivers and streams get flooded during the rainy season whereas some rivulets and brooks may get dried during rainless days. There is no single navigable river in the state.

Table 1.7 : The Generalised Geological Succession in Mizoram

Sl. No.	Geological Age	Group Name	Formation Name	Rock Type
1.	Recent Pleistocene	-	Alluvium unconformity	mainly in River beds.
2.	Mio-Pleiocene	Surma	Bolabil	Shale, silt-stone, silt-stone & little shale.
3.	Oligo-Miocene	Surma	Upper a) Dhuban	Mainly sand-stone, silt-stone & little shale.
			b) Middle Dhuban	Mainly shale & Silt-stone.
			c) Lower Dhuban	Mainly hard Stone.
4.	Oligocone	Darail	Darail	Predominantly shale, silt-stone & Grey waches etc.

Source : Pachuau Lalrintluanga 1991, p. 34.

Many of the bigger rivers and streams originate from the central part of the state and flow either southwards or northwards following the parallel ranges of the hills. Thus, the rivers here do not flow either east to west or west to east directions. Owing to the topographic set up of the region, the rivers generally flow towards Bangladesh in the west and to the Assam plains in the north and northwest. Thus, the rivers, in general, flow in Mizoram with the upper course characters and the greater part of their middle course and the whole of their lower courses have to be found outside the state are always characterized by deep gorges, waterfalls, water gaps etc. These

rivers in many places, on the other hand, provide ideal places for construction of mini and minor hydel projects.

The northern part of the state is mainly drained by rivers like Tlawng (the biggest and longest river in the state) 102 km in Mizoram, and its tributaries like Jemel and Tut. Also, Tuovawl, Tunial, Langlath, Tuivai, all flowing northern direction falling into the Tuivuang (Darat) river in Cachar district of Assam. The southern Hills are drained by Chhimtuipui on the east with its tributaries like Mat, Tuichang, Tiau & Tuipui while Ihawhlangtuipui with its tributaries like Lawrpuai, Tuichawng, Phairuang, Kau and De drain the western part, and these rivers in many places act as boundary lines between India & Bangladesh whereas Tiau & Chhimtuipui (Holadyne) form the natural boundary between Myanmar and India. The detail drainage system is shown in Fig. 3.3 of Chapter-III.

Mizoram has no lake worth mentioning compared to other lakes in the North-East like Umiam (Barapani) in Meghalaya or Loktak in Manipur. But there are some smaller lakes in Mizoram, which are yet to be exploited for commercial fish ponds. Though the lakes are not large in size, if used for fish farms properly, they are sure to be able to provide substantial amount of fish requirements in the State. Some important lakes are Palak dil, Tam dil, Reng dil, Vachadil and Rungdil (dil means lake).

The hill slopes in Mizoram are always covered by thick forests and vegetation. The rainfall and temperature conditions are very much suitable for the rich and luxuriant growth of trees, plants, climbers and Bamboos. The natural appearance of the state's hill-slope is restored with the appearance of bamboos and plants of immense species with Evergreen nature. Detail will again be discussed in the 'Forest resources' of Chapter-III.

Wild animals which used to be numerous in the past are now becoming sparser due to devastation of forests, the home of wild-lives, and the indiscriminate killing by hunters. A few herds of Elephants, Tigers, Leopards and Bears are to be seen in the western parts of the state where the population density is still lower and vegetation is thicker; whereas animals like Mithun, Bison, and Stags are still common and Bears of different varieties are also found here and there. A few, that are still to be found in the lesser or thinner populated areas include Jungle fowls, horn-bills, pheasants, doves, pigeons and varieties of birds. Thus, the wild-life of all kinds have been sadly depleted in the state while the wild-goats still manage to survive on the ridges of the hill slopes. Fishes, here and there in the rivers and streams are also deteriorating mainly due to the use of explosive materials and poisons for fishing purposes. The wild-life still is the victim of man and nature in Mizoram even though the state government is trying its best to save the wild-life with sanctuaries and awareness campaigns.

Thus, due to the wild-life preservation programmes launched at the state level, people now became aware of the importance of wild-life preservation. In short time, wild-life is expected to increase in the state.

(b) Climate :

Climate has direct impact on the intensity, growth and potential capacity of forest and agricultural resources of the area which are providing raw material to the SSIs and Cottage Industries of Mizoram. Climatically, the whole Mizoram lies within Tropical region and as such the state is having moderate climate. It is neither too hot nor too cold throughout the year. Since it is a hilly state, the climate is pleasant even though the Tropic of Cancer passes through the middle of the state. The climate is humid Tropical, characterized by short winter, long summer with abundant rainfall.

During March and April, violent storms from the North West sweep over the land, marking the beginning of summer. Spring generally starts from the end of February and lasts till the middle of April. By the months of April and May, the climate is usually hot whereas November to January experiences winter season.

So far as variation of temperature and rainfall in Mizoram is concerned, the monthly data of these elements of climate denote that the temperature fluctuations from winter to summer or temperature range is not much remarkable excepting in the

low lying areas. The highest temperature is observed during May-June, but the monsoon rains bring down the general temperature from June onwards. Thus, the temperature continues to fall with the break of the Monsoon rains, and it is minimized in December and January. In Autumn, the temperature is usually between 18 C to 25 C while winter has between 11 and 23 C and the summer temperature ranges between 21 and 30 C.

As the general land surface of the state slopes westwards, the general temperature conditions also follow the altitudes of the regions. Accordingly, the eastern parts of the state like Champhai, Ngur, Zole, Bualpui (NG) and Phawngpui mountain ranges have or experience lowest temperature conditions whereas the western most parts like Zawlnuam, Lanhmun, Vairengte, Bairabi, Tlabung, Chawngte are experiencing maximum temperature range.

The average rainfall in the state is 260cm annually of which most of the part is precipitated during summers from May to September and lasts till the last part of October. July receives the heaviest rainfall and this particular month is locally called Vawkhiakzawn thla which literally means due to prolong heavy rainy days, the soils became loose everywhere that the footprints of the pigs are marked endlessly. That means, the streets get never dry during the month. During these rainy days and months, landslides are heavily occurring over the road sides and mountain slopes. December and January are

The driest months though sometimes rains from the retreating monsoons are received during the months.

(c) Soils and Minerals :

The soils in Mizoram are generally sandy. Derived soils with red loamy texture is also found with high level of lateritic and the acidity is high. They are usually poor in Potash and Phosphorous. But unworked soils contain good amount of Nitrogen due to accumulation of organic matters. The soils in the river valleys are heavier as they are brought down by the streams from higher altitudes. The "soils" in Mizoram as a whole are classified into three orders. Such as 1) Entisols 2) Inceptisols, and 3) Ultisols (Sarker & Nandy 1976, pp. 141-145).

No mineral of economic importance is exploited so far in Mizoram. The Geology and Mining wing of Industries Department has taken up the geological investigations in several parts of Mizoram. Most of the Mizoram area is composed of surma sediments which is an alternation of sand-stone, silt stone, and shally rocks. Shell limestone has been found near Muthi (a place near Aizawl town). Turrial Bridge, South Hlimen, Champhai and Mamit areas by the Geology and Mining Wing of Industries Department. The CaO content of the shell limestone is only 25-40 percent. The geology and mining wing has taken up detail investigations at Muthi and other areas, in order to assess the quality and quantity of the limestone. As the investigations revealed, the estimated reserved is about 1,00,944

cu-m. Since the shell limestone band is a lensoidal body, and CaO content is very low, it is not possible to utilize the same for manufacturing cement in Mizoram (Ganesan 1989, pp. 12-15).

Considering the importance of finding Hydrocarbons in Mizoram, Geology & Mining wing has taken up the Oil Exploration programme with the ONGC authorities and accordingly the ONGC has carried out detailed geological, geophysical geochemical investigations at Kengte, Iherdulhan, Barcabi, Mamit Aizawl and Champhai structures. ONGC has started the drilling work at the first drill site near Bikhawlnin during May 1987 (Ganesan 1989 pp. 12-15).

But till today, Mizoram has to find a place in the Mineral Map of the Nation and the question of economical feasibility of the expected reserves, have not yet been answered. Of course, there are some minerals of building materials like sands on the narrow river banks and stones in the Quarries.

(2) Economy :

The economy of an area can be studied by interpreting the general landuse and occupational structures, of the economy which are highlighted in the following pages.

(a) General Landuse : According to the Ministry of Agriculture, Government of India, there is a general landuse classification by which the total geographical area is put under three broad categories and nine sub-categories. The general features of

land use as per the classification in Mizoram is shown in the table 1.8.

Table 1.8 : Landuse Classification, Mizoram (1988-89).

(Thousand Hectares)			
Sl. No.	Land Use Classification	Total Area	% Share
1.	Forest Area	1303	61.99
2.	Area put to non-agricultural use	10	0.48
3.	Barren and uncultivable land	201	9.56
4.	Permanent pastures and other grazing lands	4	0.19
5.	Cultivable waste land	74	3.52
6.	Other	3	0.14
7(a)	Current fallow land	183	8.71
7(b)	Fallow land other than current fallow	259	12.32
8.	Net area sown	65	3.09
Total reporting area for land utilisation		2107	100.00

Source : Basic Statistics, (1992), N.E.C., Shillong.

N.B.: The figures are provisional.

From the Table 1.8, it is clearly seen that the net sown area is very negligible, i.e. only 3.09 percent of the total reporting area for land utilisation. Further, Table 1.8 indicates that total cultivated lands under current fallow and other fallow lands, other than current fallow land, with the net sown area constitute as much as 24.12 percent of the total reporting area for land utilisation, which is not even one-fourth of the total. On the other hand, the forests cover a very large area, constituting 62 percent of the total reporting area for land utilisation. This indicates that forest is the main resource in the state. The vegetal cover, the forest types and the forest resources are shown in Fig. 3.1. The Table 1.8

clearly reveals, therefore, that agriculture or primary sector of the economy in Mizoram is dominant.

(b) Sectors of Economy : There are three main sectors of the economy which can depict the picture of the over all economy of the state. According to Census 1991, the primary sector of the economy is still accommodating more than 65 percent of the total working force of the state though only 24 percent area is under primary activities/occupations. Industrial set up of the state is very weak. It includes only 2.82 percent share of the total workforce of the state. There is no large manufacturing unit in the state. The tertiary sector of economy accommodates nearly 32 percent of the workforce which is reasonably significant. In fact, out of every 22 persons, one is being employed in the tertiary sector of the economy in Mizoram. The detailed study of sectoral shift would be done in Chapter IV.

(3) Social and Cultural Heritage :

The Mizos are of a close-knit society with no class distinction on grounds of sex, sub-tribes, social and economic status. They are highly cultured and sociable people and have a unique and colourful culture which set them apart from the others. About 83 percent of the state's population is christian and their literacy rate (including children below 7 years of age) of 66.97 (1991) is the second highest among Indian States and Union Territories.

Mizo society is well organised. A typical mizo village is a humming nest of activities. A cluster of bamboo huts on stilts, the village was usually set on the crest of a hill top. It consisted of about three to five hundred houses in general with the chief's elongated hut at the centre, flanked by the village elders, who helped the chief in administration. Within the calling distance stood the large hump roofed Zawlbuk (Bachelor's Dormitory) where all the youngmen in the village gathered at dusk and slept at night. This was the focal place from which one could gather news or master help in case of emergency. It was also a training centre where a Mizo boy was drilled and groomed to be a responsible member of the society (Directorate of Information and Public Relation, 1992).

A gregarious and close-knit society, they evolved some principles of self-help and cooperation to meet social obligations, and responsibilities. Construction of village paths, water holes, and other public utilities are executed through voluntary community works, known as, HNATLANG. Every family is expected to contribute labour or service to the welfare of the village or community in such hnatlang. (Hnatlang means working together for the benefit of the society physically.

The Mizos established a unique code of ethics called TLAWMNGAIHNA which stands basically for selfless service to others. It is a compelling moral force that requires a person to be hospitable, kind, unselfish, Courageous, generous, and

helpful to others, in war or peace times and day to day life. It is this spirit that guides and leads their thoughts and actions towards others (Jhunjhunwella 1993, p. 8).

RESEARCH DESIGN

This present research work is development oriented and it is therefore believed to be highly significant not only for academicians but it is also greatly significant for (1) further research works on this line, (2) industries department of Mizoram, (3) policy makers and planners, and plan implementation, and (4) the Small Scale and Cottage Industrial entrepreneurs of the study area. Therefore, the research is designed in such a way as to bring fruitful conclusions.

In Chapter-I, brief introduction of the subject, statement of the problem, the objectives and research questions have been incorporated. The geographical personality in general is also discussed.

Chapter-II deals with the concepts, definitions, methods used and literature surveyed for the present research.

In Chapter-III, the resource availability and their distributional patterns are discussed.

Chapter-IV deals with the growth and distributional patterns of Small Scale and Cottage Industries.

Chapter-V discusses about the structural features of Small Scale and Cottage Industries.

Chapter-VI deals with the role of administrative institutions and financial agencies in the development of Small Scale and Cottage Industries.

In the last Chapter, some of the important findings and suggestions are highlighted.

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CHAPTER IJ

Conceptual framework :

Introduction
Definitions
Literature Review
Data based and Methodology

INTRODUCTION

Industrial Development and Industrialization are very important steps a country has to come across whereas there can be many problems arising from the solutions. As a means to overcome poverty, industrialization in its turn has not failed to create its own problems like the increasing social and economic inequalities, regional disparities, widespread waste of resources, periodic balance of payment crisis, dependence on aid and so on.

The processes of industrialization of developing countries are still in their infancy while some countries have been longer at it than others, all of them have far to go before being industrialized. According to Jalan (1975, p. 29-45), there are still some questions which have not yet received convincing answers, such as :

- (1) How to speed up the process of industrialization ?
- (2) What kind of industries to be promoted ?
- (3) In what time sequence, and
- (4) With what kind of instruments.

Besides the above questions, another very important question, which have been the headache of Economists and Geographers is the locational aspect as to where shall an industrial establishment would be located. There is still a need for comprehensive framework of reference specifically for industrial location analysis. Every industrial establishment has a location. Each factory occupies a portion of the earth's

surface and stands in a certain spatial relationship to other factories and to elements of the wider economy.

Industrial location analysis may be defined as the study of the spatial arrangement of industrial activities. The term industrial location analysis is preferred to the more conventional expressions of 'industrial geography' or the 'geography of manufacturing'. The location of an industrial establishment is always determined by certain elements or circumstances prevailing within a given time and space.

The elements that make up the industrial world may be categorized in different ways, suggestive of different possible levels of analysis. The basic unit of observation is the plant or the factory or a single 'industrial establishment'. An industry consists of plants and/or industrial organization engaged in the same activity. An industrial organization comprises of an administrative or managerial structure responsible for the operation of one or more industrial establishments such as privately owned industrial corporation having branches or subsidiary branches or a state agency responsible for a specific line of production. A broader category still is that of the industrial system, which Hamilton and Linge (1979, p. 6) defined as comprising operating units of different types, (Production units, associated facilities such as offices and laboratories and suppliers of materials, transportation services, etc.), bound together by functional relationship and interacting with an environment external to

the system. This 'system' view of integrated approach of industrial setup has to become particularly influential in recent years as a means of emphasizing the interdependence of the individual participants :

"the firm or industry is seen as only one element in the total system or Milieu, and the industry is viewed as related to all other elements in the system" (Teraska 1978, pp. 30-36).

Such system may be defined spatially as a territorial industrial system, of which the Ruhr in Germany or the major manufacturing belt of the United States may be examples. The kind of empirical investigations usually conducted in industrial geography may be divided into two categories. (Smith 1981, p. 6) First, there are systematic studies of the location of a single set of a spatially distributed phenomena such as participants in a particular industry or employees engaged in a given activity. These studies can be on a world, national, regional, or local scale. Secondly, there are areal studies concerned with the industrial character of specific places and how they differ from one another. A comparison between the employment structure of a group of cities or counties would come under this heading. "There are also investigations that focus on change, in either a systematic or an areal context. And there are some that are concerned with specific industrial problems such as local employment opportunity, the feasibility of development in a particular location, and/or the impact of a new plant on an area's economy and environment. The essence of industrial activity is the

transformation of matter, by physically or chemical means, into something with greater utility or value. Certain inputs are required in the form of materials and of various kind of labour and capital necessary to undertake the processes of manufacture. The materials are converted into a finished product or output, which is subsequently shipped to the consumers. Thus, the function of transportation enters the picture both at the stage of material assembly and for the distribution of the finished products.

Thus, the industrial activity or the manufacturing involves immense factors or elements. In this regard, Smith (1901) advocated that a manufacturer, while setting up a factory, must make three crucial decisions, or sets of decisions, once the nature of the product has been determined. These are :

- (1) The scale of operations, including how much is to be produced and at what price it is to be offered to the consumers.
- (2) The technique to be adopted which involves the selection of the appropriate combination of inputs, and
- (3) The location of the factory.

To be able to make concrete decisions on the above factors, an entrepreneur has to possess certain qualities that can make him to be a promising industrialist. In this regard, Gupta (1992, p. 3) suggested that an industrial entrepreneur has to possess maximum characteristics of : (1) Innovative, (2) Calculated risk taking, (3) Hard working, (4) Goal oriented, (5) Self confidence, (6) Integrity of character, (7)

Excellence, (8) Competitive, (9) Imaginative, (10) Realistic, (11) Courageous, (12) Good managerial abilities, (13) Intuitive, and (14) Leadership.

Due to the difficult task of an industrialist and the complex nature of industrial geography, care must be taken while studying and examining industrial characteristics either in areal or systematic perspectives. In fact, the study for industrial development of an area can be pursued on the following aspects :

- (a) Sectoral aspect.
- (b) Locational aspect, and
- (c) Integrated aspect.

(a) Sectoral Aspect :

There are numerous studies on the sectoral aspects of industrial development. The works of economists and geographers are recognizable on these aspects. For detail the industrial sector is divided into various categories in order of large scale, medium scale, cottage and traditional industrial set up. In fact, such studies follow the wholistic approach by which the structural components of the industrial set up are interpreted and analysed by applying various methods. Therefore, input-output analysis of the firms, the forward and backward linkages and the scales of industrial economies are studied. The individual units can, therefore, be studied precisely with regards to employment, investment in plant and machinery, production capacities and growth trends.

(b) Locational Aspects :

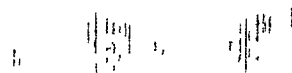
As every industrial establishment has a location or in other word, an industrial establishment or factory has to occupy a certain plot of land, the location of a particular industrial establishment at a particular location or space is determined by many factors. It is also understood that certain crops are grown in a particular season of the year because that season favours the growth of those crops. Similarly, we find that different regions are covered by typical vegetations and so on. Industrial establishment may grow together in a particular city or region or centre depending upon the favourability of the local conditions for such industrial growth. Therefore, the locational aspects of industrial establishments also count a significant role as to the development and growth of industrial units as well as complex nature of establishments.

Thus, the geographical personality of an area or region, availability of raw materials within the regions and degree of availability, availability of human resources, either skilled or unskilled and nearness to the consuming areas, etc. have to be taken into consideration with care.

(c) Integrated Aspects :

An overall industrial development of an area or a region is not based only on the development of each sectors of the manufacturing units, but it also require proper study of the factors, location and interrelationships of the components of a

firm with other firms operating in the same centre or other firms or centres of the region. Thus, the spatial behaviour of the inter linkages with respect to the geographical factors and operation of production processes are to be the major aspects of the study in industrial development. Therefore, systematic approach which leads to the study by establishing the relationships of production and productivity with the production factors in its integrated manners, is more appropriate and useful for the self-sustained growth of industrial production. For the same, a cyclic model, which shows proper integration of the manufacturing activities with the components of the system and factors, is prepared and the same views are applied here in the present research for the Industrial Development of Mizoram. The cyclic model, as suggested here (Fig. 2.1) would be discussed in detail in other part of this Chapter.



Regarding the studies of Industrial Geography, economists and geographers have propounded a good number of concepts and theories. Geographers and economists never stop searching for the models, concepts and theories in this field.

So far as the conceptual frame of the study is concerned, there are many theories (a system of knowledge which relates things to each other in a meaningful way, making unexpected, expected or at least less of a surprise (Smith 1981, p. 14) propounded by economists and geographers. The works of economists are recognizable on the sectoral aspects of

industries specially done in India during the last 40 years of planned economy in the country. Regional economists and geographers have also done intensive works on the locational aspects and provided new dimensions to the subject. The methodological aspects of the science of the industrial studies can be interpreted to classify the related materials into the sectoral and locational aspects.

- 1) The studies done on sectoral aspects of industries with relation to :
 - a) Input-Output Analysis,
 - b) Unit, Employment and Investment,
 - c) Analysis and interpretation of structural aspects, and
 - d) Analysis on Industrial Linkages.

- 2) The studies done on locational aspects of industries in relation to :
 - a) Location as a geographical phenomena,
 - b) Location as based on raw materials,
 - c) Availability of raw materials, its distribution and spatial behaviour, and
 - d) Location-allocation for future development.

The birth of industrial location theory is generally dated at 1909 (Smith 1981, p. 69) when the German economist Alfred Weber published his book *U ber den standort der Industrien* in 1909. Even though certain other Germans had written on the subject like Launhardt (1885, pp. 106-115) who attempted to show how the optimum location could be found in a simple situation with two sources of materials and a market represented by the corners of a triangle and also developed an approach based on the concept of market areas, and other Launhardt's contemporaries propounded other theories, still the Weber's book (Translated into English in 1929) gave it a much

wider reading. Even though Weber had limited his inquiry to manufacturing, it was the first attempt to construct a general theory of the location of all economic activity (Isard 1956, pp. 27-28).

The next major contribution to industrial location theory came from a Swedish economist, Tord Polander, who published *Beitrage zur standorts theorie* in 1935 (Smith 1981, p. 75). Polander was concerned about the difficulty of adequately considering industrial location within conventional general equilibrium theory, in which everything was assumed to happen at one point of time.

Hoover's early work on industrial location is still among the most useful in this field particularly for those who seek a clue to the general nature of the location problem without a high degree of abstraction and complex economic theory. In 1937, he published a study of the shoe and leather industries and, in 1948, a more general work, 'the Location of Economic Activities', (Smith 1981, pp. 79-80). Hoover's first theoretical statement (1937) was greatly influenced by Polander and helped to give a wider exposure to some of the ideas in Polander's *Beitrage zur standorts theorie*.

In 1940, August Losch produced the first-general theory of location with demand as the major variable. In 1954, Losch's *Die raumliche ordnung der Wirtschaft* was available in English and that has probably aroused more interest than any other

single contribution to location theory (Smith 1981, p. 85). Losch (1954, pp. 94-97) said that to achieve equilibrium, the space economy must satisfy the following conditions :

1. The location of every individual must be as advantageous as possible, in terms of profits for the producers and gains from the consumers.
2. The production location must be so numerous that the entire space is occupied (that is, there are no areas where the absence of a source of supply might attract a new firm).
3. The activities open to everyone there are no abnormal profits, for they will be competed away by the entry of a new firm.
4. The areas of supply, production, and sales must be as small as possible, since only then has the number of enterprises that can survive reached its maximum.
5. At the boundaries of market areas, consumers are indifferent as to which of two neighbouring producing locations they get their supply from.

The validity of certain aspects of Loschian concept of space economy has been questioned on other grounds by Beckmann (1955, N2-N8), Vajta Varis (1955, pp. 637-644), Robert Mum (1956, pp. 81-84), Greenhut (1963, pp. 174-175, 183-185), and Richardson (1969, pp. 72-77, 107-108). These Scholars argued that Loschian theory was based on a particular type of economy, characterized by agriculture spatially distributed but producing for a punctiform market and industrial punctiform in location but producing for a market of areal extent. This contains elements of real world whereas such a rigid distinction between the spatial expression of agriculture and industry is seldom found in practice.

Thus, the Principal weakness of Loschian theory, what should take place was based on limited technical criteria, was questioned by his contemporaries. Thus, there come changes in the theoretical aspects, propounded by different authors since 1950's. By 1950's two largely independent schools had emerged, embracing respectively the traditional least-cost approach and a view that emphasized the locational inter dependence of firms (Smith 1981, p. 91).

The first major attempt to integrate the least-cost and locational interdependence was made by Melvin Greenhut. In 1956, his plant location in theory and in practice brought together ideas from a number of his papers (Greenhut 1952a, pp. 526-538, 1952b, pp. 37-50 and 1955, pp. 59-72), and in his second book, *Microeconomics and the space economy* (1963), he took a further look at the effect of space on conventional theory. This work, together with a number of other papers in the fields of spatial economics (Greenhut 1957, pp. 61-88, 1959, pp. 267-280, 1960, pp. 172-182, 1964, pp. 175-184 & 1967, pp. 151-160) made his contribution to the industrial location very important and significant as well.

Greenhut's theory, integrating the least-cost and locational interdependence was based on maximization of revenue as the criterion for optimal location. His theory of industrial location includes the following factors :

- (a) Cost factors of location (Transportation, labour, and processing costs),
- (b) Demand factors of location (locational interdependence of firms, or attempts to monopolize certain market segments),
- (c) Cost-reducing factors,
- (d) Revenue-increasing factors,
- (e) Personal cost reducing factors,
- (f) Personal revenue increasing factors, and
- (g) Purely personal considerations.

During the last part of 1950's and early 1960's the locational theory was again produced by Isard (1956) who followed the method of regional Analysis. Isard gave much attention to transport factor. He considered transport inputs as important as the four conventional recognized factors of production, Land, Labour, Capital and Organization, as a requirements of the productive process (Isard 1956, p. 90).

The theories and models, so far are based on studies made for the developed economies where a large share of its workforce involved in the industrial sector with high productivity resulting into high per capita income. Therefore, these theories and models always prove ^{invalid or inapplicable} in the case of underdeveloped or developing countries where the share of work force is always very low in industrial sector. This is mainly because people are not having settled occupation. If there is more injection of technology in industrial activities, that will cost less labour requirement resulting into unemployment problems. Since the case is

peculiar with underdeveloped and developing economies, the practical aspect and validity of the models and theories propounded by these scholars is challenged by the system itself in such a case.

In underdeveloped or third world countries where there cannot be any punctiform of growth or development, the initiative of government and the policies always play vital role in the lines of development. This fact is revealed by studies made by Jalan in 1975 with the case of some developing countries discussed in the following pages.

Looking into the practical aspects of the problems of industrial development in the developing nations, the studies carried out by certain scholars can be cited.

Jalan (1975, pp. 43-45) while discussing of a programme for development policy argued that it is obvious that there are not, or even difficult universal answers to the problems of industrialization. It is also likely that whatever one does, the course of development will never run smooth. He, however, suggested some more rational industrial policies that is neutral with respect to value judgments⁴ or "political systems such as:

First, there is the need for consistency in decision making in planning for development. Effects of development activities or policies have to be judged as a whole rather

than piecemeal in terms of the effect of each policy or activity on this or that laudable objective. One policy may be justified because it promotes equality, other activities because they create employment or investment or exports or import substitutions; yet taken together, the programme may help neither equality nor growth nor economic independence. Individual decisions are necessarily made at various levels and in various departments and in order for these to be mutually consistent, it is necessary that development activities are articulated rather more specifically than desire for 'full employment' or 'social equality' or 'important substitution'. For example, an employment-oriented programme does not necessarily mean that a country will adopt any project which will employ more people, it may only mean that such projects will be given some preference over others. How much preference, and at what cost to other objectives are not matters of technical analysis but political judgment, which only the leadership of the country can and must decide.

Secondly, it needs to be recognized that whatever one wishes to do, one should try to ensure that expected benefits are larger than costs. For this, a measure of social activities is essential. The developing countries have generally neglected this aspect and it is the lacuna in project selection, rather than levels of protection, that probably explains why many food projects are technically and economically inefficient. No amount of nationalism or inward-looking strategy can justify an industrial project which

consumes more in real terms than it produces." Yet many countries have at least a few projects which are precisely of this nature. It must be emphasized that social cost - benefit analysis of projects has nothing to do with the controversy over public or private sectors or controls or the extent of planning. All economic activities yield certain costs and benefits to society and it is essential to quantify their social values in order to determine whether the costs are worth the benefits.

Thirdly, whatever views one might have on the allocative efficiency of price mechanism or controls, productive efficiency in the use of resources is a must. Once the decision to produce a commodity has been taken, it does not make sense to use more resources than required to produce a unit of output unless one can justify the additional cost in terms of corresponding gain in some other objectives. For example, some countries encourage and sometimes insist on the establishment of numerous units of production even in cases where the market is large enough only for one plant. A number of plants, each below optimum capacity, may be vaguely justified in terms of some other objectives such as regional equality or dispersal of ownership. However, on closer examination, it may be found that other benefits are largely imaginary since all the plants are located in the more advanced regions and owned by the same group of industrialists or that the excess cost of sub-optimum plants far outweighs the social gain.

Finally, in many developing countries, there is certainly a need for rationalisation of administrative controls. Rationalisation need not necessarily mean a decrease in the average level of government or public control of economic activities; it means that the system of controls should be internally consistent and that individual controls should produce demonstrable benefits in terms of the country's objectives. Administrative ability, no less than material resources, is scarce in the developing countries and it is necessary that it be efficiently allocated. There is really no point in having three controls where one will do or in continuing with controls that, however regrettably, cannot be administered.

These suggestions add up to a plea for rationality and cost consciousness in the pursuit of development objectives, and if adopted, are likely to avoid many of the inefficiencies in resource use that the Organisation of Economic Cooperation and Development (OECD) volumes have so forcefully brought out (Jalan 1975, pp. 43-45).

The development Centre of the O.E.C.D. had a survey of industrialization policies in early sixties (1964) under the leadership of Ian Little. The team studied the industrialization and trade policies of the developing countries like Argentina, Brazil, Mexico, India, Pakistan, Taiwan, and Philippines.

Their studies revealed some of the ill-effects of industrialization policies. They found that a number of countries including India have established industries whose value-added at world prices is negative. This means that to operate these industries requires imports whose value, in foreign exchange, exceed the price at which their output could be imported from abroad ready-made. They are thus both a direct loser of foreign exchange and a drain on national income. In India, leather goods, bicycles and non-ferrous metals; and in Pakistan, motor vehicles, edible oils, and sugar refining; in Philippines, refrigerators, air-conditioners and TV sets as well as several food products are being treated like that (Jalan 1975, pp. 36-37).

These studies revealed that the three countries, Mexico, Pakistan, and Brazil have been relatively successful. Mexico achieved a growth rate of 6% per annum for the last 30 years (i.e. before 1964); Brazil grew at an average rate of 6% until the early sixties; and Pakistan, after a decade of stagnation in the fifties, grew by about 5% per annum in the sixties. Policy instruments have also been remarkably similar - all of these have emphasized import substitution behind high protective barriers with a certain bias against export and agriculture.

Joel Bergman (1975, p. 9) while studying and analyzing the Brazilian experience in the process of industrialization made certain interesting points. He (Bergman) said that industrial

efficiency often depends on being industrialized. He (Bergman) said,

"It would indeed be lovely to have all those factors (preconditions of growth) appear first, and induce industrial development which would be internationally competitive right from the start. Unfortunately, for LDC's these resources appear today as the results of industrialization as much as it causes".

This means that a more rapid rate of industrialization itself increases the capacity for economic growth by promoting the development of both the financial and the human resources base of the economy. Industrialization breeds further industrialization whereas backwardness breeds inefficiency which makes progress difficult. Perhaps this is one of the reasons why all countries have backward areas, and despite efforts they remain backward. In fact there is nothing infant industries or infant economists, exploitation by advanced countries, patriotic or Military consideration that alters the fact that it does not pay to produce for ever at higher costs than you can buy for.

Stephen R Lewis Jr. (1975, p. 33) who studied the case of Pakistan found that the country in the sixties have shown a considerable growth while the exports of new manufactures had registered increase of 20-25 percent per year in the sixties, the principal tools behind were exchange control, high protection, import licensing, and export subsidies which transferred large amount of resources from agricultural sector and from urban consumers to the new industrialists. He (Lewis)

said that, even though inefficiencies in the allocation of resources were inevitable, but the policy on the whole, was highly successful in achieving a high rate of manufacturing production.

Lewis, in his study also found that the most significant single determinant of the extent to which an industry produced a large proportion of total supply domestically was the extent to which it depended on domestically produced, rather than imported raw materials.

Lewis devoted his studies with the theory of effective protection and the effect of Tariffs on Pakistan's industries. The measure of effective protection as a guide to comparative costs and industrial efficiency has totally become fashionable among economists, and Lewis findings for Pakistan should be of general interest. Two of his conclusions seem to cast some doubt on the efficiency of his measure as a guide to comparative advantage. These are :

- (1) Rate of effective protection may out state the loss in production efficiency. This is because protection may yield high profits to import competing domestic industries rather than result in higher real costs of production through improper choice of techniques, factor proportion or input mix, and
- (2) Prices do not reflect marginal costs, and tariffs may be a misleading guide to relative prices. In several industries, unit cost of production was lower than implied by tariff. But high domestic indirect tax had pushed domestic prices above prices received by exporters, net of tax.

Timothy King (1975, pp. 35-151) while studying Mexico case thanked to pragmatism and flexibility in government policies and that the resources of the economy have been used to optimum at most points. Timothy King believes that subsidies would perhaps have been a better policy instrument than protection, and suggests that import substitution in Mexico may have been carried too far at the expense of export promotion. Excessive emphasis on protection may have also led to the establishment of industries whose social benefits were extremely small. Timothy King concluded his studies on the case of Mexico that, in comparing Mexico with less successful countries, following the same pattern of industrial development, the most distinctive feature of her economic success have been her agricultural and financial policies and performance.

Meaning of Industry :

Industry means the process of making things or goods. The primary products of nature or human product always need to be changed in one way or the other form to be consumed or used. To change or transform the original form into new form involves processing and manufacturing. This process of manufacturing to produce secondary commodities and goods/materials require hard labour, both mental and physical skills and other tools etc. This phenomena of manufacturing is literarily understood as industry. I presume here that I shall not be exaggerating in telling that the word 'Industry' as an abbreviation whereas each letters in it has meaning as.

I - innovate,

N - new,

D - development by,

U - using the,

S - specialised,

T - technology with,

R - resources available to,

Y - you, and

It implies, "Innovate New Development by Using the Specialised Technology with Resources available to You".

The Small Scale Industrial Sector has emerged as a dynamic and vibrant sector of the national economy during the eighties. At the end of the Seventh Five Year Plan period, it accounted for nearly 35 percent of total gross value of output in the manufacturing sector and over 40 percent of the total exports from the country. It also provides employment opportunities to around 12 million people.

The primary objective of the Small Scale Industrial Policy, declared on August 6, 1991, by Ministry of Industries, Government of India, during the Nineties would be to impart more vitality and growth impetus to the sector to enable it to contribute its mitefully to the economy. Particularly in terms of growth of output, employment and exports, the Sector has been substantially delicensed. Further efforts would be made to deregulate and debureaucratize the sector with a view to remove

all factors on its growth potential, reposing greater faith in small and young entrepreneurs (Second All India Census 1992, p. A-1).

Right from the implementation of the Small Industries Development Programme at the National Level, in 1954, the definition as to Small Scale Industrial units has been changing. In the year 1955, Small Scale Industries were defined as those units which employed less than 50 workers when working with power and less than 100 workers when working without power and also having fixed investment less than Rs. 5 lakhs. However, in 1962, the employment criteria was discarded and only investment ceiling was retained. Since then Small Scale Industries have been defined in terms of the upper ceiling of investment in plant and machinery (original value) alone. In 1966, the investment ceiling in plant and machinery (original value) was enhanced to Rs. 7.5 lakhs in case of SSI units and Rs. 10 lakh for ancillary units (Hand Book of Statistics 1989, p. 15).

The investment ceiling for plant and machinery (original value) which was fixed in 1966 at Rs. 7.5 lakhs in the case of SSI units and Rs. 10 lakhs for ancillary units have been revised upwards four times thereafter as detailed below:

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Table 2.1 : Changing Investment and Ceiling in Plant and Machinery

(Figures in Lakh Rs.)

Sl.No.	Description	1966	1975	1980	1985	1991
1.	Small Scale Industries	7.5	10	20	35	60
2.	Ancillary Industries	10	15	25	45	75
3.	Small Service Establishment	-	-	2*	2*	-
4.	Export Oriented Small Scale Industries	-	-	-	-	75
5.	Small Scale Service & Business Industry related Enterprises (SSSBC).	-	-	-	-	5

Note : * Located in rural areas and Towns with Population of 5 lakhs.

Source : Second All Indian Census of Small Scale Industrial units (Regd upto 31st March 1988), 1992 p. 3.

The detail version of the present definition notified on the 2nd April 1991 are given below:

1. Small Scale Industrial Undertakings :

- (a) An industrial undertaking in which the investment in fixed assets in plant and machinery, whether held on ownership terms or Hire-Purchase, does not exceed Rs. Sixty lakhs.
- (b) In case of an industrial undertaking referred to in (a) above, the limit of investment in fixed assets in plant and machinery shall be Rs. 75 lakhs provided the unit undertakes to export at least 30 percent of the annual production by the end of 3rd year from the date of its commencing production.

2. Ancillary Industrial Undertakings :

Industrial undertakings which are engaged or proposed to be engaged in the manufacture or production of parts, components, sub-assemblies, tooling or intermediates or rendering services and the undertaking supplies or renders or proposes to supply or render not more than 50 percent of its production or services, as the case may be to one or more other industrial undertakings and whose investment in fixed assets in plant and machinery whether held on ownership terms or on lease, or on hire-purchase, does not exceed Rs. 75 lakhs (No Small Scale or Ancillary industrial undertaking referred to above, shall be subsidiary of or owned or controlled by any other industrial undertakings.

3. Tiny Enterprises and Industry - Related Service/Business

Enterprises :

The 'Tiny' concept was introduced in 1977. As a follow up on 'policy measures for promoting and strengthening small, Tiny and Village Enterprises' laid in Parliament on 6th August, 1991, the limit for 'Tiny Enterprises' was enhanced from Rs. 2 lakhs to Rs. 5 lakhs, irrespective of location of the unit. The Small Scale Service & Business (Industry related) Enterprises (SSSBE) with investment in fixed assets excluding land & building upto Rs. 5 lakhs, are also eligible for benefits as available to Tiny units (Second All-India Census 1992, pp.3-4).

4. Small Scale Service Establishments :

Service-Oriented enterprises having investment in plant and machinery does not exceed Rs. 2 lakhs and are located in rural areas and towns with a maximum population of upto 5 lakhs persons (Development Commissioner, SSI 1990, p. 3).

5. Reservation of Items for Small Scale Sector :

One of the measures of policy support for promoting Small Scale Industries is the policy of reservation to economically viable and technically feasible items for exclusive manufacture in the Small Scale Sector. The policy of reservation was initiated primarily as a promotional and protective measure vis-a-vis the large scale sector. Reservation grants protection to Small Scale Units by preventing fresh capacities being created in the Large Scale Sector in the areas which are techno-economically highly suitable for being taken up in the Small Scale Sector, the only exception being the case of large units which undertaken minimum level of exports as a percentage share to the total production.

The Medium or Large Scale Units which may be in existence at the time when an item is reserved are allowed to continue their manufacturing activities, but their capacities are foreseen with reference to a specific date. During the Second All India Census of Small Scale Industrial units (i.e. upto 31-3-1988) the reserved items came to 846 items (Table 2.2).

The policy of reservation of industries for exclusive manufacture in the Small Scale Sector in areas which are highly suitable both economically and technically for further development has been in existence for well over two decades. This policy was initiated in 1967 with 47 reserved items. After the introduction of the National Industrial Classification (NIC) Codes, a decision was taken in 1978 to recast the reserved list by assigning NIC codes to items. As a result, the list of reserved items expanded from 304 to 807 items in 1978. As on 31-3-88, 846 items are already reserved for exclusive manufacture in the Small Scale Sector. (Second All India Census report 1972, p. 109).

The classification of units manufacturing reserved items at 2-digit industry group as per the census report is provided in Table 2.2. It is seen from the table 2.2 that 202377 units manufacturing reserved items were having the total installed capacity of Rs. 24904 crores in respect of reserved items with a capacity installation of 47.73 percent. The capacity utilization was maximum (72.22%) for the industry group Beverages, Tobacco and Tobacco products followed by Hosiery and Garments (60%). It may be observed that the maximum number of reserved items (156) were under the industry group Chemical and Chemical products. The maximum production of Rs. 37.36 crores was contributed by only 17 reserved items in the food products industry group (Table 2.2).

Table 2.2 : Classification of Units Manufacturing Reserved Items at 2-Digit Industry Group (Regd. Upto 31-3-1988)

Reserved Items							
Sl. No.	2-Digit NTC Industry group Code	Description	No. of Items	Total No. of Units	Capacity (Rs.lakh)	Production (Rs.lakh)	Capacity Utilisation (%)
1	2	3	4	5	6	7	8
1.	20+21	Food Products.	17	34218	781732	333551	42.67
2.	22	Beverages, Tobacco & Tobacco Products.	1	40	128	95	72.22
3.	26	Hosiery & Garments.	31	26242	254969	173074	67.88
4.	27	Wood Products.	14	38592	230240	104075	45.20
5.	28	Paper Products & Printing.	30	5216	58867	33068	57.53
6.	29	Leather Products.	17	16135	66480	38488	57.09
7.	30	Rubber & Plastic Products.	99	10853	128205	76627	59.77
8.	31	Chemical & Technical Products.	166	12206	248448	154334	62.12
9.	32	Non metallic mineral products.	39	5301	45224	25813	57.08
10.	33	Basic metal industries.	14	468	32578	18409	56.51
11.	34	Metal Products.	131	44048	435878	140532	32.24
12.	35	Machinery & Parts except electrical.	55	2015	29012	19178	66.00
13.	36	Electrical Machinery & Parts.	59	2157	53799	22073	41.03
14.	37	Transport equipments & parts.	102	2843	41937	25254	60.46
15.	38	Miscellaneous Manufacturing Industries.	68	2043	90890	27107	29.82
			846	202377	2498387	1192578	47.73

Source: Second All India Census Report 1992, p. 111.

INTRODUCTION TO CYCLIC MODEL

Many developing countries have devoted considerable efforts to formulating comprehensive and consistent industrial development programmes but have failed to devote similar efforts to carry out their programmes. With the result that many countries have failed to attain their industrial development goals. Thus, experiences have shown that a developing country encounters various obstacles in its efforts to implement industrial projects, some of which are beyond its control. Bearing this in mind, the United Nations Industrial Development Organization, (UNIDO) had initiated a series of publications entitled "Industrial Implementation System" dealing with problems encountered in the implementation and follow - up of industrial programmes and projects.

Experts of the United Nations Development Programme and other International Advisers have reported that the lack of programming and control of implementation of Industrial projects is one of the most important of various factors contributing to the implementation shortcomings. In most developing countries, no formal techniques or procedures for such programming have been available. In the absence of this, it has not been possible to draw up successful plans of operation or effective implementation schedule. Thus, the projects have been hampered by delays, costs have exceeded the estimates, and then the project implementation has fallen short of expectations.

Therefore, it is felt that the State Government on whose shoulder the future industrial development of the state lies, is very much concerned with the operational techniques for programming as well as control of the implementation of its industrial projects. So that the ideas expressed in its Industrial policy may reach Technical assistance, Experts, Planners, Programmers, resulting into proper implementation of the project with proper follow up in developing the state's economy. Accordingly, the present Cycle model, with its careful implementation is suggested.

(1) A Model for Industrial Development in Mizoram :

Any scheme or plan for development of any sector of the economy should be precise and proper. When implementation of any existing scheme or plan is not successful as per expectation, the blame may go to workers or responsible persons; but we should also keep in mind that the poor achievement may also be due to the defective scheme itself. Therefore, in order to have a very proper and precise development plan and scheme, the planners should have proper knowledge of the subject assigned to them. At the same time, even a good scheme is prepared but the implementation is still poor, the result will not be positive. Thus, for proper development, proper and precise plan and good implementation are equally needed.

The Indian Science Congress at Waltair in 1970 discussed that why is percentage of poverty in India cannot come below

40 percent while Government of India implemented the poverty elevation scheme right from the First Five Year plan in 1951-52. They therefore created a working group and the working group found 3 principal causes of the failure of the scheme such as (1) Lack of good monitoring body. (2) Lack of capital among the poor and (3) Lack of own site to start establishment. (Lalsangluaiia 1990, p. 4). Therefore, any scheme, plan or project plan needs proper monitoring and evaluation for its proper implementation and achievement of goals.

In a very young state like Mizoram, most of the developmental activities are initiated by the Central or State Governments. Due to this, it seems till today that when people think of development their inclination is towards the state government and not shouldering upon themselves. At the same time, many of the department in such a young state seem to be having not proper plans and schemes. Looking into the Annual Plan and Five Year Plan documents of some department they look like charter of demands and not plans as such. Therefore, without proper plan, it is difficult to achieve development.

So far as Industrial Development in Mizoram is concerned, it is observed that Mizoram is just a beginner. Although efforts have been made and certain facilities being given to entrepreneurs and the government being following certain line of development, it is learned that the State Government could pronounce its industrial policy only since 1989, to be implemented from the 8th Five Year Plan which commence only

from 1992. Therefore, it is presumed that the state is at least 30 years behind its neighbouring states. It has to be very carefully look into the present and future of industrial development potentials. At the same time, it has to make the people aware of their duties and responsibilities towards industrialisation of the State. Looking into the present conditions, a cyclic model for industrial development given in Fig. 2.1 is thus suggested.

(2) Cyclic Model for Industrial Development :

At present situation, the state government undertakes certain factories under its corporate bodies producing similar commodities that the private entrepreneurs can produce or are producing. In those cases, the competition is between private entrepreneur and the State Government where the survival is sure to be with the State Government. An example of such a case is with the Passion Fruit Juice. Passion Fruit Juice is produced by both private entrepreneurs and MIFCO (a Government of Mizoram Undertaking). In this case, it is learned that while the passion fruit growers in Champhai Zole are willing to sell their fruits at Rs. 2.50-3.00 per kg. to the private entrepreneurs; MIFCO offer Rs. 5.00 per kg. which is sure to survive but putting the private entrepreneur nowhere. Moreover, State Government through its corporate bodies seems to monopolise the production of certain commodities like bamboo canned tin, etc. All these ugly faces of industrial development at this initial stage of its industrial development seem to be improper and lack of identified goals due to lack of proper model.

It is believed, therefore, that towards industrial development, the State Government and the private entrepreneurs have their respective role and responsibilities. But at this state, where most of the private industrial entrepreneurs are seeking help from government or acting like a toddling child and the state government as its parents, it is the duty of the state to formulate the model and help the entrepreneurs first not much involving itself in commodity productions.

In the initial stage, the first assignment suggested here is the identification of the major activities within the existing industrial establishments. As is well known, every region or area is provided by nature with certain riches and people with certain traditional skills, it is therefore presumed that the major industrial activities in an area or a region are always guided by the above two factors. Therefore, identification of the major activities will help the concerned authority to see the prospects within the existing units or categories and also further helps to see where to start and how to start.

Second Cycle, whenever a plan is going to be formulated the planner is required to know the available resources where he can formulate the plan. Identification of available resources where the state has superiority over other regions or states is very important here. It is obvious that no region has all the resources and the resources are never distributed

equally over different regions. Rather, certain regions has abundance of some resources while it is lacking some, and vice versa. Therefore, inventory of resources upon which the state is superior to other states will be important for plan formulation. Next it is necessary to identify the commodities which are not manufactured within the state but highly consumed by the local people. After identification of such items, the question arising is whether it is possible to manufacture those items locally (Fig. 2-1).

Identification or inventory of reserve resources which are not yet properly exploited and the industries which can be established on the basis of those items or resources will be important too (Fig. 2-1). For example, Mizoram has abundance of Bamboos, but still not even a single paper mill in the state. Mizoram has so many swift flowing rivers which are very good for Hydel Power Generation but it still imports power from neighboring states. Tea and coffee can be grown very well in Mizoram, but commercial plantation is not yet done because there is no factory in the state. Likewise there are so many Horticultural Crops, which grow well in the state. Literacy is very high (66.97% including children below 7 years of age) but technically skilled persons are hardly available. So, Human resources is also needing a proper exploitation within itself. Therefore, the inventory of resources is to be given prior importance.

CYCLIC MODEL FOR INDUSTRIAL DEVELOPMENT OF MIZORAM

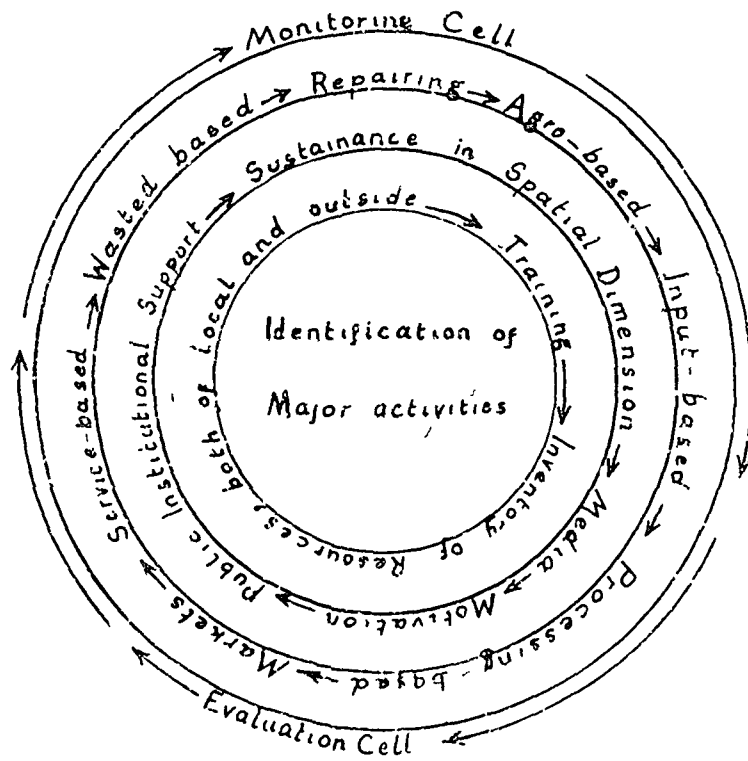


FIG. 2.1

When the resources are invented and the items that are highly consumed are identified, the state will realize how to exploit and accordingly look for the training facilities. Training the local people in different technical fields within and outside the state will surely result into systematic growth and development. In order to have right person in the right place, training of persons in the right and required trade would be needed. Taking one example, during the course of collecting primary data from entrepreneurs (1992-93), among the many motor vehicle workshop owners in Aizawl, unfortunately, no proprietor was found to have undergone proper training in a recognized motor mechanic training centre. In such a case, it is not possible to expect good and prestigious automobile repairing and servicing workshop. Therefore, state government has to see the ground realities of these and take appropriate action.

In the third circle of the model, state government with specific and concrete ideas based on the study team report is now supposed to be able to create public support through institutions with regards to financial, raw materials, transportation and subsidies, procurement of tools and machines etc. Motivation programmes, awareness campaigns, publicities and public guidances have to be created so as to lead the state in a specific way and sustain in special dimension. If the state is sure of its own policies and programmes, industrial development is guaranteed.

Fourth circle of the Cyclic Model deals with the identification of the different categories in existence within the state. The prominent categories are (at present) 1. Agro-based, Forest based, Service based, etc. Besides, identification can also be made as to units engaging in processing, repairing, manufacturing, etc. and their respective market potentials. The market problems at present are felt to be the most acute problem. Thus, the State Government can identify each trade, categories and their problems, and prospects so that it will be able to formulate pilot projects for future developments.

Above all, there should be a cell of monitoring and evaluation with able manner. It is presumed here that, if there can be an oasis in the desert and if deserts can be transformed into green fields with modern technology, there is no reason why Mizoram will remain 'No Industry Area'.

LITERATURE REVIEW

Industrial development and industrialization in broad sense denote the organization of production in business enterprises, characterized by specialization and division of labour and involving the application of technology and mechanical and electric power to supplement and/or replace human labour. The industrial development programmes in India was started with the launching of the First Five Year Plan from the year 1951-52. However, the process of industrialization has

started with the second plan, under which expansion of capital goods industries was given more priority. But till the present day, the country with its multi-regional economy is far from achieving equal regional development. Rather while some states or regions have achieved more development, certain other regions will be lagging behind. Accordingly, the Central Government still declared the entire North-Eastern Region as industrially backward and is offering a host of incentives to industrialize it. Moreover, the North-Eastern Region is also still agriculturally backward either. Specially, the present study area, i.e., Mizoram state is still agriculturally dominated area. The characteristic features of its economy can be said as [infrastructural] poor base of facilities, resource-rich, high cost and lagging state, where a number of pull and push factors are operating. Thus number of obvious problems are now obstructing the processes of industrial development of the state.

After all, industrialization in backward areas and developing societies is one of the major problems faced in the developing countries. But, 'industrialization' by itself, raises the question as to when can an economy be called industrialized? Some economists suggested that a really industrialised economy is one which has a highly developed (mechanized) agriculture. On the other hand, others like R. H. Suttcliffe suggested that an economy's one-fourth of whose GDP arises in the industrial sector, of which at least 60 percent in manufacturing has at least one-tenth of its total population employed

an industry could be counted as industrialized. Although, the above definition does not take into account the 'export of industrial products' and 'technology level', it helps in the identification of industrial backwardness (Neog, 1988, pp. 139-140).

By the above criteria, India cannot be called as an industrialized country. Once it occupies the tenth position in the World League of Industrial Nations and recently has slipped down to the 27th. Due to its vast technical man-power, highly complexed and relatively sophisticated industrial structure, India is now internationally regarded as a semi-industrialised Nation (Neog, 1988, p. 140).

Keynes (1936) for the first time studied industrial development focusing his attention on the forces which determine the employment policy followed in industrialization process. He propounded the theory that entrepreneurs will offer the amount of employment which offers maximum output and advocated also that employment can increase only with increase in investment and vice-versa.

Labour employment is an important component of industries and intensity of labour input is not only the function of production maximization of the firm but it is also influenced by availability of labour force. Thus, the importance of labour employment, its volume and quality, for the industrial development has been felt since long time back and it drew the

attention of scholars to study the labour employment and labour characteristics. Therefore, in the post second world-war, a major theoretical work has been achieved (Lewis 1956, pp. 139-191). Lewis had a conviction that labour-reallocation from agricultural sector to industrial sector which result into the migration of labour from primary sector to the secondary sector. Lewis advocated that this process of labour migration ultimately shift the centre of gravity of the economy towards industrial sector whose ultimate result being the heart of development problem in an agriculture predominant labour surplus economy like India.

In fact, Lewis hypothesis of labour force migration seems to be quite valid with the present case of Mizoram industrial development which is in its initial stage. Actually, it is not possible to pin-point at which stage Mizoram stays industrially, may be at its transitional juncture. Therefore, at present, it is observed that as industry becomes more and more important while agriculture declines year by year, there has been labour migration at a significant level since the 1980s. Accordingly, when looking into the picture of sectoral shift of labour force, the highest growth of labour force between 1961-1991 has been recorded by the industry or secondary sector in the state (Fig. 4.2).

But the intermediate sector expansion is particularly an promising short-run strategy for employment generation and growth. This fact has been proved with the help of

mathematical analysis of an industrialization model of Harris and Todaro by introducing an intermediate sector (Steel and Takagi 1978). Steel and Takagi ultimately suggested that a policy of industrialization at minimum cost in unemployment must include a strategy of supporting the intermediate sector as well as investing in the modern sector. It appears, therefore, that the process of shifting labour force from primary to secondary sector is not an endless phenomena in a labour surplus country like India or Mizoram. A time will come when a particular sector cannot absorb all the labour force in queue. There should be sectoral balance of labour force and the strategy for industrial development should take care of other sectors side by side.

Scholars on industrial activity also recognized the incidence of functional relationships between the firms and industries leading to considerable overall economics in industrial production. Thus, with regards to the functional relationship of firms or industrial establishment, agglomeration has been identified as one of the locational factors besides the least costs of transportation and labour (Dutton 1969, pp. 185-187).

Weber (1909) focused his attention on agglomerative factors as an advantage or a cheapening of production and marketing created from the fact that production is carried on to a considerable extent at one place. Though Weber did not specify exactly what he meant by 'one place' in geographical

terms, it could be a large urban centre where infrastructural facilities are available and such facilities are likely to act as agglomerative factors (Hirsch, 1929, p. 136).

The Weber's agglomerative factors were again classified into three specific types of economies, viz., (1) large scale economies, (2) Localization economies and (3) Urbanization economies (Hoover 1937, pp. 90-91). Hoover again added transfer economies into the general agglomeration economies. Hoover's transfer economies implied 'Locational juxtaposition' of industries resulting from input-output transactions between a set of technologically interdependent industries. The 'Locational juxtaposition' of industries in a limited geographical space referred to the location of interdependent industries in a large urban area or centre or in a metropolitan cities leading into minimization of the opportunity cost.

However, further studies of industrial linkages and of industrial complexes freed the concept of industrial linkages from the narrow confines of an urban centre, and interdependence between industries could also be examined at the regional level. For example, Isard and others aspired to find the best combination of industries for the whole of Puerto Rico (Isard 1959).

The industrial linkages are often perceived as channels through which the growth impulses are stimulated and transmitted, not only within the growth centre but also in

regions other than the centre. Industrial linkages are accepted tools of regional development, which include the development of backward areas as well as the rural areas. Thus, the system of forward and backward linkages between complementary industrial units expected to be able to develop a self supporting growth process. Street (1969, p. 177) was of the opinion that in fostering such systems of complementary industries it can be expected that the strength and variety of backward and forward linkages involved would soon initiate a self supporting growth process.

The origin of this regional development model lies in the conceptual framework of 'Growth Poles' and 'Growth Centres' and the principles of the 'Diffusion of growth'. The growth generated in the selected growth centres is supposed to trickle down the hinterland of such centres (Hermanson 1972).

What is important with all these Theories, models and concepts is the goal of those scholars. Looking into their respective works, we can conclude that the development of theory of such kind and the works of the scholar always aimed at three main principal objectives, such as (1) to advance the understanding of industrial location in general, deducing the locations or patterns likely to be adopted in specific circumstances; (2) to provide a framework for the explanatory side of individual empirical inquiries, and (3) to identify the conditions required for optimality according to particular criteria, so as to make better plant location decisions.

In fact, these objectives are always closely interrelated, since abstract general theory must be constantly related to ground reality, if it is to be anything more than an exercise in applied logic and must ultimately be judged by its capacity to explain location patterns in the real world and to guide the planning of industrial development. Therefore, what is more important here is the empirical application in industrial location analysis as well as the applicability in actual ground conditions.

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Towards the direct application of industrial location theory to real-world situations, only very limited progress has been made so far. Stevens and Brackets (1967, p. 7) had carried out a comprehensive survey of literature and presented their observations. Of course, a large number of empirical studies have been carried out during the last few decades, but most of them have been for the purpose of gaining general understanding of location factors and patterns rather than of testing theory. This is partly because it has been difficult to generate testable hypothesis from the existing theory because the goals of the theoreticians have been quite different from the goals of researchers in empirical works.

Economists are generally more concerned with the construction of elegant theories of locational equilibrium, or with the fusion of location theory and production theory than with providing a guide for empirical inquiry. And the empiricists in geography have been more inclined to use

industrial location as a context for the application of currently fashionable numerical methods than to draw on the existing body of theory.

Looking into the practical part, we find that the conventional industrial location theory does not necessarily permit the formulation of explanatory hypotheses or models which are very much required by the real world situations. Therefore, finding the optimum location for one firm at one point of time is of little help for the explanation of the ground distribution of a whole industry, which may be the end product of a long process of evolution.

Besides, there is an acute problem of obtaining the necessary data as per the conventional industrial location theories. In this present day situation, the identification of a least-cost location for even a particular industrial establishment requires a large amount of accurate information obtained only by direct inquiry of existing firms. Moreover, other variable such as demand function for different sets of customers and the cost savings from agglomeration economies cannot be measured in numerical terms which means the incorporation of those components would not be possible in an operational model. However, a large number of studies have been conducted by international agencies, National agencies or private individuals in various countries, regarding different aspects of an employment-oriented strategy of industrialisation. In spite of varying nature of political and Socio-

Economic systems prevailing in different countries a review of the strategies and mechanism, which have contributed to the economic achievements in other countries, can enrich the insights into the issues confronting in other areas or countries in one way or the other, whereas it may be difficult to envisage the roady transfer of the whole strategies from one country to another. Wu (1963, pp. 219-245) has also examined relevant data from India, Japan, Pakistan and Philippines and he found that both the capital-output ratio and wage-capital ratio show an inverse relationship with capital intensity. With the case of Delhi City, Wu found that the 'rate of operating profit' for Small Scale Industries showing a similar inverse relationship with capital intensity. Wu ultimately recommended the setting up of capital light Small Scale Industries in a country with large unemployment problem like India. From his study of industries in Puerto Rico, Reynolds (1965) found that the development of modern factory style of manufacturing made only a limited contribution to employment generation. He therefore, suggested what he called 'Imaginative exploration of Small Scale, more decentralized, more labour using forms of organization, such as have persisted in the Japanese economy' for incorporating in an employment oriented industrialization programme. The study of United Nations Industrial Development Organisation (UNIDO, 1967, p. 56) based on evidence from a number of developing countries also revealed that small enterprises with a lower level of investment per worker tend to achieve a higher productivity of capital than do the large scale, more capital enterprises.

The study of the pattern of employment in the Tropical Africa revealed the significant advantage of labour intensive techniques vis-a-vis capital intensive techniques. (Arrighi, 1970). Arrighi found that in the case of the study area, the capital intensive techniques were characterized by a pattern of employment in which semi-skilled labour and high level manpower predominate, whereas labour-intensive techniques make greater use of skilled and unskilled labour.

A study of some developed countries like U.K., U.S.A., West Germany, France and Austria shows that employment and productivity have a negative relation and the employment-GNP relation may not be non-appropriate. (Adhvaryu, 1980, pp. 44-46). On the basis of his findings Adhvaryu concluded that 'an industrial strategy based on maximizing only one objective, i.e. employment, may lead the economy into an economic quagmire and to extricate it therefrom may prove a sheer frustrating experience. He, accordingly suggested that, even an employment-oriented strategy of industrialization should aim at maximization of GNP, so that the surplus generating capacity of the economy is not adversely affected.

A comparative analysis of employment data for large scale and small scale sugar and textile plants from India and for cement plants from China has been made (Sural 1980, pp. 119-155). The analysis revealed that the employment per unit of capital was about 9 times more for small plants than those of the large scale units. Sural's analysis shows that :

- (a) Large plants have higher unit cost of production than the small ones using appropriate technology.
- (b) A given capital invested in a number of Small Scale plants can contribute more to Industrial output than if invested in a single large scale plant, and
- (c) Small Scale plants are more appropriate than large scale factories for efficiently utilizing the resources of African countries. Sirat finally, therefore, concluded that 'modern Small Scale Industries are the most 'desirable industries' in countries where chronic unemployment is already pervasive.

A number of specific case studies conducted in different countries by World Bank (1978) led to the conclusion that 'small manufacturing firms generate more direct and probably more indirect jobs per unit of invested capital on the average'. The study indicated that in many activities where the optimal size of production unit is small, it proves to be the most efficient organization and as firm size increases (a) capital investment per worker rises, (b) value added per worker rises (c) the wage rate rises, and (d) value added per unit of capital falls. A detail study of industrial patterns of India and South Asian countries was carried out by Mehta (1976). In the light of inter-regional, inter-country and inter-industry analysis, he suggested that 'the broad framework of an employment-oriented industrial strategy should include vigorous, sustained and concerted measures for (1) fuller and more efficient utilization of idle capacity in manufacturing industries (2) reducing the capital intensity of industrialization through: (a) promotion of labour-intensive manufactures, and (b) application of economically sound labour-intensive techniques of production, and (3) rapid expansion and promotion

of technically sound and economically viable Small Scale and Cottage Industries that could secure simultaneous increase in output, employment, savings and investment.

Another case study on rural industrialisation in China was made by Sigurdson (1973). Sigurdson found that rural industries, as a component of overall strategy of employment-oriented industrialization, have miserably failed to satisfy the employment aspirations of the people. In support, he cited the figures from Zunhua country, where more than 85 percent of the total work force still depends on agricultural operations, which even for a developing agricultural economy is too high. But Deleyne (1973, p. 59) on the basis of a detailed and objective study of China's economy, arrived at the conclusion that the creation of Small Scale Industries constituted the only means of creating a large number of jobs for the young people coming in to the labour market.

A stream of thinking pioneered by Schumacher (1972, pp. 75-76) brought forward the suggestion for 'intermediate technology' which will not only maximizes employment, but is also a reaction to the fact that modern technology and rapid industrialization have led to many problems in the advanced countries. In a nut-shell, his intermediate technology approached the adoption of labour-intensive Small Scale technologies, compatible with efficient production and as low a capital investment as possible with a view to maximize employment

currently. This stream has been followed up also by Dickson (1974), Sen (1975), Johnson (1975) and Vyasulu (1976, p. 28).

Another important analysis of the pros and cons of adoption of a labour-intensive technology has been presented by Dandekar and Rath (1970). These two scholars pointed out that there are three important questions which must be asked and answered before accepting the labour-intensive technology as the most suitable employment oriented strategy of industrialisation such as (1) Does the adoption of a labour intensive technology, which is also a technology with low labour productivity, enable a person to earn a minimum desirable living? (2) Is it a feasible solution in the sense of one which can be maintained in the face of economic forces operating in an economy in which the means of production are privately owned? (3) If the solution is, perforce maintained over a period, does it create conditions for progressive economic development or is there a danger of its leading into conditions of stagnation.

Galenson (1963, pp. 505-570) pointed that the use of highly labour-intensive techniques in manufacturing may create more jobs in the sector, but if this is accomplished at the expense of immediate production or of the rate of growth of manufacturing capacity, there may be an offsetting loss of job opportunities in tertiary employment. He, therefore, suggested that an employment-oriented strategy of industrialization must take into account the impact on tertiary employment. If it

seems socially desirable to sacrifice a portion of manufacturing output through the use of labour-intensive techniques in order to relieve unemployment, such policy might prove irrational unless new manufacturing employment offset the tertiary employment foregone as a consequence of diminished output.

APPROACHES TO INDIAN INDUSTRIALIZATION

Coming into the Indian context, it appears here too that, the large amount of industrial literature is found on the ground of industrial labour employment. This is mainly because the Indian scholars are always preoccupied by the spirit of scarcity of capital and prevailing large scale unemployment coupled with over dependence of population on agriculture as the country is highly populated. Therefore, most of the studies in the field are strategy for employment generation. In fact, in a country like India, even the national planners are left with little choice except to adopt the strategy of labour intensive Small Scale Industrialization Programme to increase employment opportunities for the growing workforce and to reduce the dependence on capital intensive technology for industrial development. In short, industrial sector is expected to be a strategy to fight growing unemployment at the national level. Therefore, almost all the scholars who are engaging in industrial studies, concerned themselves and try to test the validity of industries as a strategy to tackle unemployment problems.

The beginning of the modern factory system in India can be traced back to the second half of the 19th century (Ramavatar 1992, p. 13). Before the 1850, there were some tray attempts to set up modern factories in India. Those were the pioneering efforts, mostly of the Europeans and they got success because of political privilege, control over external business and control over organized money market. The first Indian to think on the line of industrial development or industrial entrepreneurship was Rakhod Lal Chota Lal, a Nagpuri Brahmin, in 1847, (Ramavatar 1992, p. 13) who envisaged the textile manufacturing on modern factory line. A number of studies have been carried out or conducted by Government Agencies as well as scholars in India to work out the proper strategy of industrialization which could help in accelerating the National economy as a whole, whereas most of such studies are on the sector-based approach. The Village and Small Scale Industries committee, dealing with employment oriented strategy of industrialization (Planning Commission 1956) suggested the setting up of Village and Small Scale Industries in the rural areas would be suitable as the rural areas or people have been traditionally trained and for which they possess equipments. The committee realized the necessity of introducing better technique among the village industries so as to make them go along with the progressively expanding national economy. The committee further recommended that such injection of better technology in the rural industries should not hamper employment generations within itself.

Dhar and Lyndal (1961) studied the capital, labour and output aspects of various industries. The study was based on the figures of 'Census of Indian manufactures 1950' and the studies prepared by the Perspective Planning Division of the Planning Commission. They found that although small enterprises appeared to employ less capital per unit of output, in general the most capital intensive type of manufacturing establishments are in the Small Scale Factory using modern machinery employing upto 50 workers. They, therefore, concluded that the issue of choice between large and Small Scale Industries for the purpose of an employment-oriented industrial strategy is largely irrelevant, and it should aim at making the best use of scarce resources, instead of aiming at creating employment just for the sake of employment. Further, the National Committee on Science & Technology (NCST 1975) had carried out a study on the Khadi and Village Industries with regards to the growth of production and employment in the sector. The study revealed that the Khadi and Village Industries are not good or reliable source of employment as they seem to be and the study reported that the compounded rates of growth of employment in these industries, as compared to the growth of output, were very meager.

Datt and Sundharam (1979, pp. 537-538) studied the employment-oriented strategy of industrialization by working out employment output, capital output and employment generated in different industrial sectors. Their studies revealed that though productivity is the lowest in the Small Scale Sector,

Community Development Blocks of Jaunpur District in Uttar Pradesh. His study focused mainly on the extent and nature of unemployment among agriculturists and agricultural labourers. Srivastava opined that for the industrial development of such rural areas, the best strategy would be employment oriented Small Scale and Village Industries. He, however, concluded his studies with severe limitations of such strategy as a solution to unemployment. He opined that eradication of or even substantial reduction in general unemployment or under-employment of the study area, through the development of industries was a practical impossibility. Banerjee (1971, pp-277-295) who had carried out studies in the context of promotion of SSI units in India was also doubtful about the merits of the SSI units in India. According to her, the promotion of SSI units in this country encourages subminimal wage rates and weakens the bargaining strength of the industrial workers. She made her argument that the SSI units are not competitive rather often tied with the big firms with regards to their products, price and the amount of output they can produce and sell. Subramuniam and Kashyap (1975) also already had conviction that it is a myth that the SSI units use a more labour intensive technology and therefore, generate more employment for the same amount of investment or output.

It is true that the industrial activities in India are mainly characterized by the dominance of informal and small forms of production. Thus, the industrial sector instead of accelerating technological and socio-economic change throughout

the economy shows all symptoms of high cost economy, semi-feudal character lacking in vitality and prone to sickness despite the availability of cheap labour. The main reasons behind the main plausible reason of this poor industrial performance may be due to the less weightage given towards agglomeration and scale economies within the industrial planning (Dashyp and Shah 1989, pp. 1977-80). On the other hand Patel (1983) was of the opinions that the poor performance of the industrial sector in the Indian context could be due to entrepreneurial and managerial deficiencies rather than any exogenous influences. Smith's study (Smith 1982) however, pointed out that emphasis on lack of entrepreneurship and managerial skills puts the blame for the failure of small enterprises on the people who run them rather than on the environment in which they are operating. The studies carried out on the small scale manufacturing process in the developing countries by Little, Mazumdar and Page (1987) made conclusion that the promotional agencies are ill-equipped to render necessary guidance to help small businesses choose products and technologies.

Aggarwal (1987, pp. 15-18) had a comprehensive study on the industrial sickness in the country. He pointed out that in between 1980 to 1985, the number of sick SSI units in the country went up from 23149 in 1980 to 1,17,783 units in 1985, which indicated an increase of 400 percent. Aggarwal's study also revealed that the number of sick unit in case of Large Scale sector during the same period went up from 409 to 637

(55.00%) and in the case of Medium Scale units it was 992 to 1186 (19.00%) only.

Very recently, there have been some case studies on the aspects of industrial linkages of small towns and regional development and explorations. In this respect, Pathak (1993, pp. 45-50) focuses attention on industrial interdependence and linkages with the hinterland of an industrial town of the developing region of Western Uttar Pradesh (Dhampur) where the entire economy is based on sugarcane crop and rural-industrial setup is based on handloom industry. In the backward state of Orissa where industrial linkages are weak, the hinterland of industrial towns are poor and therefore, there are many problems in the industrial development. These problems were studied by Meher (1993, pp. 74-88) by taking Jagalpur industrial estate as sample case of SSI and concluded that because of lack of qualitative entrepreneurship, improper planning and cumbersome bureaucratic procedures followed in the release of fixed and working capital as well as other benefits, the performance of the SSI units in the Estate has remained far from satisfactory.

Another case study on the developments of Small Scale Industries in relation to growth, employment and regional distribution in Madhya Pradesh has been made by Shukla (1993, pp. 89-97). In the case of Madhya Pradesh, the scholar has found that the SSI units are more employment oriented providing about 60 percent of industrial employment within the State. His

study revealed that the SSI units provided 1.5 times more of employment than the Large and Medium Industries.

But, so far as the case studies are concerned, they are seldom of wholesome studies and that they provide informations, in general of one aspect or the other of the sector. And no scholar so far is not in a position to give concrete conclusions so as to provide a valid and development guaranteeing schemes.

There have also been numerous studies on the industrial development of the North-Eastern Region of India. The proceedings of the seminar on 'The impact of the Five Year Plans on the Socio-Economic Development of the N.E. Region of India' organized by Gauhati University, Gauhati in the month of January 1988, have emphasized on many aspects of industrial development in this part of the country. Different scholars have prepared research papers on different topics on the theme. Therefore, at the time of the Seminar, the Scope of Industrial Development, approaches to industrialization, problems and prospects of industrial sectors of the economy and their factors in the case of each and every constituent states were discussed elaborately. The Seminar concluded that there are enough potentials in the industrial sector of North-Eastern Region which can absorb more labour force and the fact that the sector has enough employment opportunities in the future with increasing industrial production and productivity especially of the Small Scale and Cottage Industries (Whorah 1988).



So far as the study area in particular is concerned, it is still at the status of 'No Industry Area' and that industrial literature based on empirical studies is yet to be created. So far as the area remained under the then Assam Government as a district, no economically worth mentioning economic development took place in the area. But it was however felt that the cottage and village industries could be developed to some extent. Thus, the attitude of the administration in this regard was expressed in the annual administrative report of 1935-36 in the following manner.

"As the villagers are familiar with the art of spinning and weaving their clothes, attention towards better development of this art is also being paid by encouragement of sheep breeding that will produce good wool and sericulture that will produce good silk for their clothes. Industries and economy are virtues of a civilized life. As the district, which is still raw and penniless, is awakening and feeling the need for money, it is hoped that these new industries will become village industries suitable for local conditions" (Annual Report 1936, pp 34-36).

Consequently the district officer and his wife perceived that the Lushais possessed a great skill in cotton weaving on hand looms, traditionally in use from their forefathers. The couple, with a view to introducing the skill of the Lushais to the commercial markets, so that, among other things, the Lushai people could have some thing upon which to fall back in case of failure of the rice crop, financed a cottage industries organization from his salary and borrowings from the government and the bank. So the Lushai Hills Cottage Industries grew from small beginnings, and the superintendent's residence

became swamped with stocks of rugs, cotton, hosiery, packing materials, all the paraphernalia of business. It was Sir Robert Keld, Governor of Assam, and Lady Keld, who became the patrons of the industries, who saw the need of an adequate building, and accordingly provided Keld House in Aizawl, which acted for office, stock room, dye room, and large packing room... chief markets lie in Shillong, Calcutta, Bombay and Silchar in Assam. All that is produced is quickly sold (McCall 1949 pp. 270- 274). Thus, the first organized attempt to developing industries in the Lushai Hills was made by McCall, Superintendent in the 1940's with very active and encouraging help from his wife. They started, a unit in Aizawl. Villages were encouraged to take up making of rugs, money bags, cane work, luncheon mats, ladies hand bags, aprons and many other similar articles. (Ray 1982, pp. 195-196).

The Superintendent, McCall and his wife thought that the traditional woollen Mizo blanket was not good for business purpose and they searched for a new design. The new designed Mizo woven blanket was then liked not only by rich people in India, but also in England. Thus, they could sell Rs. 2,00,000/- worth of those blankets within a year and in those days, a full grown hen costs only Re. 0.25 (Thus, 50 years ago, the local woven blankets already reached England but today, we do not have any item of industrial product marketable to other parts of our India and the sending out of our industrial products to overseas like England is out of mentionable (Zodinpui 1987, pp. 75-78).

It is clearly seen from the above that Handloom industry of Mizoram was very much popular and profitable at that time. But there was no persuasion and impetus to develop the skill, labour as well as to carry on the task. Therefore, till the present day the handloom cloths are not exported any more and rather Handloom industry are still found in the State at very small level.

In 1971, the Lalhama Committee reported that there was no industrial unit worth the name in the Mizo Hills. According to the report submitted by the Rural Industries Project Office Aizawl, there were 119 units under the RIP, Aizawl. These units, except a handful of them, could not be said to be industries in the real sense of the term (SIDO 1971, pp. 23).

The development of industries initiated under the community development projects, suffered a set back because of the disturbances of 1966. The Lalhama Committee listed a number of industries which could be conveniently developed in the Mizo Hills. Some of those were: Manufacture of sugar, fruit preservation, tapioca starch making, oil expelling, Bamboo pulp, board, saw mill, Processing of maize, banana, chili, and Ginger. Apart from these agro-based industries, there are possibilities, according to the committee, of many other Small Scale Industries like tyre-retreading, radio assembly and repairing and manufacture of plastic articles, footwear, hosiery goods, ready-made garments, aluminum utensils, etc. (SIDO 1971, pp. 28-29).

By January 21, 1972, when Mizoram became Union Territory the industrial establishment in the Territory did not have any class one post. Moreover, out of six class two post, only one post was filled up. Practically, there has been no published works on the industrial development in Mizoram based on empirical studies. Of course, the Directorate of Industries published Journal (Industry meichher) Quarterly Magazine where valuable articles are available as well as government official information.

At the instance of the Directorate of Industries, Government of Mizoram, a techno-Survey of the Aizawl District was carried out to explore in-depth the industrial potential for the District of Aizawl (SIET-1977).

The Government of Mizoram appointed Sri J. L. Nanjappa, an international expert in the field of Small Scale Industries development for a period of 3 months as industrial adviser to the government. Nanjappa joined his duty on 1st June 1987. Nanjappa studied the organizational set up and reviewed the activities of the industries department in Mizoram. With the recommendation and request of the Adviser the first Industrial Convention in Mizoram was convened on 21-22 July 1987 and the convention was attended by 1000 participants on the first day and 800 persons on the second day. The convention was regarded as the first major step in the industrial revolution of Mizoram (Nanjappa 1987 pp. 2-3).

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The Industrial Adviser's deputation period was extended for another three months and he prepared a comprehensive and integrated development programme for Mizoram with certain recommendations. As per his recommendation, the Directorate of Industries, Government of Mizoram, had taken many steps towards industrial development.

Nanjappa recommended reorganization and enlargement of the Directorate of Industries, finance institutions functions and attitudes towards the industrial entrepreneurs and steps to be taken with suggestions (Nanjappa 1987, pp. 73-84).

The Association for Mizoram Economic Forum (AMEF 1992, p. 31) during 1992 organized two workshops at (1) Aizawl during 24-28 February 1992 and (2) Lunglei during 27-30 April 1992 on 'Problems and Prospects of Economic Development in Mizoram', with Participatory Training Methodology. Even though their attention was on the overall economic development of the state as a whole, their findings and the outcome of the two seminars published by the Association, are expected to be very meaningful even for industrial development of the state.

The workshop identified the following bottlenecks of economic development activities in Mizoram :

1. Plan mual lo (lack of proper planning),
2. Market thia tawl lo (marketing problems),
3. Politics hiansualina (misuse of political powers),
4. Hlemhlethna (Prevalence of Corruption),
5. Hnathawh thiem (lack of hardwork),

6. Lack of good leadership,
7. Lack of public awareness,
8. Lack of economic consciousness, and
9. Physical features of the area.

On the whole, going through the literature survey related to the theories, concept and approaches of industrial development of the world, India and Mizoram, it can safely be concluded that the study of industrial development in the backward tribal economy that prevails in the state of Mizoram, must be based on the major aspects of (i) the availability of raw material (ii) Interacting and interdependency of industrial setup, (iii) Marginal productivities and elasticities of various types of industries establishing in the state and (iv) the problems of entrepreneurs and government agencies in the development of industrial setup. These aspects are closely related with the methodological perspective of the present study which is given in the proceeding section.

DATA BASE AND METHODOLOGY

In the preceding part of this chapter, the conceptual background and workable models for the study of industrial set up in Mizoram have been highlighted. For proceeding the work to the core of the present study, a few questions relating to the methods and data collections may also be answered here. So far as the methods adopted in the present study for interpreting the structural components of Small Scale and Cottage Industries and their spatial distributions are concerned, the normative

viewpoint is put forward for the same. Therefore, the methods which are used here can be interpreted in the following-

(a) Cartographic Methods :

Cartography is the tool for geographers and planners. Through cartographic representations, a planner can infer many and varied results of the organism which he wants to study. Therefore, the distributive nature of the existing Small Scale Industrial characteristics have been shown by suitable maps and diagrams. To show appropriate results and also to provide the logical reasoning of the facts, suitable cartographic representations like wheel diagrams, Pie diagrams, Bar graphs, Line graphs, etc. are used. In fact, these tools are not sharp enough for inferring the accurate results and to the validity of the hypotheses posed for the present study. These cartographic representations have only been used for the general inference of the interrelated phenomena. But for logical study of the industrial (SSI) set up of Mizoram, statistical methods have also been used.

(b) Statistical Methods :

As the collection of the detail statistics of industrial phenomena for the entire Mizoram is very voluminous, the inference of the results directly from the raw data is impossible. Therefore, processing of the raw data through statistical techniques are essential. But, the appropriate use of such techniques is a crucial importance because the wrong application of the techniques is sure to give insignificant and

misleading results. However, some simple and appropriate statistical techniques have been used here for interpreting the results and accelerating the decision-making process. The following statistical methods are, therefore, appropriately used for the present work :

(1) For showing the variation and variability results of the distributional patterns, the coefficient of variation which is the ratio of Standard Deviation (SD) with Mean has been adopted.

(2) Though the relationship among the attributes of industrial characteristics are also shown graphically by scattered diagrams, the Coefficients of Correlations are also measured by the Karl Pearson method of 'product moment'. Even the causal relationship of industrial characteristics have also been shown by preparing the correlation matrices.

(3) The index of industrial diversification (Dc) which shows the diverse nature of industrial composition of the industrial centres is prepared by generating two attributes of the industrial characteristics : (i) the mean of various industrial units on a particular location (\bar{X}), and (ii) the mean difference among the industries (Md) which refers to the differences among all the possible pairs of various industries. The following formula may be derived for the purpose :

$$Dc = [1.00 - (Md/2\bar{X})].$$

(4) The study of the marginal productivity and elasticity of various industries with respect to their input structure is very much important for accelerating the decision making process for the self-sustained growth and well-balanced development of the industrial structure in the state. For the same, the 'production function approach' is adopted and marginal productivity and elasticity coefficients for various industrial categories are calculated by adopting multiple regression model. In fact, marginal productivity refers to the absolute change in industrial output with respect to change in its input intensities while elasticity indicates the proportionate change of output with respect to proportionate change of an input. The following form of production function is used for assessing the marginal products and elasticities of various industries of the study area :

$$Y = a + b_1X_1 + b_2X_2,$$

where Y is the industrial output, X₁ and X₂ are the Capital and Labour inputs, b₁ and b₂ refers to the coefficient and 'a' is

 * - The concept of marginal productivity and elasticity of a production function is based on the differential calculus of mathematics. Economists are using frequently these concepts in production theories. It has been symbolised mathematically as :

- (i) Average Productivity (Ap) = Y/X_n ,
- (ii) Marginal Productivity (Mp) = dY/dX_n , and its diminishing return follows the condition $d^2Y/dX_n^2 < 0$.
- (iii) Production Elasticity (Pe) = $(dY/Y)/(dX_n/X_n)$.
 It can be simplified as :

$$Pe = (dY/dX_n)/(Y/X_n).$$

Thus, Pe is the ratio between Mp and Ap in the industrial production system.

constant in the model. Cobb-Douglas production function is used for the detail study of the production characteristics. The details about this function would be interpreted in the concerned Chapter-IV.

(c) Methods for Selection of Sample Locations :

Though the total areal universe of the study area (i.e. Micoram) is small, the industrial units are dispersed unevenly throughout the entire area. Thus, for the detail study, there is need of selection of some sites/centres and industrial units so as to achieve detail and informative results of the industrial activities. In fact, the total 2205 industrial units (March 1990) are dispersed on 143 locations of the state. Out of these 143 locations, some are towns, sub towns and villages. Therefore, out of these locations, only 28 main concentration centres have been selected for spatial, ⁱⁿ st ^{at} interaction and in-depth study of the existing industrial phenomena. These 28 centres truly incorporate as much as 1965- 931 units, (i.e. 89.12 % of the entire state). The table 2.3 shows the detail compositions of various industrial categories within the selected centres.

From the table 2.3, it has been identified that maximum units in all categories are contained within the 28 selected locations. Therefore, for further detail study, certain number of units from various trades of the different categories are chosen on the basis of :

- (1) Stratified purposive sampling where 250 industrial units

out of the 1965 units of the sample locations have been chosen. Thus, the size of the sample units from the 28 selected locations is 13.72 percent.

Table 2-3 : Category-wise SSI Units of Sample Locations in Mizoram (1990).

Sl. No.	Industrial Categories	Total Units in Mizoram (in Nos)	Total Units in 28 Selected Locations (in Nos)	Share of Sample Locations to whole State (%)
1.	Food Products & Allied Industries	252	176	69.84
2.	Manufacture of Woods & Wooden Products	397	323	81.36
3.	Manufacture of textiles & Textile Goods	300	290	96.67
4.	Manufacture of Paper Products, Publishing and Allied	100	98	98.00
5.	Manufacture of Rubber, Plastics etc.	35	35	100.00
6.	Manufacture of Chemicals & Chemical Products	55	55	100.00
7.	Manufacture of Non-Metallic and Material Products	53	53	100.00
8.	Manufacture of Basic Metal & Allied Industries	21	21	100.00
9.	Manufacture of Metal Products & Parts	157	46	29.29
10.	Manufacture of Leather Goods & Repairing	21	21	100.00
11.	Service Based Industries	841	789	93.81
12.	Miscellaneous	73	67	91.78
	Total	2905	1965	67.63

Source : Industry Directory, Mizoram.

(2) The sample units are selected from each and every trade of all the industrial categories so that we can infer the results for all the categories. As per the Industry Directory (1990) which is published by Directorate of Industries, Government of Mizoram for registered industries for individual trades, 56

different trades have been identified (Appendix B). Accordingly, the samples are chosen in such a way, so that they should represent to each and every trade of the state excluding the miscellaneous group. The trade-wise number of sample units and their proportionate shares are given in the Table 2.4.

Table 2.4 : Number of Sample Units (Category-Wise).

Sl. No.	Industrial Categories	Total Units in Sample Locations (Nos)	Total Sample Units of Each Category (Nos)	Share of Sample Units to Total Units in Sample Location (%)
1.	Manufacture of Food Products & Allied Industries	176	36	20.45
2.	Manufacture of Woods & Wooden Products	325	40	12.31
3.	Manufacture of textiles & Textile Goods	290	35	12.07
4.	Manufacture of Paper Products, Publishing and Allied	98	10	10.20
5.	Manufacture of Rubber, Plastics etc.	35	5	14.29
6.	Manufacture of Chemicals & Chemical Products	55	10	18.18
7.	Manufacture of Non-Metallic and Mineral Products	50	7	13.71
8.	Manufacture of Basic Metal & Allied Industries	21	4	19.05
9.	Manufacture of Metal Products & Parts	46	5	10.87
10.	Manufacture of Leather Goods & Repairing	21	2	9.52
11.	Service Based Industries	783	96	12.26
12.	Miscellaneous	73	62	84.93
	Total	1903	250	13.14

Source : Industry Directory, Mizoram.

Note : 62 Units of Miscellaneous group are excluded while selecting sample units.

COLLECTION OF DATA

Any empirical work of this kind without relevant data either at the secondary level or the primary level would not be possible to be carried out. Accordingly, the present work is carried out with the help of secondary data and completed with the primary level statistics. Therefore, the statistics have been collected by secondary as well as primary sources in the present study.

(1) Primary Data Collection :

For the purpose of collecting primary data, scheduled and questionnaire have been prepared. Thus, with the questionnaire, the researcher visited to all the 28 selected centres and individually to all the 250 sample households during October 1992 - March 1993. The form of the questionnaire is given in the Appendix - A.

(2) Secondary Data Collection :

For the collection of secondary data, the concerned institutions and government departments are approached. Some relevant data are obtained from Economic and Statistics Department, District Industries Centres, Census Office, Financial Institutions and other relevant offices. However, for the collection of data related to Loans, and Grant-in Aid, Subsidised and Industrial Training, the concerned institutions and Government Departments are approached with a separate scheduled for a specific period of time (i.e. 1988 (85-192-91).

Thus, with the help of these secondary data, the performances, achievements and role of such agencies towards the industries (SSI) are tested. The Table 2.5 shows the details about the collection of Secondary data and its sources.

Table 2.5 : Sources of Secondary Data.

Sl. No.	Nature of Secondary Data Collected	Source	Year
1.	Industry Registered (SSI Units, Production, Investment in Plant & Machinery, Equipment)	Directorate of Industries, Govt. of Mizoram	1990
2.	Census Figures	Office of the Registrar General, Census of India, State Census Office NIC, Aizawl	1961 to 1991
3.	Basic Statistics Related to Resources, Population etc.	Various Publications of North Eastern Council, Shillong	1981 to 1991
4.	Statistical Handbooks	Directorate of Eco. & Statistics Aizawl	1986 1989 1990 1992 etc.
5.	Industrial Trainees	Office of MIVIB, IIT, DIC, DRDA, etc., Aizawl	1988-89 1992-93
6.	Industrial Loans/No. of SSI Units Assisted	MIVIB, ZIDCO, DIC Banks, Aizawl	1988-89 1992-93

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CHAPTER III

Resource Availability :

Introduction

Resource Chain

Resource Availability in the Study Area

INTRODUCTION

It is a well known fact that human wants are unlimited. Therefore, man is always searching for means to attain given ends. Life satisfaction of his wants and objectives as well as the possession or ability to take advantages of opportunities or to extricate himself from the difficulties within the nature. Due to this fact, there had been constant interactions between man and nature. And in the process, man has learned that the materials act as means to given ends and that he can rely upon them for aid, support and/or supply. Thus, anything that can be used as a source for human activity to satisfy human needs is a resource (Gupta 1985, p. 10).

Etymologically, the word 'resource' is related to 'source'. The prefix 're' meaning 'again' suggests dependability through time, as indicated in the word 'relies,' used in the dictionary definition. A person may have various sources of income or support, but a nation has resources. The stress on dependability points toward long-run and social implications, not however to the exclusion of other meanings where emphasis in this aspect is on the basic long-run social assets (Fosch & Constantin 1972, p. 9).

Therefore, a resource is neither a material nor a substance but a positive interaction between man and nature, positive to approaching the given ends of satisfying individual wants and social objectives. Therefore, resource itself is not

anything visible but the inter-acting elements between man and nature. In fact, the word 'resource' does not refer to a thing or a substance, but to a function that a thing or a substance may perform, or to an operation in which it may take part, namely, the function or operation of attaining a given end such as satisfying a want. In other words, the word 'resource' is an abstraction reflecting human appraisal, and relating to a function or operation. As such, it is akin to such words as food, property, or capital, but it is much wider in its sweep than anyone of these (Peach & Constantin 1972, p. 9).

Therefore, we can conclude, as to the meaning of resource, that 'resources' are :

1. that upon which one relies for aid, support or supply.
2. means to attain given ends, and
3. the capacity to take advantage of opportunities or to extricate oneself from difficulties.

RESOURCE CHAINS

Similar to the Food chain systems among the animals, there is remarkable chain systems among the resources. For example, the manufacturing of metals and metal products depend upon the minerals required for that industry whereas the availability and quality of such minerals are depending upon the geological structure of a region. Similarly, rice mills or flour mills depend upon the agricultural products whereas agricultural productivity depends upon the fertility of soils which is

again determined by the relief and climatic conditions of a particular area.

On the other hand, the level of exploitation and utilization of the resources do not depend only on the qualities and capabilities of man. Rather the existence, volume, availability, quality, are always determined by nature. Therefore, there is a remarkable chain relationship between the natural, human and cultural resources which in turn are again determined by certain factors in each case. It means that, there are many factors determining the availability of the resources in a region. At the same time over-use or constant use of resources may also become dangerous due to pollution or other environmental effects.

Due to heavy industrial activities in some parts of the world, the sea water and rivers in many places became polluted with industrial wastes which, in turn, brings commercial fishing impossible in such regions. The constant destruction of forests through shifting cultivation in the hill areas of the country specially in the North-Eastern parts, that due to short Jhum cycles, the trees do not get enough time to grow bigger in size which resulted into the problems of establishing saw mills. Thus, there is an interrelationship among the resources as well as the factors as to the availability, quality and level of exploitation, by man. The Fig. 3.1 shows the interactions among the resources and the factors leading to formation of the stages of resource utilisation.

Fig. 3.1 : Stages of Resource Utilisation.

Stages

I Resource Use (Natural Processes)

Natural Vegetation		Agricultural Land		Water	Mineral
-----		-----		Drinking & Washing Purpose	Traditional Tool Making
Forests (Woods & Trees)	Pastures (Grasses)	Agricultural Crops	Horticulture		
II Extracting Stage (Raw Material Availability, and Labour-dominated Processes)					
Lumbering	Grazing	Food Grains Commercial Crops	Fruits Orchards	Fishing	Mining & Quarrying
III Processing & Fabrication					
Saw Mill	Dairy	Food Processing	Preservation & Processing	-Processing of Fish Products -Hydro Electric	Metal & Non-Metals & Allied

It is evident from the foregoing discussion that no one group (scientists, technicians, entrepreneurs and economists) can, by itself, fully understand and appraise resources, such as understanding and appraisal are joint responsibilities.

The appraisal of resources proceeds from:

- i). the knowledge of facts of nature and culture to,
- ii). the determination of technical feasibility to,
- iii). the determination of profitability to, and
- iv). the formulation of the grand strategy along socio-economic lines (Peach & Constantin 1972, p. 17).

Thus, while examining man as a resource, certain important attributes like distributional aspects of population, growth, strength of workforce and level of technological developments come for consideration. As per the above discussion, man, in interacting with the nature has to fight in joint hands and restrict the activities and interactions of resource processing for the sustained development of the society.

In fact, the physical environment determines the extent of opportunities, but how far man's activities will be encouraged will depend on man's cultural environment, reflected in ethnic and religion, Government attitude, quality of man-power and behaviour of people towards economic, social and technological changes. (D Gupta 1985, p- 39). Since these factors are all related to human beings, it means that there is direct

relationship between physical and cultural environments in the process of economic development in a region or country. Therefore, in some cases, there may be conflict between cultural and physical environments as for example, the technology or technological progress may not be coincided or supported by the social and other institutions, and the time lag may be too long to reap any immediate benefit. This shows that the response of man to his physical environment is very much up to the social and economic factors in his modification or improve environment. The extent of man's response to the physical environment again is determined by his ethnicity, commerce, religion, economic life, and the form of government under which he is working.

The foregoing discussion leads to the conclusion that the availability of resources and their rate of utilisation are directly related to the industrial setup and govern the locational patterns of industrial activities of an area or region. Therefore, a detail study of the distributional patterns of resource availability in the study area must be studied for an explanation of industrial locations, their inter-and intra-linkages, and optimal patterning of the distribution of industrial activities in Mizoram.

RESOURCE AVAILABILITY IN MIZORAM

The resources, when looking into their nature, form, presence, and functionability, may be classified into certain

different types. And such classification may not necessarily be significant for different scholars. The resources are classified as such in different types like (a) presence or absence of inanimate matters, (b) exhaustibility or in-exhaustibility, (c) ownership (d) distribution (Sadhu Khan 1990 p. 96). As it has been mentioned in the definition part, these materials or substances become resources only where there is interaction between them and man, and as such man has to explore, exploit and develop them. Some materials may exist in nature whereas some has to be processed developed. Thus, the classification given by Sadhukhan (above) may not be safe so as to incorporate all forms of resources. Therefore, the classification given by Gupta is found to be more appropriate here (Gupta 1985, pp. 10-13) said that nature has provided vast range of resources in varying degrees in different regions, and their exploitation for human use depends on the quality of human powers which in turn is dependent upon the social and cultural factors. He therefore, regarded man as a resource as well as cultural aspects as a resource. He then classified resources into different types, such as:

1. Natural Resources :

(a) inexhaustible life :

- the atmosphere and
- water in its cycle.

(b) Replaceable and maintainable :

- Water in a place
- Soils
- Land in its Spatial use.
- Forests.
- Forage and other cover plants.
- Wild animal life.

- (c) Unreplaceable :
 - Minerals.
 - Land in its natural conditions.

2. Human Resources : Man as a Resource.

The natural resources in a narrow sense are those uncaptured natural stores which are useful to mankind in one way or the other. They can be commonly grouped as soil, water, forests, livestock and minerals. Among these natural resources, soils and forests are replaceable and maintainable while minerals are irreplaceable. The natural resources become economic resources from the interaction with human and cultural factors.

The natural resources in their form of existence are not immediately usable in most cases. Generally, most of them need some changes, or processing before use. They also require proper management for conservation and rational exploitation, more so when they are not replaceable. In fact, the mere presence of natural resources in any region does not necessarily suggest that such resources are being used by man within the area or outside though their presence give challenge to man to make use of them sooner or later.

As is well known, every region is provided with certain resources by nature. Accordingly, different resources are available in different places whereas certain regions may be equipped with similar resources. At the same time, it is true that some regions are richly gifted with some resources whereas

others are talking, with the same material. Therefore, when coming to the context of the present study area, it is necessary to examine the availability of resources : the nature, quality, Volume and factors contributing to such availabilities. Let us, therefore, examine the resources available in the study area.

NATURAL RESOURCES

According to the resource classification given above, natural resources, renewable or non-renewable, are the gift for man. Therefore, these resources must be studied in detail. In fact, if land is treated as resource, then the landuse classification may be helpful for understanding the distributional aspects of natural resources. In Mizoram a major share of land is under natural vegetation, therefore, forest resources are prominent here.

(1) Forest Resources :

Mizoram has an abundant growth of vegetation. Out of the 21081 sq. km. geographical area of the state, as much as 15935 sq. km. is covered by forest, (including open forest), which accounts for about 75.57 percent to the total geographical area of the state (Statistical Handbook 1972, p. 138). The prevailing tropical and sub-tropical climatic conditions of the entire region with adequate rainfall favour the luxuriant growth of rich vegetation.

The forest resources in the region remained to be hidden resources for years. The forests were neither well organized nor properly exploited. The forests, rather began to disappear due to the cruel method of shifting cultivation. Of course many forest areas still remained unexploited due to inaccessibility and non-availability for cultivation.

Prior to the creation of the Mizoram District council in 1952, the whole region, during the Assam Government time was put under one Forest Range Officer. Under the then Lushai Hills District Council created in 1952, the whole region was placed under one Divisional Forests officer as the region was made as one Forest Division under the Assam Government (Clement 1991, p. 176).

Until 1972 when Mizoram became Union Territory, the Inner-Line Reserved Forests were looked after by the Deputy Commissioner of Aizawl district while the rests were in the hand of the erstwhile District Council. With the inception of Union Territory on 21-1-1972, all the responsibilities of the D.C. and the then District Council in respect to forests were taken up by the Department of Agriculture, Government of Mizoram. A full-fledged Forest Department was created on 22-1-1974. Thus, the reserved forests were placed under the direct control of the Forest Department along with the village forests a status quo (Gazetteers 1989, p. 266).

From 1983, the department was again headed by Chief Conservator of Forests. The Forest Department became enlarged by 1987 and renamed as "Environment and Forest Department" with the Principal Chief Conservator of Forests.

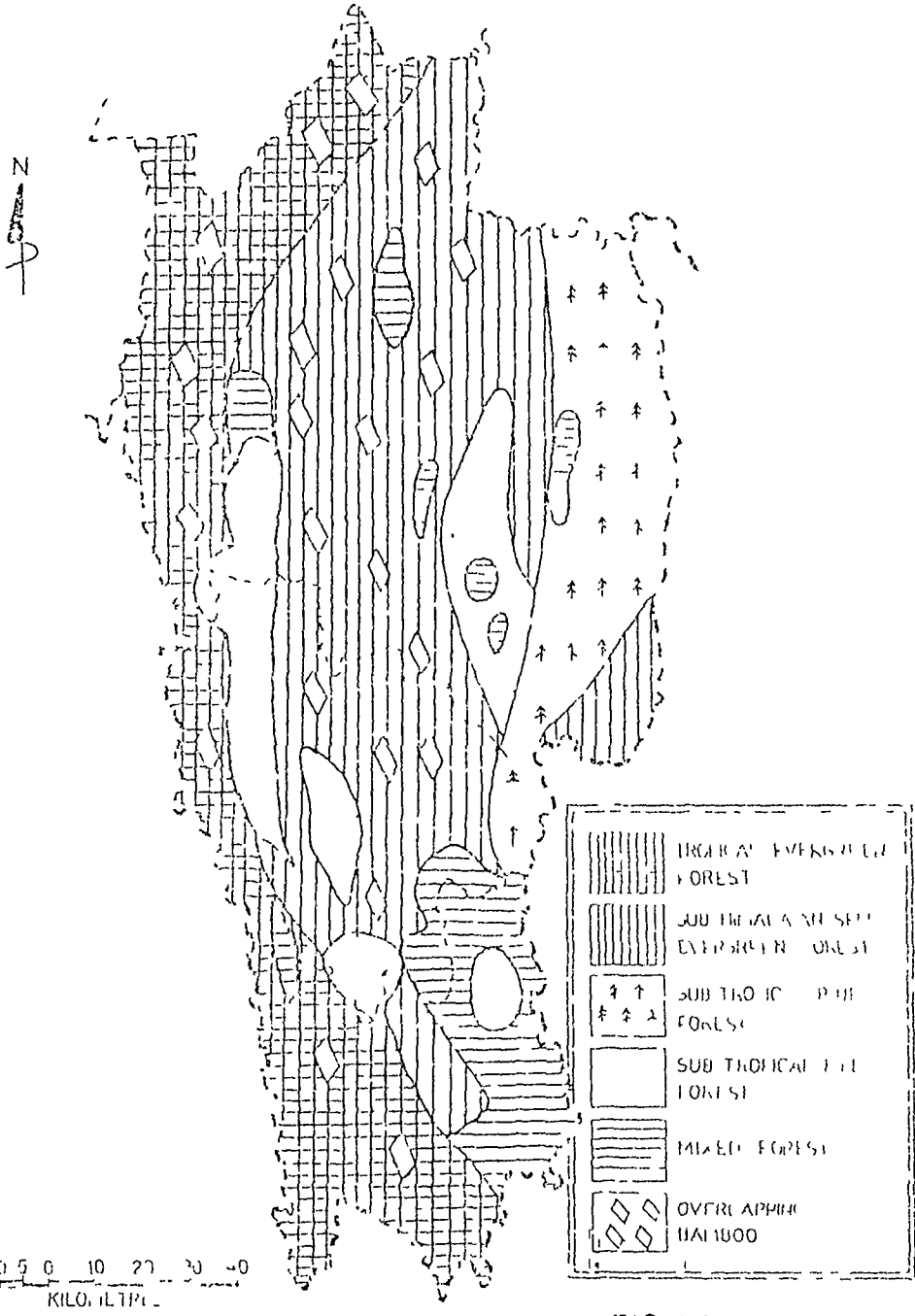
(1) Distributional Patterns : The different kinds of forests are found in the region ranges from Tropical to sub-Tropical evergreen forests, comprising of highly valuable timber species, medical herbs and domestic resources. The forests as a whole can be classified or described as wood forests of the higher altitudes, bamboo forests in the lower ridges, including riverine lowlands.

The general distributional patterns of forests in the state as shown in Fig 3.2 are closely related to the relief features and climatic conditions of the area. The Fig 3.2 reveals that Bamboo is available almost everywhere by overlapping the other kinds of forests. However, the forests in Mizoram may broadly be classified into three major groups, namely,

- (1) Tropical Wet Evergreen Forests,
- (2) Tropical Semi-evergreen Forests, and
- (3) Montane Sub-tropical Forests.

The first-category is dominating in places where precipitation is high. It is abundantly found in western parts of the state, adjoining to Bangladesh, Tripura and Assam. The

DISTRIBUTION OF FOREST MIZORAM



SOURCE PACHUAU (1991)

FIG 3.7

economically important timber species are : (1) Ithlanvawng (Gmelia arborea), (2) Ngiau (Michelia Champaca), (3) Sahatah (Animoora Wallichii), (4) Lawngthing (Dipterocarpus turbinatus).

These timber species are popularly used for construction of houses, Furnitures, etc.

The second category is the dominant category of the whole state, growing in mixture with other vegetal species in about 50 percent of the geographical area of the state. The category is found mainly in the central part of the state, stretching right from River Chhimitupui in the south to the Manipur boarder in the north. The important timber species under this category are : (1) Ithiang (Schima Wallichii), (2) Tei (Cedrela toona), (3) Char (terminalia Mycrio Carpa). Char is popularly used for construction and furnitures works. They are also used for fuel woods and charcoals.

The third category is found in the higher altitudes, mostly confined in the eastern fringe of the state. They are also found in the strips of ranges in the western parts about Bunglemun and in isolation in Sangai area in the south. The important trees under this category are : (1) Iar (Pine-tree), (2) Chhawhlei (Rhododendron), and (3) Tall grassy plants. etc.

Resides the above three major kinds of forests, mention should be made of the luxuriant growth of various kinds of Bamboos, which are available within the length and breadth of

the state. Actually, bamboo is the largest component of the forests in Mizoram and it is one of the most important natural resources of the state at present. The prevailing climatic conditions and the soil types of the region are very much suited to the luxuriant growth of varieties of bamboo. About 45 percent of the forests in Mizoram is estimated to be covered by Bamboos. There are 15 species of bamboos out of which 12 species are classed as commercially useful (Sangzuala 1990, pp. 23-27).

Some of the commercially useful bamboo species found in Mizoram are : (1) Melanocanna, (2) Bamboo siodes, (3) Bambusa Tulda, (4) Bambusa Paluda, (5) Dendro calamus Longipathus, (6) Dendro calamus Stricta, etc.

(11) Administrative Status of Forests : Administratively, the forests are classified into (1) State Owned (2) Village Council Controlled and (3) District Council Owned Forests. The detail classification and areas under each class are shown in the Table 3.1.

Table 3-1 : Mizoram and Its Forests 1992

Sl.No.	Classification	Total Area	
		(in sq.km.)	in %
A. State Owned Forests			
1.	Protected Forests.	1300	8.16
2.	Reserved Forests.	681	32.29
3.	Wildlife Sanctuaries.	7127	4.27
B. Village Council Controlled Forests			
1.	Village Safety & Supply Forests.	11782	11.18
2.	Unclassed state Forests (Under Revenue Department).	5240	32.88
C. District Council Owned Forests			
1.	Protected Forests	347	2.18
2.	Reserved Forests	363	2.28
3.	Wildlife Sanctuaries.	210	1.33
4.	Village safety & Supply Forests.	866	5.43
Grand Total		15930.00	100.00

Source: Statistical Handbook, 1992, p.138.

(111) Revenue Earned : Forest is the main contributor to the state's annual revenue. As it is not possible to give the forest products in physical quantities, the revenue earned from the forest products over certain years in monetary terms may give a picture of the importance of forest species in Mizoram (Table 3.2).

The Table 3.2 reveals that Bamboo is the major contributor to the state's revenue. The next important source is the stones from the quarries followed by the Sawn Timber and Raw Timbers. Besides the above four main sources, mention may also be made of Fishes, Sand, Charcoal, etc.

Table 3.2 : Revenue Earned from Forest Products, Mizoram

(Figs. in Rs.000)

Sl.No.	Items	1985-86	1986-87	1987-88	1988-89
1.	Bamboo	448.59	697.30	1638.58	1413.79
2.	Raw timber	NA	104.36	165.04	597.89
3.	Sawn timber	NA	235.22	312.91	359.64
4.	Firewood	NA	108.07	111.93	148.09
5.	Cane	313.40	68.23	3.70	2.06
6.	Stones	455.85	514.49	828.07	645.21
7.	Sungrass	9.16	3.44	4.26	5.83
8.	Patta/Leaves	10.86	NA	0.80	0.27
9.	Broom stick	13.92	2.58	3.70	4.32
10.	Sand/Gravel	38.02	402.53	175.48	451.36
11.	Poles	20.20	9.29	38.05	11.28
12.	Charcoal	NA	33.73	59.46	130.41
13.	Dugout	6.29	0.72	3.32	1.09
14.	Agar	5.00	NA	20.00	NA
15.	Fish	94.88	76.46	51.73	13.52
16.	Grazing	0.80	0.02	NA	NA
Total		1416.97	2256.44	3417.03	3784.73

NA= Data Not Available.

Source: Statistical Handbook 1987.

The production of Broomsticks and Sungrass show increasing trend whereas cane production shows a decreasing trend over time. But, looking into the overall contribution of the forest resources to the state's revenue, it is observed that the total revenue earned during the years under consideration went on increasing from Rs. 14.17 lakhs in 1985-86 to 37.85 lakhs in 1988-89 (Table 3.2).

(iv) Scope for Forest-Based Industries : The natural vegetations and plantation trees like teak, Eucalyptus, Rubber, Gmelia, Pines, etc. are carried out for harvest at present. It can, therefore, undoubtedly be said that there is vast scope for certain forest-based industries.

Bamboo, which provide an important raw material for the manufacturing of paper, grows luxuriantly in Mizoram. Actually, due to the absence of paper industry or allied in Mizoram, such abundant bamboos in the state do not find proper use as well as proper care. In fact, a Paper Factory with production capacity of 100 tonnes of writing paper and 100 tonnes of craft paper per day could be established at Bairabi (Government of Mizoram 1977, p. 41).

One of the serious problems faced by the Indian Paper Factories at present is the less availability of raw material supply. Due to inadequate supply of raw materials, many paper factories are about to be closing down. This fact is discussed by the Joint Committee of Paper Industry of India (India Today 31st Jan., 1987). The best raw material for paper industry, and its availability in the state, the Mizoram bamboos can be shifted to the near surrounding paper mills of the Assam so that the raw bamboos will earn more revenue to the state.

Moreover, as is well known, a bamboo has to undergo three processing stages to be manufactured for papers such as chipping, pulping and paper making. In this case, even if paper mill is not possible to be established within the state at present, chipping and pulping can be done in the state so that the semi-product materials can be supplied to the paper mills in other parts of the country. These chipping and pulping industries will surely earn huge amount of revenue to the state which in turn will accelerate the economic development here.

Besides, bamboo based SSIs like the manufacturing of Bamboo Ply, Particle Fibre Board can be established. Other household materials like Bamboo bags, hats, baskets, Furniture/Fixture, Tooth-pick and other crafts can be made from Bamboos. Lalthanzama of Bethlehemveng, Aizawl a master crafts man said that from a full grown bamboo, crafted goods worth Rs. 2500/- can be produced (Sangzuala 1990, pp. 23-27). Some products of forest based industries like Cane-Furniture, Hardwoods, Hat and Bamboo-Shoot Canned Tins are shown in the plate 3.1 (a & b) and 3.2 (a & b).

At present, the Mizoram Food and Allied Industries Corporation (MIFCO), a Government undertaking, is producing Bamboo shoot canned Tins, which is seemingly a promising establishment. But it may not be very much recommendable for long run because harvesting of the young shoots is sure to lead to the complete disappearance of this valuable self reproducing resource.

Wild banana plant also grow in abundance in Mizoram. The dry trunk as well as the dry leaves of these wild bananas can be used as raw materials for paper factories. Therefore, it can rightly be said that Mizoram has abundant supply of raw materials for the production of, at least¹⁰, the¹¹ secondary qualities of paper that has industrial uses as packing materials, cartons, cardboards, corrugated papers meant for absorbing shocks as are used in wrapping bottles. Mizoram can straight away go for the production of this kind of papers with



3.1a : Cane Furniture, the most Profitable Forest-based Industry in Mizoram.



3.1b : Birdwoods, Decorative Materials with International Market Accessibility.



3-2a : Khumbeu, the Mizo hat, Bamboo-based (The Crafting skill is still preserved).



3-2b : Bamboo-shoot Canned Tin, MIFCO Product, Vairengte.

its bamboo and wild banana plants grown abundantly in the state.

Again, with her abundant growth of valuable Timber species and canes, Furniture and Carpentry works, constructions of bus body building, etc., have bright future in the region. The development of Lumbering centres can also be made with the development of Transport and Communication networks. Besides, other wood-based industries like Radio Cabinets, Box making and stick of safety matches are very much possible to develop in the state.

(2) Agricultural Resources and Agro - Based Industries :

In the traditional life of the Mizos, there were no trade and commerce or buying and selling of commodities and labour were not practised. There were no markets and shops. They used to offer and give to other anything which they have in surplus. Every family was self-sufficient in rice, the staple food and the total workforce was engaged in agricultural activities with shifting cultivation.

Thus, even though agriculture remained to be the principal source of livelihood, development of agriculture in the modern scale was never thought of until it attained the status of Union Territory in 1972. Of course, the Department of Agriculture had a small beginning under the then Assam Government. But it was only after it became Union Territory that a full-fledged Directorate of Agriculture was created.

Presently, as development activities increased, the then Directorate of Agriculture was divided into three full-fledged Directorates as Agriculture, Horticulture and Fisheries. Therefore, these Directorates now are trying their best to develop Mizoram with their respective efforts and programmes.

However, only 20.86 percent of the total cultivable land for paddy and other seasonal crops is put under cultivation at the same in 1989. In other words, the area put under the cultivation of paddy and other seasonal crops (Permanent cultivation) was 13147 hectares during 1988-89. The area under horticulture was only 6760 hectares, which was 1.51 percent of the total land suitable for the Horticulture crops. (Agriculture Department, 1988).

ii

(1) Food Crops : The final area and production of some important agriculture crops (1992-93) are given in the Table 3.3. As per the 1992-93 departmental information, as much as 87932 hectares of land was under cultivation of various crops in the state. Out of the total cultivated area, the share of Rice was recorded as 61277 hectares which is 69.71 percent of the total with production of 83954 mt. tones whereas the total production in 1987-88 was only 49,000 tones which means there has been growth to 41.63 percent during the period showing 6.94 percent of annual growth rate. Out of the total land under rice cultivation the share of Wet Rice Cultivation (Charif & Rabi) was only 21.66 percent which means Jhuming is still extensively practised in the region.

The area-wise share of Maize cultivation in the same year was only 7.71 percent; the share of pulses like Rice, Bean, Arhar, Poha, Gram, etc., was 4.59 percent. The share of oilseeds like Soyabean, Sesamum, mustard and Groundnut was 0.21 percent, whereas spices like Ginger, Turmeric, Chillies, Garlic and Onion shared only 4.39 percent of the total land used. So far as irrigation is concerned in Mizoram, the ultimate irrigation potential under minor irrigation scheme is estimated about 70,000 hectares, of which 45,000 hectares is for flow irrigation and 25,000 hectares for river lift-irrigation. Up to the end of the 6th Five Year Plan, only 3200 hectares were brought under irrigation. (Agr. today in Mizoram 1989). This means that another 95.43 percent of irrigable land are yet to be irrigated if all the potentials are to be utilized. It is to be noted that due to ruggedness of topography, flow or canal irrigation is not applicable in most of the places, that in turn necessitates lift irrigation whose development requires sufficient and regular supply of electricity. However, in spite of the difficulties, there has been remarkable progress in bringing the lands under irrigation since the last few years.

The rice is the staple food of the Mizo people, therefore there is significant requirement of rice. But till today, even though, the area shared by rice cultivation is higher than 69 percent of the total cropped area, a larger part of annual requirement has to be procured from other parts of the country. This means, rice cultivation is not yet mechanized and the

yield per hectare is still very low. Therefore, there is a need to increase the productivity of rice cultivation as well as the land itself with the modern means.

Due to the favourable climatic conditions and abundant rainfall in the state, maize can be grown for at least twice a year. There is a good scope for maize milling as is already experimented by MFCU at Thawzaw Village where production is going on.

Table 3.3 : Districtwise Final Area and production of Agricultural Crops in Mizoram (1992-93)
(Area in hectare; Production in Metric Tonnes)

District	Name of the Crops						
		Rice under Jhum, WRC & HYV	Maize	Total of Pulses Jile Rice Bean, Pea Arhar, Gram, etc.	Oil Seeds	Spices	Horti- Veg- tables
Aizawl West	A	10642	965	913	1333	1764	2005
	P	21649	3011	2175	1347	4990	36755
Aizawl East	A	17429	2651	1971	1670	1175	892
	P	21271	5602	3718	1867	3891	3531
Kolasib	A	16025	1450	431	3010	434	53
	P	20095	2002	412	2816	884	228
Lunglei	A	7441	1010	506	1029	305	858
	P	11460	1255	1015	820	1053	3440
Chhimitpuui	A	7760	695	213	274	151	627
	P	8678	928	450	169	72	751
Mizoram	A	61297	6781	4034	7216	3859	4745
	P	93954	12858	7970	7017	11190	44910

Abbreviations : A - Area, P = Production

Note : Agriculturally, Mizoram is divided into five districts.

Source : Directorate of Agriculture, Government of Mizoram, Aizawl.

There is also a bright prospect for oilseeds cultivation. Extraction of mustard oil is being done by the MIZOFID Ltd. at Aizawl. Spices processing plant is also going to be set up soon. Spices like Chillies, Gingers with best quality are growing very well in the state. Ginger is already processed into powder and oil extraction being carried out by MIFCO Ltd. Thus, not only selling raw chillies and gingers out of the state but processing plants have already started. There is a vast scope for growers as well as industrialists in this respect. The ginger oil and Ginger powder, manufactured by Mizoram Food and Allied Industries Corporation (MIFCO) are shown in plate 3.3a.

(ii) Horticulture Crops : The final area and production of Horticulture crops (1992-93) are given in table 3.4. Out of the total cropped area in 1992-93, the area shared by Horticulture crops was 10211 hectares which is only 9.74 percent. Among the Horticulture crops, Orange, Banana, Pineapple, are the important ones. Table 3.4 shows that out of the total Horticulture cropped area, Orange alone shared 53.69 percent of area, Banana shared 24.34 percent whereas Pineapple share 7.93 percent hectares.

Pineapple squash and orange squash are already produced locally with MIFCO Ltd. at Sairang and Vairengte. There is one Fruit Juice Concentrate plant at Chhianchhip which is not yet functioning.

Among these horticulture crops, passion fruit is found to be growing very well with best quality in the country. It has been studied and approved that this passion fruit has a bright prospects with local and outside markets. MIFCO is producing its Juice. According to a scientist from CIIRI, Mysore, the passion fruit in Mizoram is as testy as those of Australia, Philippines and Thailand and it can be processed, not only for domestic consumption but also for export. He said "In India, Mizoram and the Coorg District of Karnataka are the only places where passion fruits grow well and Mizoram's passion fruit is more testy and more flavoured" (Hnenti Daily, Oct. 18, 1973). Passion Fruit Juice, manufactured by MIFCO, Aizawl is shown in the plate 3.3b.

The Squash of Hatfora is locally made and distributed in the local markets. This fruit also proves to be having good markets both local and outside if the production process has been improved.

Bananas of different kinds are grown well in Mizoram. Since winter is not severe in Mizoram, the winter cold does not retard its growth. At present, bananas are not yet processed and it is simply consumed as raw fruits.

Likewise, different Horticultural crops, having bright prospects are growing in Mizoram Luxuriantly. In fact, the area of cultivation and production are yet to be accelerated by local industries based on them.



3.3e : Singer-oil and Singer Powder, A promising Agro-based Industry.



3.3b : Passion Fruit Juice, the Pride of Huzoram, A Promising Horticulture Crop-based Industry.

Table 3.4 : District-wise Final Area and Production of Horticulture Crops in Mizoram (1992-93).

(Area in hectare, Production in metric tonnes)

Sl. No.	Name of the Crop	Aizawl west		Aizawl East		Kolasib		Lunglei		Chhimgtuipui		Mizoram	
		A	P	A	P	A	P	A	P	A	P	A	P
1.	Orange	2894	16055	1247	2843	500	1500	493	1242	348	155	5482	21795
2.	Lemon	140	535	34	340	20	30	27	269	25	12	246	1186
3.	Hatkorla	70	293	25	106	40	800	-	-	-	-	135	1199
4.	Banana	770	6091	995	1491	40	260	400	1159	280	378	2485	9399
5.	Pine Apple	226	1431	237	1733	50	350	171	919	126	156	810	4189
6.	Mango	105	733	101	235	50	200	70	120	26	18	352	1506
7.	Papaya	91	1308	30	40	6	12	26	69	8	14	161	1443
8.	Peach & Plum	16	83	9	24	-	-	11	19	14	12	50	138
9.	Guava	70	470	43	94	5	15	18	31	7	7	143	617
10.	Jackfruit	68	635	21	89	10	20	30	58	1	9	133	811
11.	Arecanut	4	51	-	-	20	30	-	-	-	-	24	81
12.	Pear	21	132	34	74	-	-	4	20	1	1	60	227
13.	Lichi	-	-	-	-	1	2	-	-	-	-	1	2
14.	Tamarine	8	16	-	-	3	2	2	4	-	-	13	22
15.	Coconut	3	11	-	-	5	5	-	-	-	-	8	16
16.	Sweet Orange	NA	2	13	34	-	-	3	10	-	-	16	44
17.	Passion Fruit	10	8	78	976	-	-	2	3	2	6	92	993
Total		4496	28052	2870	8079	750	3246	1257	3523	838	766	10211	43668

Source : Directorate of Agriculture, Government of Mizoram, Aizawl.

Sugarcane is also very much suited to the prevailing soils and climatic conditions of the region. Sugar production from sugarcane is now started by M.V.I Board at Saitual in Aizawl district. The Mini Sugar Mill under the Board was commissioned during December 1993. Production is now going on with the locally grown sugarcane. In fact, sugarcane grows well in the length and breadth of the State.

Other crops like Potatoes, Sweet Potatoes, Calacasia, Tobacco, Betel Vine and Cotton are also growing well in the region. They are not yet utilized for industrial raw materials because modern Small Scale Industries based on them are yet to be localized in the region.

Mention should also be made of Tung plant and Citronella from whose fruits, valuable oil are extracted. While these plants are not much growing well in other parts of the country, they are growing very well in Mizoram.

About 5 lakhs of Tung plant have already grown in Mizoram (Lalsangzuala J. 1993). A Mini Tung crushing unit has been set up in Zembawl Aizawl with M.V.I Board undertaking. This unit is the first Tung Oil Extraction unit in the country.

Besides, mention should also be made of Tea Cultivation in Mizoram. Tea is highly consumed by the Mizos. Mizoram use to procure tea leaves from other states costing about Rs. 300 lakhs every year. (Lalsangzuala J. 1993). As Mizoram is having

ideal climatic condition for tea cultivation, tea industry can be successfully established through which huge amount of revenue can be earned every year.

For the development of Tea cultivation and tea industry in Mizoram, the Government of Mizoram has already declared four Tea growing Belts where tea cultivation would be given emphasis. Looking into the Four proposed Tea growing belts, it is seen that the four belts cover the entire state which means tea can be successfully grown anywhere in Mizoram.

(111) Sericulture : Silk industry is also highly prospective in the state. The Table 3-5 shows the production figures of Sericulture Department in Mizoram during 1990-91 and 1991-92. The Table reveals the possibilities of silk production and silk industry development in the state.

From the light of the above discussion, it is clear that Mizoram is blessed with varieties of cash crops and Horticulture crops. It is also clear that raw materials for Agro-based industries are locally available. But technology is lacking in the State. Therefore, efforts should be made to make technical know-how, available within the state so that modern Small Scale and even Medium Industries can be set up which in turn will have acceleration to the proper exploitation and cultivation of such potentials of agricultural Horticulture and other cash crops in the state.

Table 3.5 : Production Figures of Sericulture in Mizoram (1990-91 and 1991-92).

	Mulberry		Oak tasar		Muga		Eri		Total	
	1990-91	1991-92	1990-91	1991-92	1990-91	1991-92	1990-91	1991-92	1990-91	1991-92
Area of Govt. Farm (Hectare)	345	380	60	60	60	60	195	195	660	695
No. of Govt. Farm	14	16	3	3	4	4	7	6	28	29
Private Cultivated Area (Hectare)	300	600	Natural	Natural	Natural	Natural	450	450	750	1050
No. of Private Rearers	250	600	35	60	Nil	5	1965	1000	2250	1665
Production of Cocoons (Kgs)	8458	9497	4223	4343	116	533	4028	4857	16825	19230
Production of Silk (Kgs)	100	200	Nil	20	8	15	1000	1000	1108	1235
Production of Clothes (metres)	1000	1300	Nil	200	100	195	9000	2000	10100	1695
Production of Carpets (Nos)	Nil	Nil	Nil	Nil	1	1	20	2	21	3
Production of Rugs (Nos)	Nil	5	Nil	5	Nil	5	100	20	100	35

Source : Statistical Handbook, 1992, pp. 221-221A.

(3) Live-Stock and Animal Husbandry :

Livestock plays a very important role towards economic self-sufficiency. Prior to the attainment of Union Territory status in 1972, there was no significant impact in the field of Animal Husbandry and Veterinary in Mizoram. Now, there is a full fledged Directorate of Animal Husbandry and Veterinary Department in the state. At present, Mizoram has 5 cattle Breeding farms, 5 Piggery farms, 10 Poultry farms, and 2 Duckery farms. Besides, the Animal Husbandry & Veterinary Department is having 5 Veterinary Hospitals, 33 Dispensaries, 88 Rural Animal Health (RAH) Centres, 5 mobile Units, 10 Stockman centres and 10 A.I. Centres, (Statistical Handbook 1992, pp. 99-92).

Veterinary Census are conducted after every 5 years. The heads of Live stock and Poultry in Mizoram for three consecutive Veterinary census years are given in the table 3.6.

The Table 3.6 shows that among the domesticated animals, Poultry, Pig and Cattle are the important ones followed by Government. Poultry alone in the latest census constituted 81.70 percent of the total live stock and poultry heads followed by Pig with only 8.01 percent whereas cattle heads shared 4.95 percent followed by Goat with 1.93 percent. The population of sheep, Dog, and Duck show decreasing number over the previous years whereas Mules and Donkeys have insignificant population.

Table 3.6 : Livestock & Poultry as per Veterinary Census Years

Sl.No.	Items	Units	Years		
			1977	1982	1987
1.	Cattle Crossbred & indigenous.	No	30740	48001	50255
2.	Buffalo	No	897	4331	5602
3.	Mithun	No	493	986	1435
4.	Horses & Ponies	No	2451	1419	2302
5.	Sheep	No	983	882	790
6.	Goat	No	22012	27539	19668
7.	Mules	No	-	43	-
8.	Donkey	No	-	26	-
9.	Pig	No	44983	77119	81505
10.	Dog(Domestic)	No	-	18441	15443
11.	Poultry	No	532955	686867	801915
12.	Duck	No	3631	12618	9212
Total			676945	878871	1012127

Source: Statistical Handbook 1992, p-94.

Meat consumption among the Mizos is relatively high and meats are always very costly. There is not yet a single meat processing unit in the entire state and that meats are directly consumed unprocessed. The monthly expenditure, in cash, on five selected meats in Aizawl town is as follows.

The Table 3.7 reveals that the expenditure on meat in the whole state would be very high. Therefore, the meats that are consumed has to be neat and clean with proper processing. This indicates the need for meat processing plants in the state.

Table 3.7 : Monthly Expenditure on Meat, Aizawl Town.

Sl.No.	Item	Rs. In Lakh
1.	Chicken	8
2.	Eggs	12
3.	Fowl	16
4.	Beef	21
5.	Fish	3
	Total	60

Source: Lalsangzuala 1992, p. 5.

(4) Water Bodies and Power generation :

There is no big lake like Loktak in Manipur or Umiam Lake in Meghalaya, which can be utilized for generation of power in Mizoram. But the drainage system with so many swift flowing streams and rivulets suggest generation of Hydel Powers provided that they are utilized for the same. As the state is not yet generating sufficient powers within the state, it is still depending to a great extent for electricity on Assam, Manipur and Meghalaya.

The maiden step in power development in the state was taken up only in 1962 with the commissioning of the 75 kW Diesel Power Station at the heart of Aizawl town and not much tangible progress was made during the decade that followed (District Gazetteer 1989, p. 200).

It was only 10 years after 1962 that the second town in the state, Lunglei, and other three villages were electrified in 1972 by Diesel Generators with 150 kW installed capacity and the generating capacity of the Diesel Power Station of the

Aizawl was raised to 400 kW. The construction of 66 KV line was taken up in 1971 for supply of the power from the Assam Grid to Aizawl town.

The beginning of a modest Planned Power Development Programme at an approved outlay of Rs. 448.91 lakhs was made by Mizoram Government in the Fifth Five Year Plan, 1974-79. This included augmentation of Power Stations, completion of the 66 KV line, electrification of 50 more villages and investigation of Hydel Generation Potentials.

At the end of the 5th Plan, eight Diesel Power Stations have been setup having total installed capacity of 2.916 MW, out of which 1.58 MW is available considering derated output and wastages. The 66 KV line has been completed and charged at 33 KV making available 0.5 MW power at Aizawl from the Assam Grid. By this time, the two towns and 10 villages have been electrified and preliminary investigation of a few hydel schemes have been carried out (District Gazetteer of 1989, p. 280).

In fact, Mizoram remained a division under the Assam State Electricity Board till it became Union Territory in 1972. When Mizoram became Union Territory, the Electricity Department was functioning as a cell under Public Works Department. It was only in 1979 that Mizoram has a full fledged and separate Electricity Department with Chief Engineer at its head.

The power lines and stations in Mizoram as on march 1990 is shown by Fig 3-3. The 132 KV line and 66KV line for import of 34 MW power from the Assam State Electricity Board and the North Eastern Electric Power Corporation have been completed. But, at present, only 15 MW is imported whereas it is estimated that 45MW is required to be imported. The 66KV line connects Aizawl via Vairengle. The 132 KV line from Jirbham to Aizawl and Aizawl to Lunglei is functioning now. This line is extended from Aizawl by different lines to Lhewzawl, Phaileng, Marpara, Serchhip, Lungdar, Lunglei, Lawngtlai, Lungsen, etc.

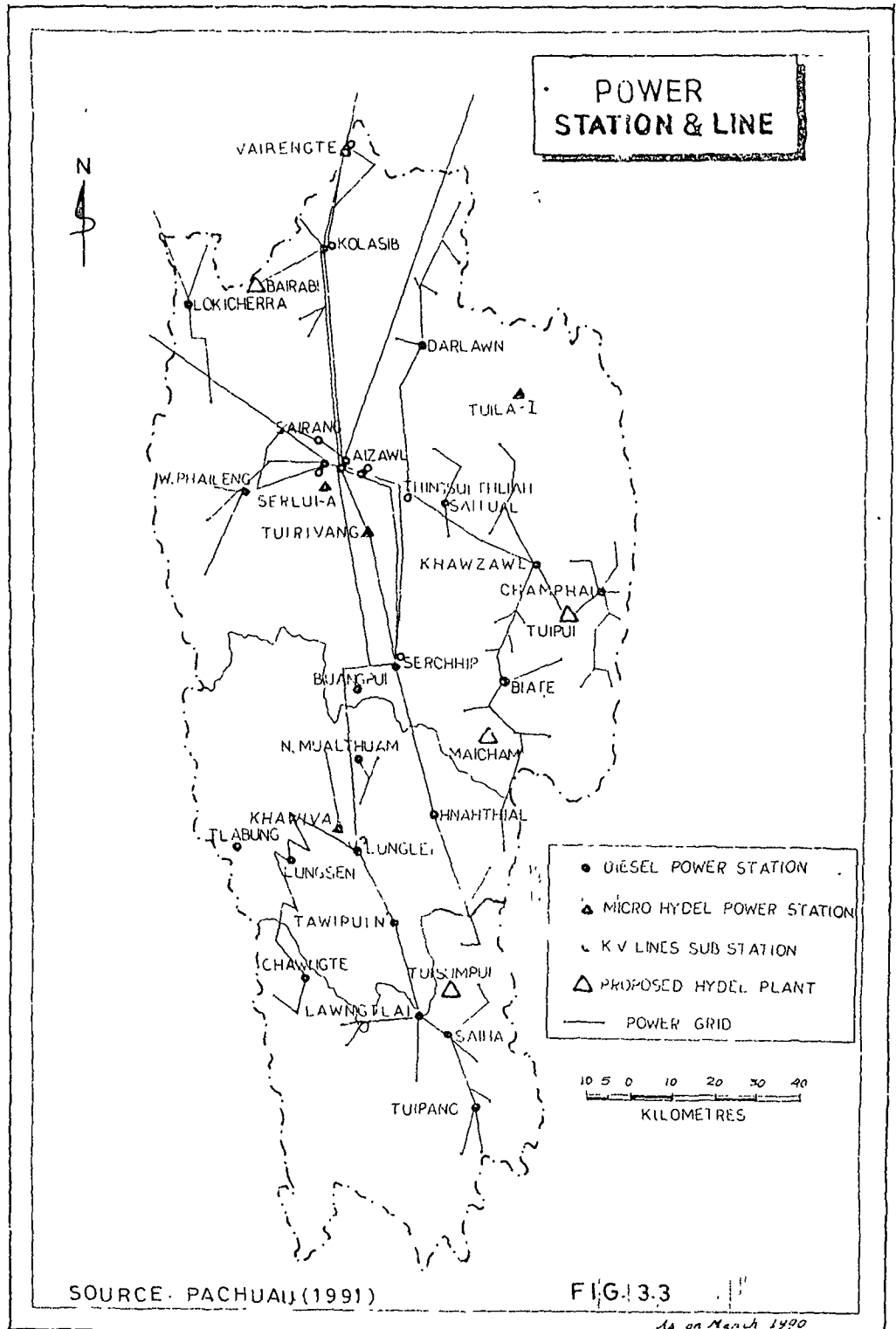
Mizoram cannot get enough power through importing from its neighboring states. The state government has generated power with Diesel Engines and some Hydel power stations while simultaneously importing power. power problem is still one of the talks of industrialist in Mizoram. The power consumption in the state, therefore, is still very low due to less industrial development. The consumption in the industrial sector is recorded lowest (table 3.0)

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Table 3-8 : Electric Power Utilization in Mizoram.

Sl.No.	Category	unit	1990	1991	1992
1.	Domestic	MWH	25.69	31.90	33.60
2.	Commercial	"	2.05	2.84	2.85
3.	Public Lighting	"	3.60	3.81	3.84
4.	Industrial (L.T)	"	0.90	1.04	1.15
5.	Public Water Works	"	5.15	5.50	5.50
6.	Ball Supply	"	1.26	1.54	1.60

Source: Statistical Handbook 1992, p. 201.



The state government is, therefore, trying its best to generate power either with Diesel Power Stations or Hydel Power Plants. Thus, with the power imported and generated by the state, upto August 1991, 457 Villages were given light, excluding Aizawl and Lunglei. The table 3.9 is showing power availability in the state upto 1992.

Table 3.9 : Generation of Electricity and Import (Million kWh) Mizoram.

Sl.No.	Years	Unit	Diesel	Hydel	Imported	total
1.	1970	MkWh	13.67	1.40		15.07
2.	1991	"	13.50	1.80	50.29	65.59
3.	1992	"	11.82	0.92	55.33	68.07

Source: Statistical Handbook 1992, p. 204.

Towards the development of Hydel Power Electricity in the state, the Mizoram Government has had undertaken certain Hydel Power Generation Projects. Some of the salient projects with their estimated capacities are given in the table 3.10.

The table 3.10 reveals that 8 Hydel Projects with total estimated capacity of 3340 kW have been completed. Out of all the eight Projects are mini Hydel Projects. Another one Mini Hydel Project at Ierei River/Stream is under construction. The rest of the Hydel Projects are remaining at the status of either proposed or surveyed only.

The Figure 3.4 shows the general distribution of drainage system in the state. These swift flowing streams, in many

places provide ideal sites for construction of Hydel Power stations in many places. The Table 3.10 reveals that all the Projects have been completed and not yet completed or proposed projects are of mini Hydel Projects. Besides among such swift flowing streams or rivers, very few like Turrial, Ieirei, Serlui, and Tuivai are included which all have smaller water volumes. Instead of going for many mini Hydel Power Projects, it would be better for the state, if it concentrates for fewer but bigger plants or projects which can generate substantial amount of Power.

Table 3.10 : Hydel Power Stations, Mizoram (as on May 1992)

Sl.No.	Name of the Projects	Status	Estimated Capacity
1.	Tuilo Micro Hydel Project	Completed	30 KW
2.	Lailipui Micro "	"	30 KW
3.	Iuidum " "	"	30 KW
4.	Serlui 'A' Mini "	"	1000 KW
5.	Ihawiva " "	"	1050 KW
6.	Iuirivang " "	"	300 KW
7.	Iupui " "	"	450 KW
8.	Tuisumpui " "	"	450 KW
9.	Maicham " "	Work in Progress	2000 KW
10.	Ieirei " "	Proposed	2500 KW
11.	Serlui 'B' " "	"	9000 KW
12.	Turrial " "	Surveyed	60000 KW
13.	Tuivai " "	"	210000 KW
14.	Chhimlupui Phase-I	"	"
15.	Iipaimukh " "	Central Govt. Project.	"

Source: J. Lalsangzuala, Finance Minister Mizoram delivered at Diate.

Since many of the existing power projects are mini status and Diesel Power stations, the bulk of power available in the state is still imported from its neighboring states.

So far as possibility of power generation in Mizoram is concerned, mention may also be made of thermal and wind power generation. Mizoram is blessed with bright sunshine throughout the year. Efforts, therefore, should be made to tap energy from the sun and convert it to electricity. With the help of solar panels, streets and individual houses can be lighted at night. In other words, the remote villages can be given light through the solar energy.

Besides, due to the hilly nature and its very location, the state receives strong winds at least during a certain part of the year. Windmills can, therefore, be erected at suitable hill tops to harness wind energy for generation of electricity.

It can, therefore, rightly be said that the generation of sufficient or more than sufficient electricity, which is the basic requirement for industrial growth as well as elevation of standard of living, is very much possible in the state. If enough efforts are made, the production and consumption of electricity can be increased within the state and dependence on outside be minimized or eliminated.

(5) Mineral Resources :

No mineral of economic importance has been found in the study area. Of course, some deposits of lime stone have been found in places like Muthi village, Lunglei, Hlumen, etc. But the CaO contents of these lime stone deposits are very poor that they are not economically feasible whereas their deposits

are also very less. Mention may also be made of stones in the quarries and sands of Turpuu and Flawng rivers which are used for building and construction works. Otherwise, no mineral of economic importance has been mined in the state. The more or less details about minerals in Mizoram has also been discussed under Soils and Minerals in Chapter 1.

HUMAN RESOURCES

For an overall economic development of a region, man plays the vital role. It is true that human wants are unlimited as satisfaction of a particular want leads to further wants. Due to this fact, man goes on searching, exploring and using the resources with endless chain. In fact, he is a resource and mobiliser of natural resources.

While studying man as a resource it is understood that his capabilities or the extent of the level of interaction with the natural resources depends upon many factors. Therefore, in the study of man as a resource, one is concerned with total population, trends, density, distribution and factors of workforce. In fact, these aspects of study are helpful in understanding the availability and quality of workforce for the future industrial development of a region. Thus, these aspects of human resources are discussed in the context of Mizoram in the following way

1) Population: Growth, Distribution and Strength :

Mizoram is the habitat of the Mizos, a tribal community where the scheduled tribe population accounted for about 93 percent and the Scheduled Cast Population accounting about 0.03 percent only. The major tribes who constitute Mizos are Ralte, Ithar, Pawl, Lusoi, etc. with their respective sub tribes.

Mizoram is still sparsely populated. The first population census was conducted in 1901 in which there were only 32,434 persons in the entire area. Since 1901 onwards, censuses have been conducted along with the census at the national level at 10 years interval. The total population in the 1991 census was 689,756 (Census 1991) showing a growth rate of 39.69 percent over the 1981 census whereas the growth rate between 1971-1981 was as much as 48.55 percent.

The decadal growth rate of total population in the state has been recorded as 48.55 percent in the 1980's which is even faster than the national average. It may be because of (i) Chakma influx and (ii) immigration from other parts of the country coupled with the fast natural growth within the state. In fact, despite of its remote location and undulating topographic features, immigration into Mizoram is prevalent. It may be because of (i) hospitability of the people, (ii) job availability, (iii) low population density and (iv) trading convenience, as the state is called *Trader's Paradise*. This in turn indicated that there are unexhausted natural resources available which man wants to utilize them.

The details about population growth in the state since 1901 to 1991 is shown by Fig. 3.5, which reveals a fast growth specially after 1971.

The population density of the entire area as per 1901 national census was 4 persons per sq. km. But, the population density in 1981 became 23 persons per sq. km. whereas, density has already become 33 persons per sq. km. in 1991. The figure 3.6 shows that the Tlanquim Block is the highest density, with more than 50 persons per sq. km. This is mainly because Areawl Town (i.e., the State Capital) falls within the Block. The second highest density is recorded in the Lunglet Block (40 to 50 persons/sq. km.). It may be because the second largest town Lunglet is situated in the Block. The lowest density blocks are Xerel Block, W. Hunghamun and Sangau where population density are below 20 persons per sq. km. What is peculiar with the distributional patterns of population density is that it is always determined by the physiographic conditions and the distribution of urban population of the state.

As per the 1981 census, the rural population in the state consisted of 75 percent. This means that the tribal population in the state was spread evenly throughout the state. But as time passed by, due to increase business activities, rapid urbanization, fast increase in business activities has been noticed. Due to this, the traditional compact shape of settlements at hill tops and ranges was broken and thus

POPULATION MIZ ORAM (1901 - 1991)

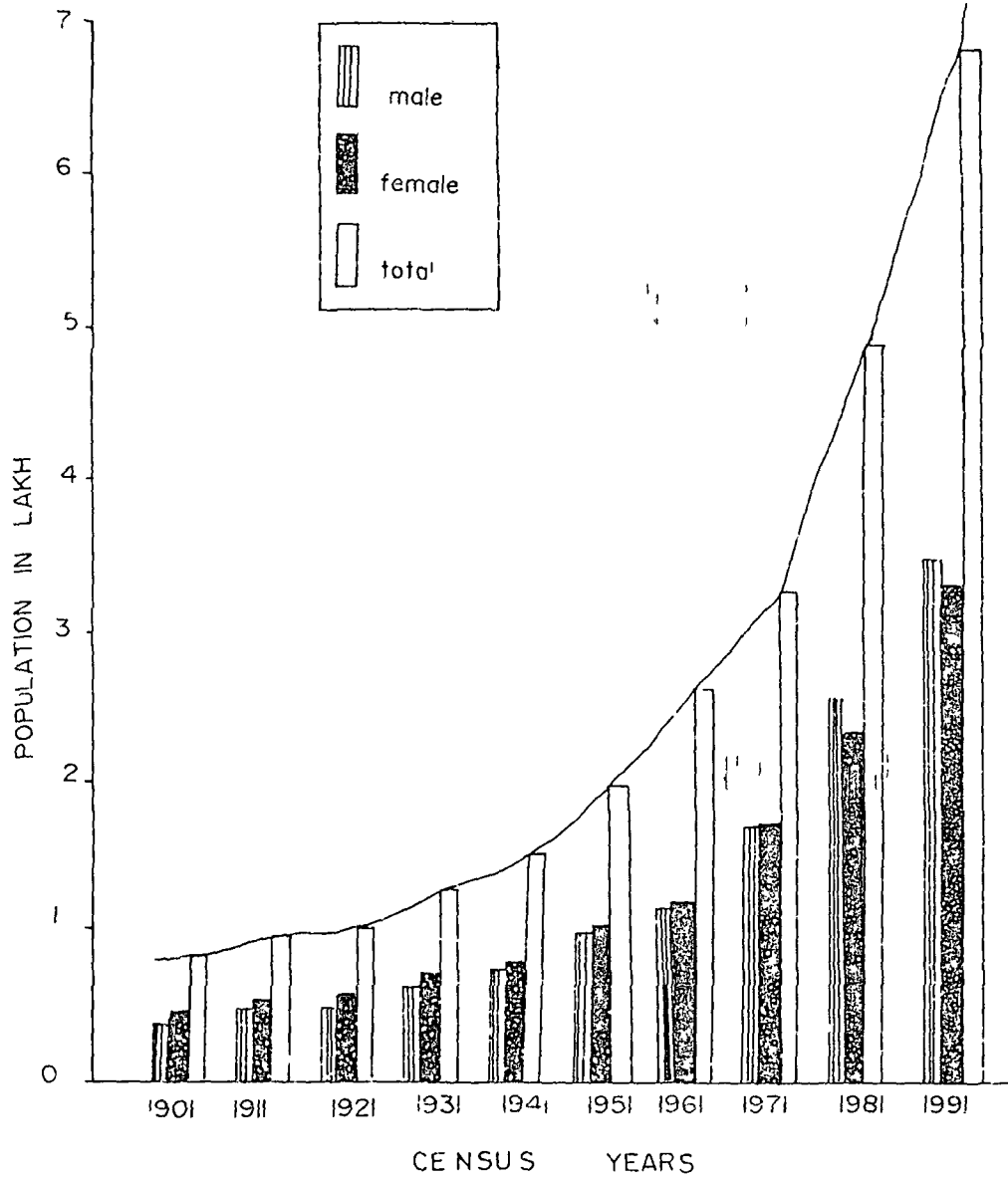
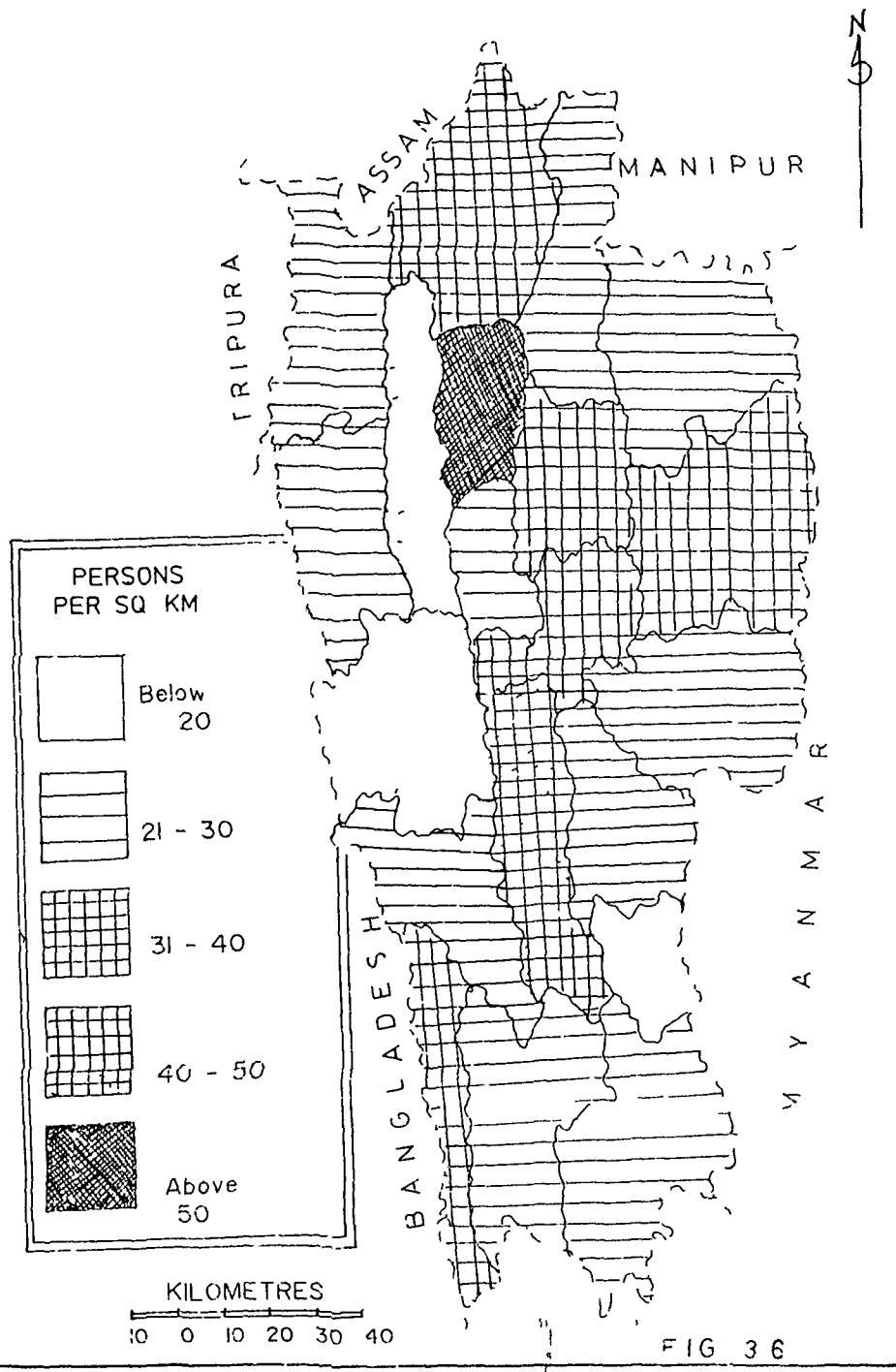


FIG. 3 5

POPULATION BLOCK WISE 1991 (DENSITY)



settlements now became linear along the road sides and river banks (Pachuan 1991, p. 186).

(1) Urbanisation and Industrial Development : In fact, urbanisation lead to increase industrial establishments too. Since there is initial stage of urbanization in the state, the industrial setup is still weak and articulated. The process of urbanization started during the last part of 1960's when the Government of India introduced progressive protected villages or 'grouping' of the villages. The villages were grouped in certain villages in which the process of urban settlements existed.

The process of urbanization is directly influenced by road constructions and power supply. The road construction programme in Mizoram were necessitated by the Mizo National Front (MNF) movements in the state from 1966. For administrative convenience as well as minimizing scattered villages in the remote areas where the M-N-F. could collect food materials, the villages were grouped. The grouping centres thus becoming bigger settlement areas continued to be so ultimately becoming urban centres.

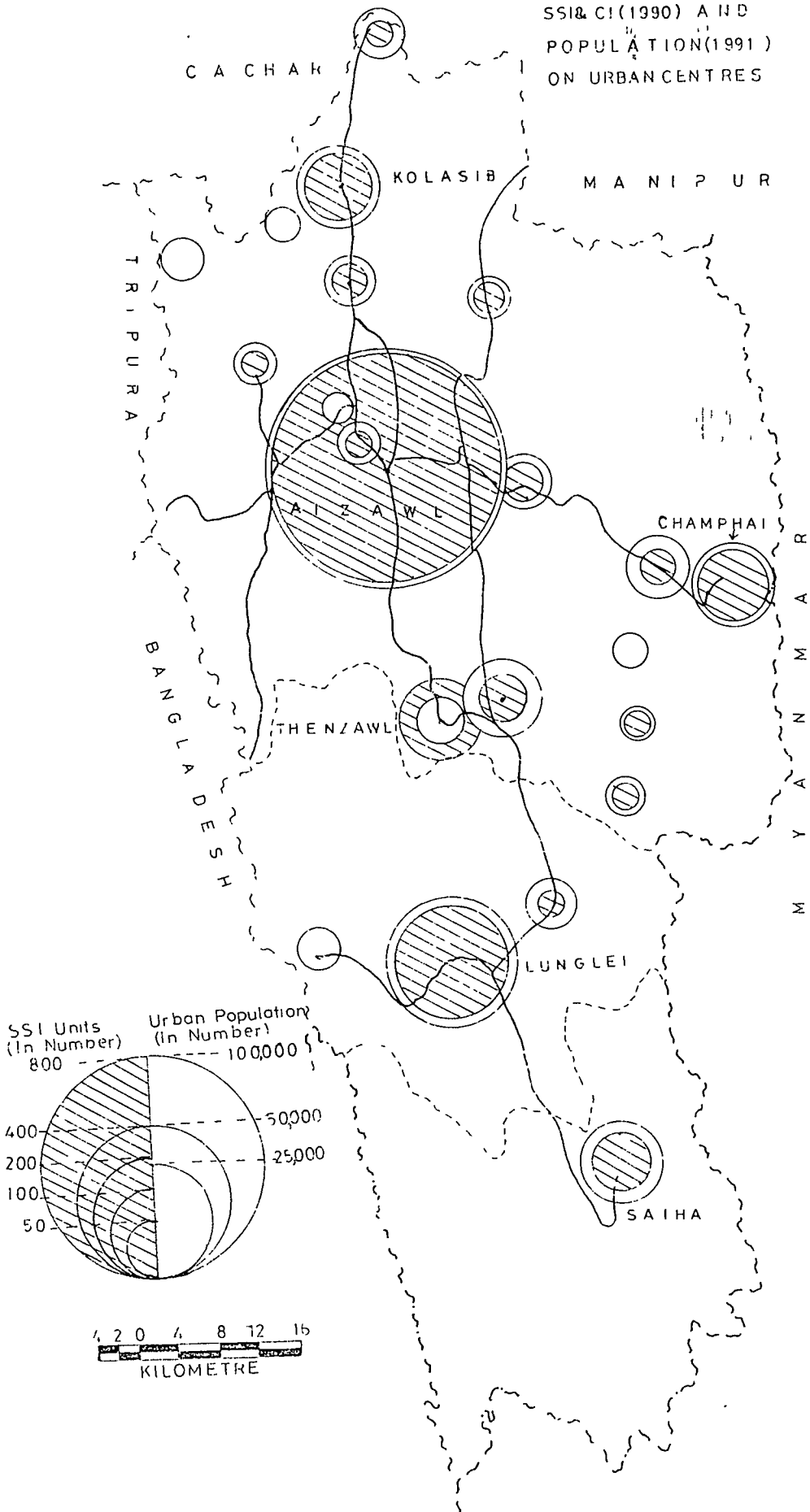
Density and accessibility of road network play a very important role in the processes of urbanization and industrial development in a region. The present study area, Mizoram is a hilly area where nature has retarded road constructions and developments to a great extent. But the importance of roads,

its length, density and accessibility never fail to play its role towards its development. For industrial development of a region like Mizoram, transport and communication lines are very very important. In fact, it has been observed that urbanization, industrial development and electric power supply lines follow the roads. It means where there is good road or where an area or a region is well served by road networks, urbanization, secondary activities and other developmental activities come up naturally.

Accordingly, road length, density and the accessibilities within the study area has been described in the preceding lines. The Table 3-11 shows the districtwise breakup of road length and density upto 1990-91 and 1991-92. The Table 3-11 reveals that road density is the highest in Aizawl district (i.e. 27.53 km./100 sq. km., 1991-92), and as such the Aizawl district alone constituted as much as 1785 SSI & CI units (1990) which is 80.95 percent of the entire state whereas Chhimiupui district, where road density is lowest, constituted only 6.67 percent of SSI & CI units in the state in the same year. Moreover, as road length and density increases over time, industrial units become more and wide-spread along with the communication lines whose fact would clearly be revealed in chapter IV (Fig. 4-5). For justifying this fact, the urbanization and industrial (SSI & CI) growth trends have also been shown with the help of a diagram. The Fig. 3-7a and 3-7b shows clearly that road network development, urbanization and industrial growths affect each other positively and relatively.

MIZORAM

DISTRIBUTION OF
SSI & C! (1990) AND
POPULATION (1991)
ON URBAN CENTRES



TRENDS OF URBANISATION AND INDUSTRIAL GROWTH

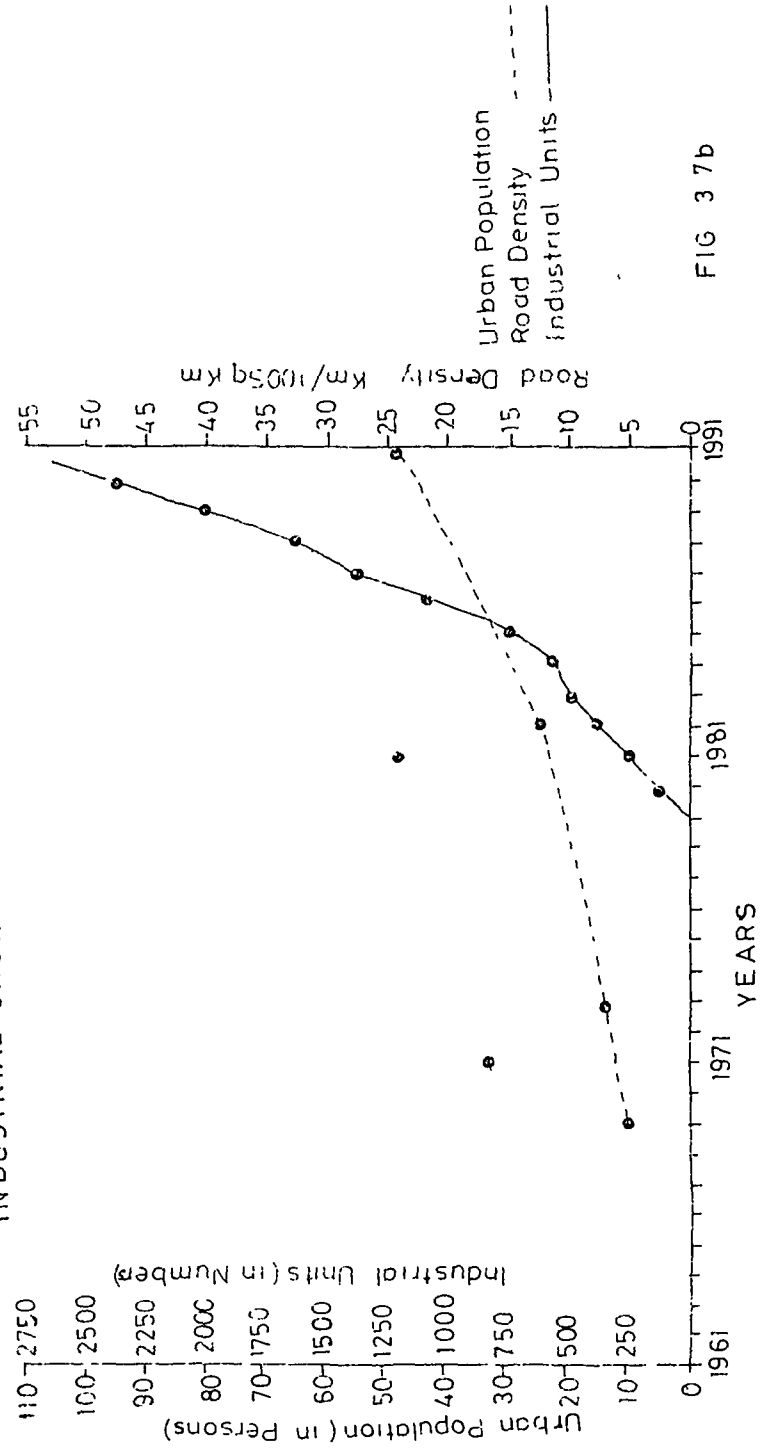


FIG 3 7b

Table 3-11 : District-Wise Road Length (Km) Mizoram upto 1991-92.

Particulars	Districts					
	Aizawl		Lunglei		Chhimgurpu	
	90-91	91-92	90-91	91-92	90-91	91-92
1. Roads Under PWD Mizoram	222.93	2400.60	556.07	600.00	329.50	366.00
2. Roads Under BRD	1082.36	1065.36	353.20	353.20	373.02	373.02
3. Surfaced Road Under PWD	431.93	852.60	119.19	100.00	14.00	51.00
4. Surfaced Road Under BRD	690.91	573.91	353.20	353.20	241.02	241.02
5. Unsurfaced Road Under PWD	1791.00	1818.00	397.18	495.00	315.20	315.20
6. Unsurfaced Road Under BRD	391.45	391.45	-	-	128.20	128.20
Total Road Length	3305.29	3463.96	709.37	953.20	702.52	739.02
Road density (km./sq.km.)	26.26	27.53	20.05	21.01	17.70	18.60

Source : Statistical Handbook 1978, pp. 212-213A.

In fact, by 1969, road density in Mizoram was as low as 3.45 km. per 100 sq. km. and the total road length was 1149 km. by 1974, road density in the state rose to 7.54 per 100 sq. km. Later in 1982, road density in the state was 12.60 km. per 100 sq. km. In fact, road density by 1991-92 in the state was still as low as 24.67 km. per 100 sq. km. whereas it was 15.20 per 100 sq. km. in Orissa, 23.32 km. in Meghalaya, 24.44 km. in Manipur and 89.10 km. in Tripura, and 38.31 km. in Nagaland and the National level in the same year was 47.27 km. per 100 sq. km. (Basic Statistics, 1982-93). Besides the low density of road, the state is not having navigable rivers, Railways and Airways of any worth mentioning. The poor transport and communication network is a real bottle neck to

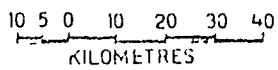
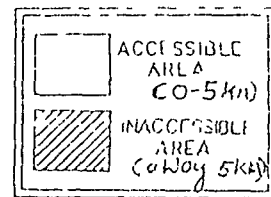
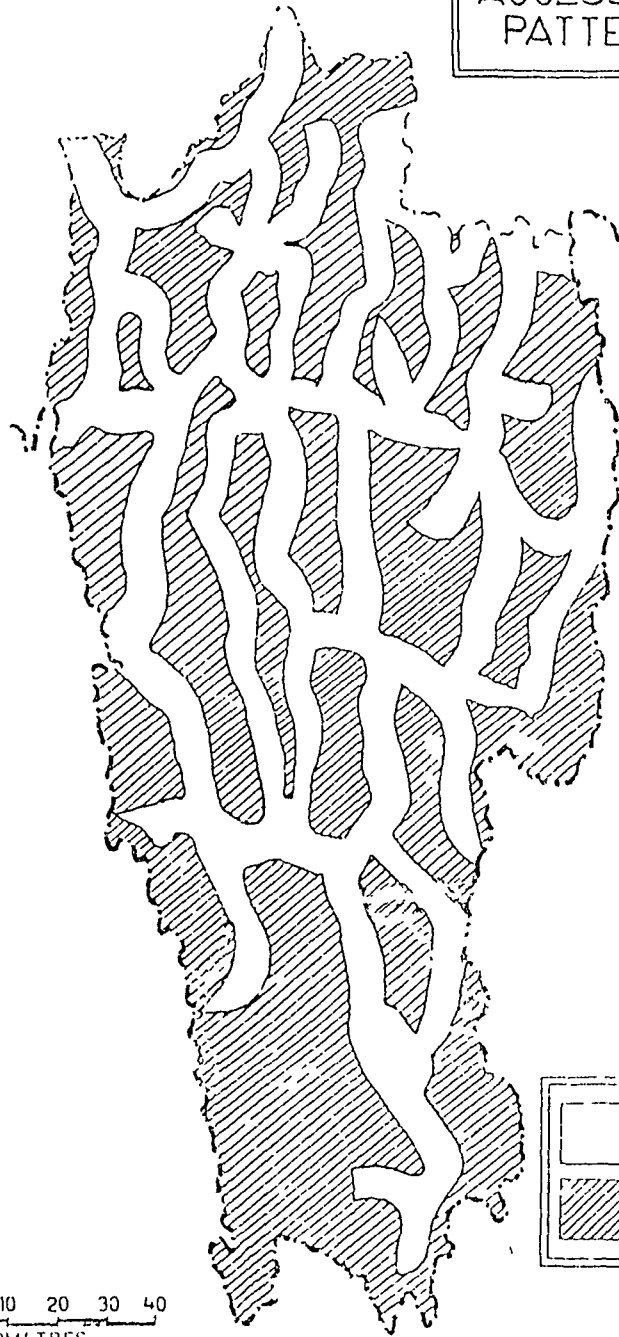
the economic development, industrial development and labour mobility.

development of transport network is, therefore, a must for the economic growth and industrial development of Mizoram. Though rugged and terrain in nature, there is very much possibilities of transport network development in the State as road accessibility in the state is shown by Fig 3.8a.

Accessibility in Mizoram is greatly restricted by geographical factors, the most prominent being physical structures. Other factors like economic and social as well as political factors also affected the accessibility to a great extent. On the other hand, the development of transport and communication network is an important factor which helps the process of development at micro-region and vice versa. (Fachuau Lalrinthlanga 1991, pp. 97-98).

Taking an average width of 3 km. from motorable roads as accessible areas, a map is prepared (Figure 3.8a). From the map. It can be seen that the inaccessible areas occupy larger areas than those of accessible areas. The positive areas are made accessible by North-South trending roads in most cases, and east west dimensional roads in smaller cases. As stated, the accessibility pattern is influenced by physical factors. The mountain ranges running north-south direction favour the construction of roads in the same direction while they act as a limiting factor to the east west construction of roads. It is

ROAD
ACCESSIBILITY
PATTERN



SOURCE PACHUAU (1991)

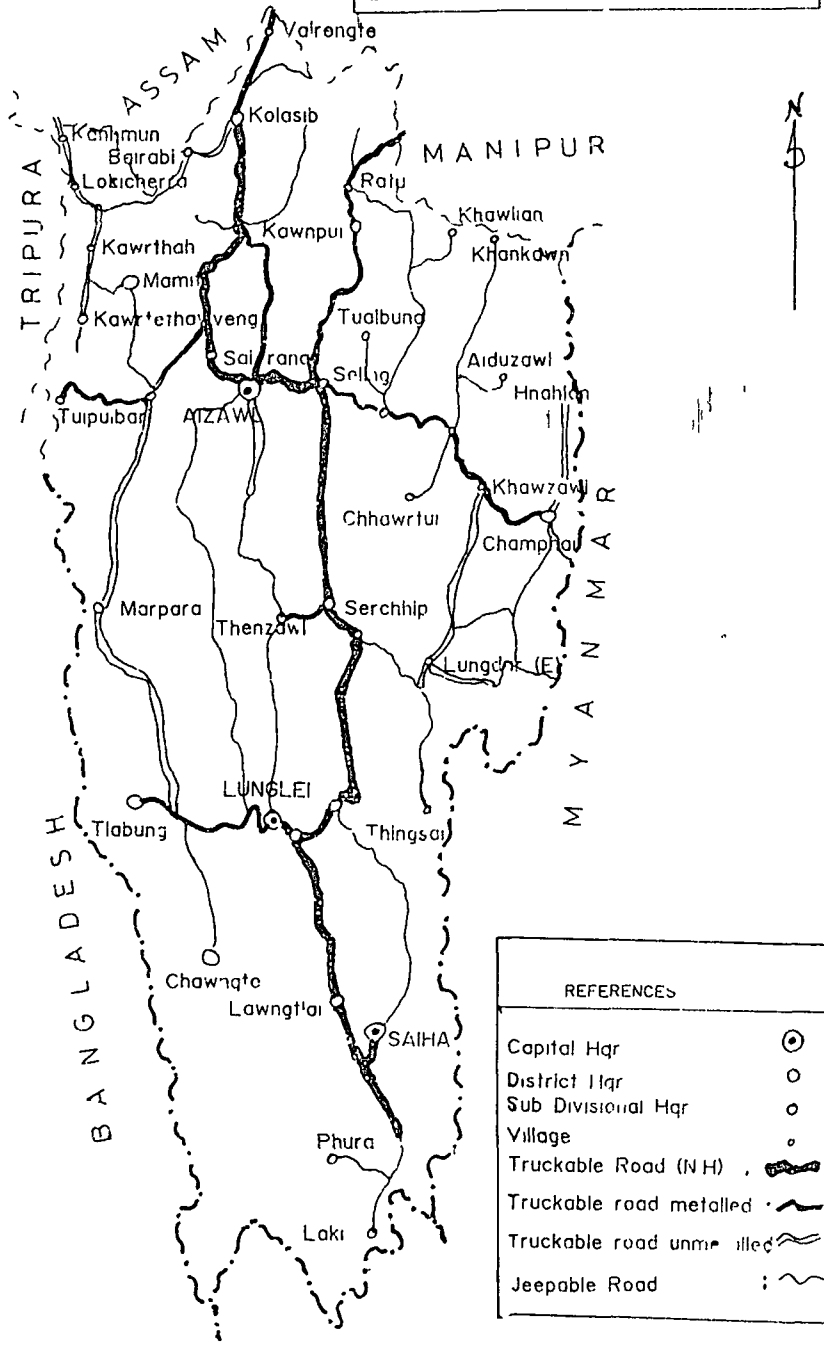
FIG 38a

result, the accessibility lines link the areas by a longitudinal stripes. The east-west construction of roads is beset with enormous obstacles as it has to cross numerous ranges, but has to be constructed in such a way that steep slopes and blind curves are reduced to minimum. As such the east - west roads are constructed in folded lines, cutting several escarpments, streams, spurs and rivers and therefore, the detour index is high in Mizoram.

The fig. 3.8h shows road net work in Mizoram which reveals that all the urban centres are well connected with metalled roads. Due to this transport and communication facilities available in the urban areas, they are the concentration of industrial establishment. In fact, almost all the 143 industrial locations are scattered all over the state are reached either by metalled roads or steppable roads. It means that transport and communication facilities play an important role both in the process of urbanization and industrial development in the state.

Ultimately, as per the 1991 census, the share of rural population to total population has decreased to 53.90 percent and the urban population constituted as much as 46.10 percent. The main reason behind the rapid urbanization, is the creation of new urban centres. In fact, there were only 6 urban centres in 1951 whereas there were as much as 22 urban centres as per 1991 census (Table 3.12).

MIZORAM ROAD NET WORK



REFERENCES	
Capital Hqr	⊙
District Hqr	○
Sub Divisional Hqr	○
Village	○
Truckable Road (NH)	—
Truckable road metalled	—
Truckable road unmetalled	~
Jeepable Road	- - -

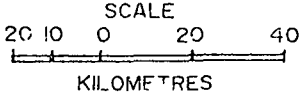


FIG 38b

Table 3-12 : Population and SSI Units of Urban Centres in Mizoram (1971)

Sl. No.	Name of Town	Total Population	% Share to total State's Population.	No. of SSI & CI Units	% Share to total State's SSI & CI Units
1.	Aizawl	155240	22.51	1134	51.43
2.	Lunglei	25599	5.16	208	9.43
3.	Champhai	20809	3.02	86	3.90
4.	Serchhip	13688	1.99	35	1.59
5.	Saiha	13669	1.98	17	0.95
6.	Lolasib	13482	1.95	62	2.81
7.	Thawzawl	2402	1.22	12	0.54
8.	Saitual	2104	1.03	22	1.00
9.	Vairengte	5607	0.81	11	0.50
10.	Hnahthial	5548	0.80	6	0.27
11.	N. Lawupui	5290	0.77	12	0.57
12.	Thenzawl	4502	0.65	116	5.26
13.	Darlawn	3609	0.52	13	0.59
14.	Namit	3546	0.52	9	0.41
15.	Serang	3527	0.51	7	0.32
16.	Zawlnuam	3455	0.50	-	-
17.	Tlabung	3409	0.49	-	-
18.	N. Vanlaphai	2804	0.41	7	0.32
19.	Danabi	2421	0.35	-	-
20.	Diato	2325	0.34	12	0.54
21.	Khawhai	2102	0.30	-	-
22.	Lengpui	1808	0.26	-	-
Total Mizoram		317946	46.09	2205	92.63

Source: (i) Statistical Handbook 1972, p. 15.
(ii) Industry Directory, 1970.

It has been observed and resultantly generalised that although topography creates hindrances in development, the construction, extension and intensification of infra-structural facilities like road networks and electric power supplies accelerate the process of urban growth resulting into development and diversification of secondary activities. In fact, road networks help in mobilising the rural labour force to migrate to urban areas and the better hydro electric power

grid systems provide power facilities to the establishments and growth of new SSI & CI units in such areas. Therefore, it has been observed that there is a significant and positive relationship between the sizes of urban centres and concentration and diversification of SSI and Cottage Industrial units in Mizoram ($r = 0.970$).

(2) Occupational Structure :

In order to ensure effective man power planning a clear knowledge of the working force, occupational structure and sex-wise participation in work are very much essential because the type of physical resource base and social organizations are broadly reflected by these aspects. In fact, there is a close relationship between economic development and occupational structure. Accordingly, the economic development and growth are generally associated with certain distinct, necessary and predictable changes in the occupational structure.

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The occupational structure refers to the distribution or division of a country's population according to different occupations, viz., Primary activities, Secondary activities, and Tertiary activities. The Primary or agricultural sector includes cultivation of crops and other occupations connected with agriculture like animal husbandry, forestry, fishing, Bee keeping, mining and quarrying. This sector is directly related to the soil or in other words it is primarily based on land or nature. The activities based on processing, manufacturing, repairing and Servicing at any level, tiny, small, medium or

large scale are known as Secondary activities. The tertiary or Service sector includes trades, transport, communication, banks and other government and non-government services.

So far as Mizoram is concerned, it is an agricultural economy where concentration of labour force is still very high in the Primary sector. The census 1991 which is produced by the National Informatic Centre, Mizoram State Unit, shows that as much as 65.77 percent of the workforce in the state is still in the Primary sector whereas the secondary and tertiary sectors shared 2.82 and 31.41 percent respectively.

Looking into the Districtwise break-up of occupational structure as per the 1991 Census, Chhimiupur District has the highest percentage share of labour force in Primary sector which is 78.98 percent. The District has 0.75 percent in Secondary Sector and 20.27 percent in the Tertiary activities. Aizawl District, the most developed among the three Districts has 61.15 percent in Primary sector whereas 3.66 percent in secondary and 35.19 percent in the Tertiary activities. Lunglei District has 72.62 percent in Primary 1.27 percent in secondary and 26.10 percent in the Tertiary activities.

The detail occupational structures of the state at the Block level is given in the Table 3.13. Looking into the Blockwise distribution of workforce into the Primary, Secondary and tertiary sectors with the help of Table 3.12, it is learned that the least share of primary sector (22.67%) is found in

Langnuam Block where Aizawl, the capital town is located. The second lowest percentage share of Primary Sector is seen in Lunglei Block where the second largest town, Lunglei is located. Thus, it indicates that when there is faster urbanization, there will be simultaneous shift in occupational structures from primary to secondary and tertiary activities.

Table 3.13 : Blockwise Occupational Structure, Mizoram 1991.

	Name of Block	Fig. (Fig. in %)		
		Primary	Secondary	Tertiary
1.	Zawinuaam	87.54	0.69	11.76
2.	W.Phalleng	90.87	1.22	17.90
3.	Reiek	86.80	1.51	12.19
4.	Langnuam	22.67	8.22	67.08
5.	N. Thungdawl	71.00	2.17	26.83
6.	Darjawn	85.92	1.01	13.97
7.	Arbawl	83.07	1.10	15.83
8.	Sorchhup	74.53	2.46	23.01
9.	Thingulthirah	72.29	2.18	25.53
10.	Ngopa	84.18	0.29	15.43
11.	Thawzawl	79.92	1.48	18.59
12.	East Lunglei	85.01	0.28	13.81
13.	West Bughmun	88.44	0.13	11.43
14.	Lunglei	85.84	0.28	13.88
15.	Lunglei	54.56	2.53	42.91
16.	Thahthai	81.19	0.31	18.00
17.	Chawngte	92.41	0.35	7.23
18.	Lawnglai	77.94	0.27	21.80
19.	Sangau	85.13	0.05	14.77
20.	Turpang	66.29	1.32	31.87

Source: NIC Mizoram State Unit, 1991.

(3) Work Force Distribution :

Work-force is the main component of human resource. Work-force or labour force means the share of the working population, (aging between 15-59 years of age) to total population in a given area or region. The quality and quantity of labour force are determined by its demographic factors.

Thus, sex, age and literacy are the main determinants of labour force. The table 3.14 shows that the percentage share of labour force to the state's total population is 42.07 percent whereas the corresponding figures in Tripura and Assam are 31.36 percent and 36.37 percent respectively (M.E.C., 1992, p. 10). The high share of workforce in Mizoram is may be due to immigration of other working people, rather than the non-working class. It means, the state has great potentials of workforce to be employed in future. The main aspects of work force can be interpreted by studying the work force on the basis of its distribution, rural-urban composition, male-female ratio, etc.

Table 3.14 : Districtwise Workforce Male & Female 1991.

Districts	Figures in percent		
	Total workforce	Male	Female
Aizawl District	41.42	61.67	38.43
Lunglei District	42.51	62.47	37.53
Chhantuipei District	44.84	58.96	41.04
Mizoram State	42.07	61.32	38.68

Source: NIC, Mizoram State Unit 1991.

Table 3.15 : Districtwise Workforce (Rural & Urban) Mizoram (1991).

Districts	Total workforce	(Figs. in percent)	
		Rural	Urban
Aizawl District	41.42	49.70	50.30
Lunglei District	42.51	64.74	35.26
Chhantuipei District	44.84	59.72	40.28
Mizoram State	42.07	58.33	41.67

Source: NIC Mizoram State Unit 1991.

So far as the distribution of the share of labour force to the total population is concerned, it is true that the highest percentage share in Districtwise is found in Chhittauipur District i.e. 44.83 percent. The share of female labour force is lowest in Lunglei District i.e. 37.53 percent whereas it is 41.04 percent in Chhittauipur District (Table 3-14).

The work force distribution into Rural and Urban areas as shown in Table 3-15 reveals that the concentration of labour force within the rural areas is found to be the highest in Mizoram when compared to other N.E. States. As high as 58.03 percent of the labour force is found in rural areas in Mizoram whereas the corresponding figures in other states are 53.04 percent in Arunachal Pradesh, 37.00 percent in Assam, 41.47 percent in Manipur, 45.95 percent in Meghalaya, 45.58 percent in Nagaland, and 31.80 percent in Tripura (MEC 1992, p. 10).

The high concentration of labour force in the rural areas is very much caused by poor transport and communication network resulting into the immobility of labour movements from rural to urban and vice versa.

The Table 3-15 reveals also that the concentration of labour force in rural areas in Mizoram is highest in Chhittauipur District where it is as much as 89.72 percent. The other two districts, Aizawl and Lunglei Districts has 49.70 percent and 64.74 percent respectively. The Urban labour force in Aizawl District shares 50.30 percent of the labour force

within the District whereas the corresponding figures in cases of Lunglei and Chhittagpur Districts are 30.26 and 10.73 percent respectively.

ii

The labour force distribution at the Block level is shown in the Fig 3.9. The Fig 3.9 reveals that in the Block level distribution of workforce, Lawnglaj block has the highest share of labour force, which is 50.53 percent. The second highest labour force with 47.50 percent is found in Chawngte Block. The lowest labour force of 38.41 percent is found in the Luipang, Sangau, Lunglei, Aibawl, Hlangnam and Hringdawl Blocks. The share of labour force in percentage is 44.47 percent in Hnahthial, Lungdai E., Serchhip, Phawzawl, Daulawn and Zawlnam Blocks. It is 41.44 percent in the remaining blocks like Lungsen, West Burghmun, W-Pharlong, Kotel, Thingsuithlial and Ngopa.

From the Fig. 3.9, it has been observed that the remote and least served by the road network blocks are having higher workforce proportions whereas the central belt, well served by road networks with larger urban centres like Vaivengle, Lolasih, Aizawl, Serchhip, Lunglei, Saha zone has lesser percent of workforce population. This indicates that in the central longitudinal belt the share of children population is larger and life expectancy is higher. There are other causes of variation in the percentage share of total workforce and

ii

WORK FORCE DISTRIBUTION 1991

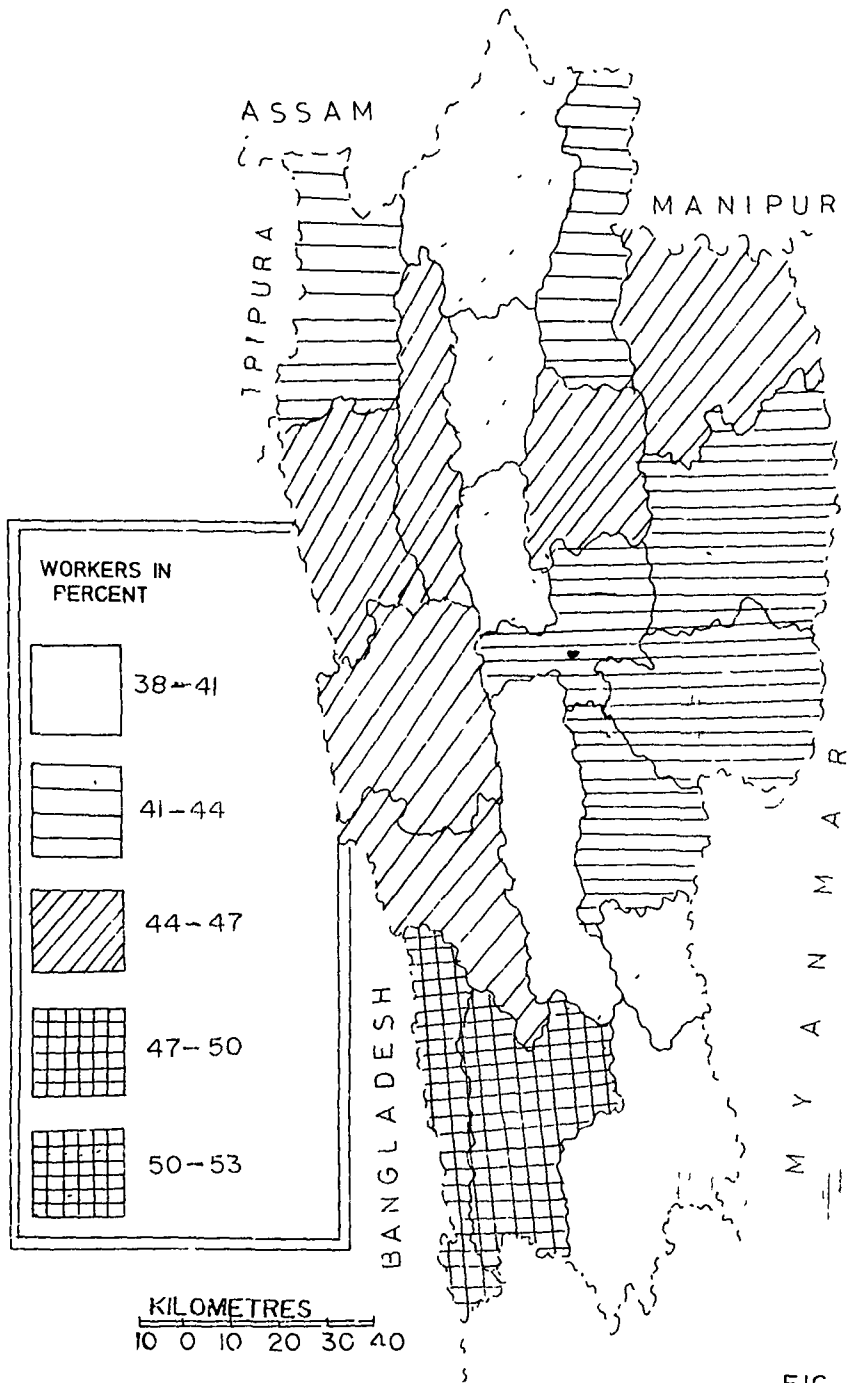


FIG 3 9

Literacy is one such important factor. Therefore, there is need of detailed study of literacy patterns in Mizoram.

(1) Literacy : Literacy is a main factor influencing either directly or indirectly on the capabilities of work-force and skilled labour availability. Though the art of reading and writing was known to the Mizos as late as 1894, literacy at present is remarkably higher than the other states of India. According to 1901 census, literacy rate was 0.93 percent which became 19.48 percent in 1941 (Fig. 3-10). The literacy rate as per 1991 was **81.23** percent (aged 7 years and above) and the state has become the second highest in India (Fig. 3-11). The fast increase in literacy rate in the state may be because of the efforts at the central and state levels coupled with the general awareness of the people in the art of reading and writing.

The figure 3-10 reveals that the literacy rate in Mizoram goes on increasing right from 1901 to 1991. In fact, excepting the first three decades, i.e. 1901-1931, the other decades recorded more than 6 percent increase in literacy rate.

The distributional patterns of the level of literacy (Fig. 3-11) shows that the lowest literacy level is found in the south-western parts of Mizoram, which is Chawngte Block. The possible reason behind its remarkable low literacy rate are (1) the poor transport and communication facilities and (2)

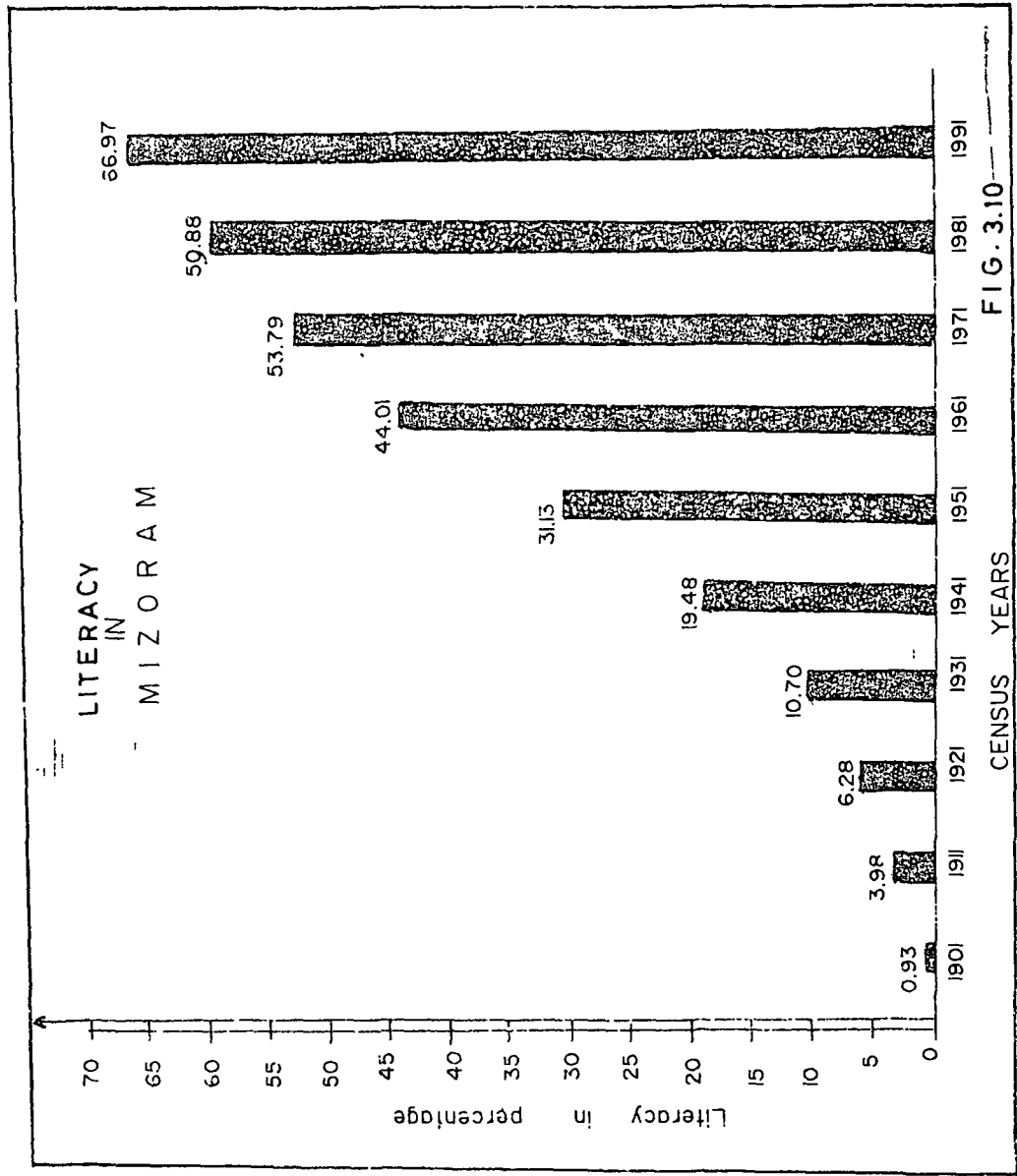


FIG. 3.10

LITERACY LEVEL BLOCK WISE 1991

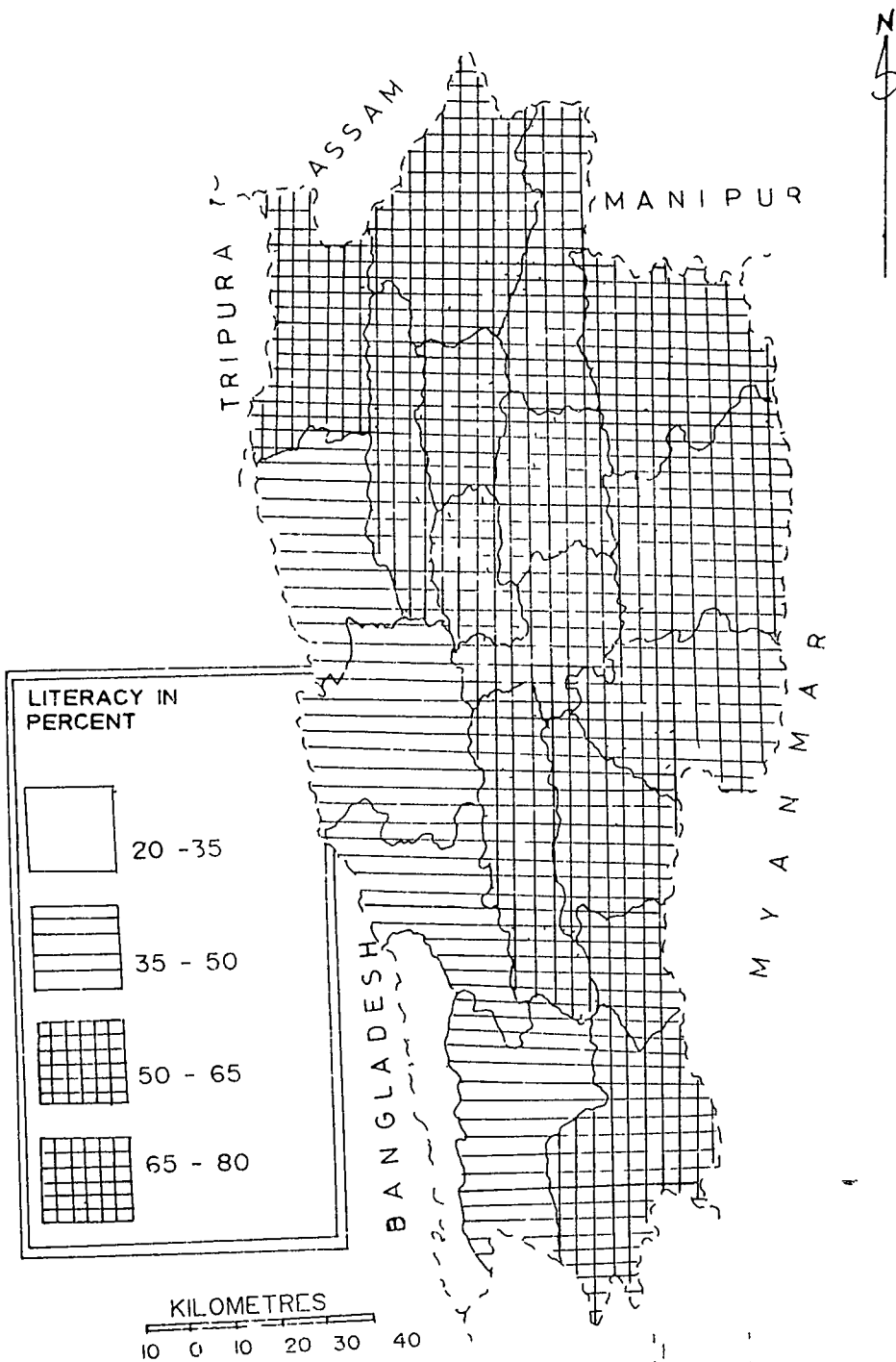


FIG 311

High Concentration of backward tribes like Chalma, Piro and Riang in the Block.

Table 3.16 : Blockwise Literacy in Mizoram (1991)

Sl. No.	Name of State/District/ Block	Literacy in Percent		
		Total	Male	Female
	Mizoram	66.97	54.46	45.54
1.	Aizawl District	71.89	53.55	46.45
2.	Lunglei District	63.63	55.77	44.23
3.	Chhimitpui District	47.22	59.09	40.91
4.	West Bunglei Block	44.56	61.26	38.74
5.	Lunglei	42.26	62.52	37.38
6.	Lunglei	76.68	54.25	45.45
7.	Hnahthial	74.28	51.26	48.74
8.	Chawngte	20.08	77.81	22.19
9.	Lawngtlai	46.99	59.50	40.50
10.	Sangau	67.09	54.55	45.35
11.	Tupang	62.16	55.89	44.11
12.	Zawlnuam	55.28	55.50	44.50
13.	West Phaileng	43.46	65.31	34.69
14.	Ralei	73.45	54.00	46.00
15.	Hlangnuam	78.79	52.28	47.02
16.	N. Thingdawl	69.55	54.08	45.92
17.	Darlawn	69.03	52.43	47.57
18.	Aibawl	74.49	53.08	46.92
19.	Thingulthiah	74.53	54.02	45.98
20.	Ngope	60.55	53.98	46.02
21.	Phawzawl	72.57	53.32	47.68
22.	East Lungdar	71.06	52.40	47.52
23.	Serchhip	73.01	53.02	46.98

Source: N.I.C. Mizoram State, 1991.

Note : Including children below 7 years of age.

The other Blocks like W. Bunglei, Lunglei, Lawngtlai, and West Phaileng are having literacy rate from 35 to 50 percent. All these blocks are located in the longitudinal belt of the Western part, (excepting Lawngtlai Block), bordering with Bangladesh. The Blocks in the western part of the state, close

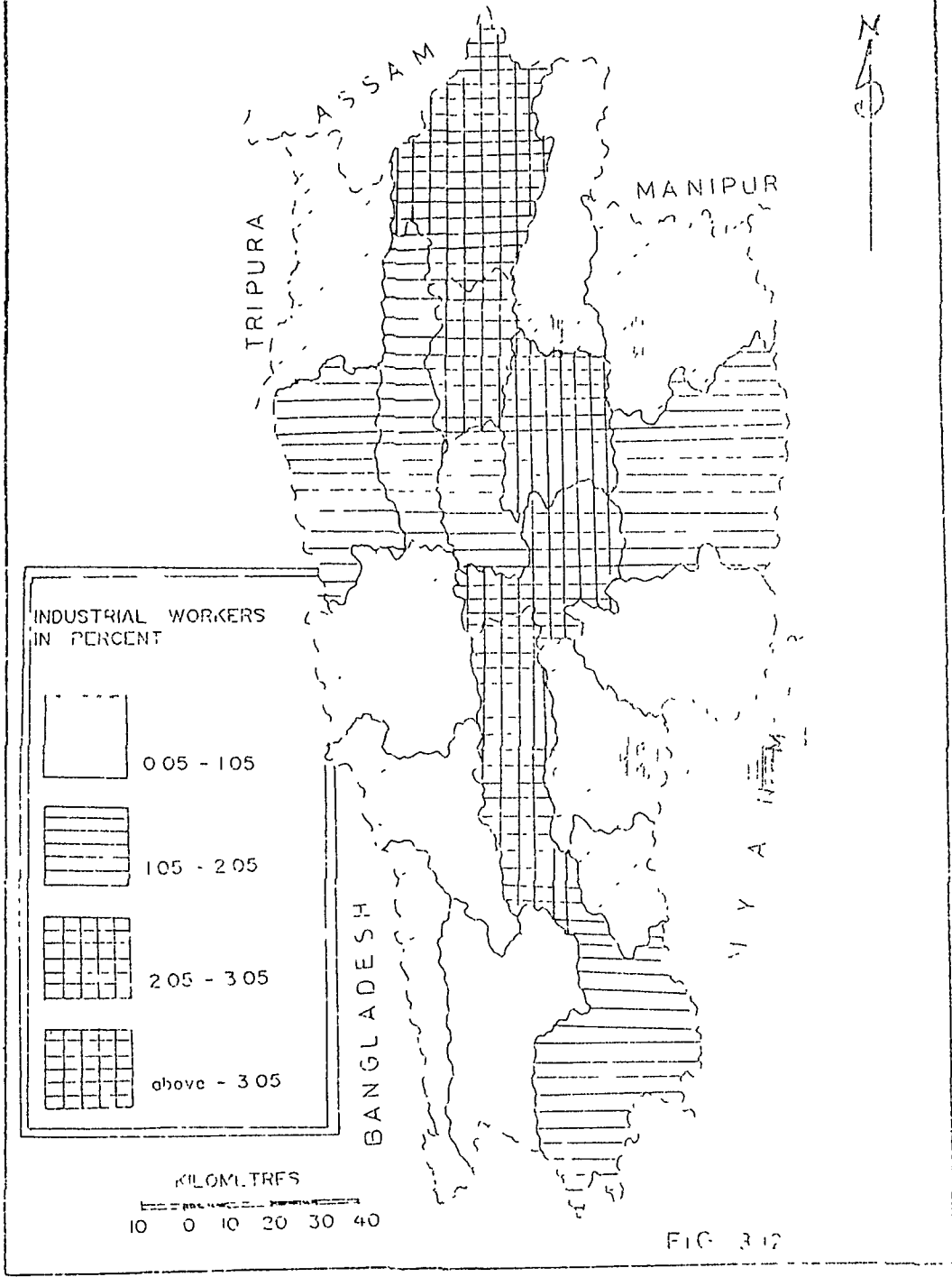
to the Bangladesh border exhibit comparatively low rate of literacy. This western belt with low literacy rate is the concentration of the more backward classes and immigrants from Bangladesh. The belt is also not well served by transport network. The only block in the western side exhibiting a high literacy of 50-65 percent is the Zawlnuam Block, bordering with Tripura. Turpang and Sangau Blocks in the Southern part are having literacy rate between 50 and 65 percent. Literacy rate is above 70 percent in Lungler, Hnabthial, Kerei, Tlanquam, Aibawl, Thingsulthiah, Thawzawl, East Lungdar and Serchhip blocks. The Tlanquam Block is having the highest literacy rate, i.e. 78.79 percent. Thus, the North, Central and Eastern most parts of the State have very high literacy rate (above 65 percent).

The Table 3-16 provides the comparison between male and female literacy rates at the Block level. Among the Districts, Chhumbupui District has the highest male literacy with 59.09 percent whereas the female literacy rate is highest in Aizawl District with 46.45 percent. The difference of male and female literacy rate is found to be highest in Chawngte Block where male literacy rate is recorded 77.81 percent while female literacy is 22.19 percent only. The female literacy rate is always lower in all the 20 Blocks. There is not much areal variations in the percentage share of male as well as female literates in the state.

(ii) Distribution of Industrial workforce : The distribution of workforce in the Industrial sector at the Block level is shown in the Fig 3-12. The total strength of the industrial labour force at the state level is as low as 2.02 percent (1991) which is insignificant. Accordingly, the strength of industrial workers to the total workforce in each and every block is very low. The Fig 3-12 reveals that 10 blocks out of 20 are having industrial labour force below 1.05 percent. The highest percentage share of industrial labour force is found in the Flangnuam Block above 3.05 percent and this is the block where Aizawl, the Capital town is located. The remaining four Blocks, Lunglet, Serchhip, Thingsulthiah and Thingdawl are having industrial labourforce between 2.05-3.05 percent group.

It can be observed from distribution map of industrial workers (Fig. 3-12) that the central longitudinal belt where the percentage share of total workforce to total population is low with well connected road networks with moderately urbanisation, has higher percentage share of industrial workers. Therefore, there is easily availability of the workforce even in the other parts of the state but the industrial setup is weak which would be studied separately in the next Chapter.

INDUSTRIAL WORKERS BLOCK WISE 1991



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CHAPTER IV

Growth and Distribution of Industrial Establishments :

Introduction

Sectoral Shift of Labour Force

Employment, Investment, Production and Distribution

INTRODUCTION

The industrial sector remained neglected and unorganized in Mizoram over years after it attained the status of Union Territory in January 1972. It was only since September 1977 that a more or less proper and systematic development started with the mere functions of registration of Small Scale and Cottage Industries. There was no other Large or Medium Scale Industries in the State at that time. Therefore, the nature of growth, trend, composition, location and other attributes of Small Scale and Cottage Industries prior to 1977 were not traceable.

The registration of Small Scale and Cottage Industries was started only in Aizawl District by September 1979 at the District Industries Centre (DIC), Aizawl. Within that year itself, only 15 industrial units, namely Bakery (1), Furniture workshop (3), Woollen Garments (1), Cotton Mills (1), Tyre Retreading (1), Candle making (4), and Milling and Searing (4) units were registered. In these registered 15 industrial establishments only 107 persons were employed.

The registration of Small Scale and Cottage Industries in the other districts, Lunglei and Chhramtupur, were started by 1980 and 1985 respectively. In 1980, Lunglei District registered 46 units with 213 employees whereas Chhramtupur District in 1985 had registered 22 units with 185 employees.

In the present research work, only the units having permanent registration are taken into consideration. The detail informations about the permanently registered units are obtained from the Directory of SSI in Mizoram as on 31-3-90, prepared by the Directorate of Industries, Government of Mizoram and the North Eastern Industrial Consultants Ltd. (NEIC Ltd), Imphal Urban Cooperative Bank Building, H. G. Avenue, Imphal (Manipur). Therefore, the figures and other secondary informations here are related to the said Directory.

GROWTH TRENDS

A Growth Trends in General :

In the Industry Directory, Small Scale & Cottage Industries are registered tradewise. It is, therefore, identified that there are 52 (excluding miscellaneous group) trades operating in Mizoram. These 52 different trades are classified into eleven industrial categories as per the classification given by the Ministry of Industries, Government of India, New Delhi. The table 4.1 shows the annual increase in number of registered units with the corresponding employment increase in each district from September 1979 to March 1990.

Table 4.1 : Districtwise SSI Units and Industrial Workers in Mizoram (1990).

Year	Aizawl District		Lunglei District		Chhimituipui District.		Mizoram	
	No. of Units Regd.	No. of Person employ ed.	No. of Units Regd.	No. of person employ ed	No. of Units Regd.	No. of person employ ed	No. of Units Regd.	No. of persons employ ed
1979	15	107	-	-	-	-	15	107
1980	93	574	46	213	-	-	139	787
1981	99	490	19	65	-	-	118	555
1982	118	753	10	41	-	-	128	794
1983	94	480	2	3	-	-	96	483
1984	64	313	17	81	-	-	81	394
1985	154	879	22	96	29	185	205	1160
1986	308	1569	25	94	10	79	343	1742
1987	329	1756	44	184	-	-	373	1940
1988	150	840	42	164	10	50	202	1054
1989	336	1871	39	156	98	342	473	2369
1990*	25	164	7	25	-	-	32	189
Total:	1785	9796	273	1122	147	656	2205	11574

Source: Industry Directory ,1990.

* - Figures of 1990 account for the registration during 1 Jan. to 31 March 1990 only.

The Table 4.1 clearly shows that with increase in number of registered units, the corresponding employment figures are also increasing. With the humble starting of 15 units with 107 employees in 1979, the figures have grown to 2906 units with 11574 employees by March 1990 showing an average annual growth rate of 148.55 percent in industrial units and 137.06 percent in industrial employment during the last decade (1980-90). It indicates that the growth rate in employment is significantly lower than the physical growth of the industrial establishment. This, in turn, shows that the industrial units are still very small and they are not able to absorb more labour.

The average annual growth rate of industrial units during 1979-80 was 826.67 percent with the corresponding growth in employment at the rate of 635.51 percent. But the year 1980-81 shows a noticeable decrease in industrial employment and units. Though a little increase was recorded from 1981 to 1982 both in total units registered and employment, the next two years, i.e., 1983 and 1984 show a decline. However, there was a very high increase in annual rate in case of units registered (153.09%) and in employment (194.42%) during 1984-85. Again a decrease has been recorded during 1988 both in the employment and units registered. But from 1988-89, there is an upward trend. In 1989, the total units registered was recorded as 473 and the total new entry of labour was 2369 persons, showing a growth rate of 134.16 percent in case of units registered and 124.76 percent in case of employment over the previous year. The Fig. 4.1 shows the clear picture of the trends both in

units registered and entry of labour force in the sector during 1979-1990.

With the help of the Fig. 4-1 and from the light of the above discussion, it can, therefore, be concluded that even though there are entries of new registered units and industrial employees in industrial sector every "year", the rates are significantly fluctuating from year to year. A high growth rate in a particular year does not necessarily indicate the growth in the next year. Rather, a positive growth in a particular year is followed by a significant decline in the next year and vice-versa. Besides, it also seems that the growth in the registered industrial units is always corresponded by a substantial growth in employment. In other words, when the new entry of industrial units is less, the entry of industrial employees is also less. This indicates the non entry of bigger industrial establishments in the sector so far.

The main reason behind how the 15 registered units in 1979 could grow to 2205 units in 1990 March may be single out that the people in general became aware of the importance of the sector as well as its creativity of self-employment schemes. Like other states, Mizoram is also having acute unemployment problems both in rural and urban as well as educated unemployment. These jobless people having no alternative are compelled to go for secondary occupations either to be employed or employer. Therefore, the total magnitude of registered Small

SSI & COTTAGE INDUSTRIAL UNITS WITH
EMPLOYMENT (YEARLY CUMULATIVE TREND 1979-89)

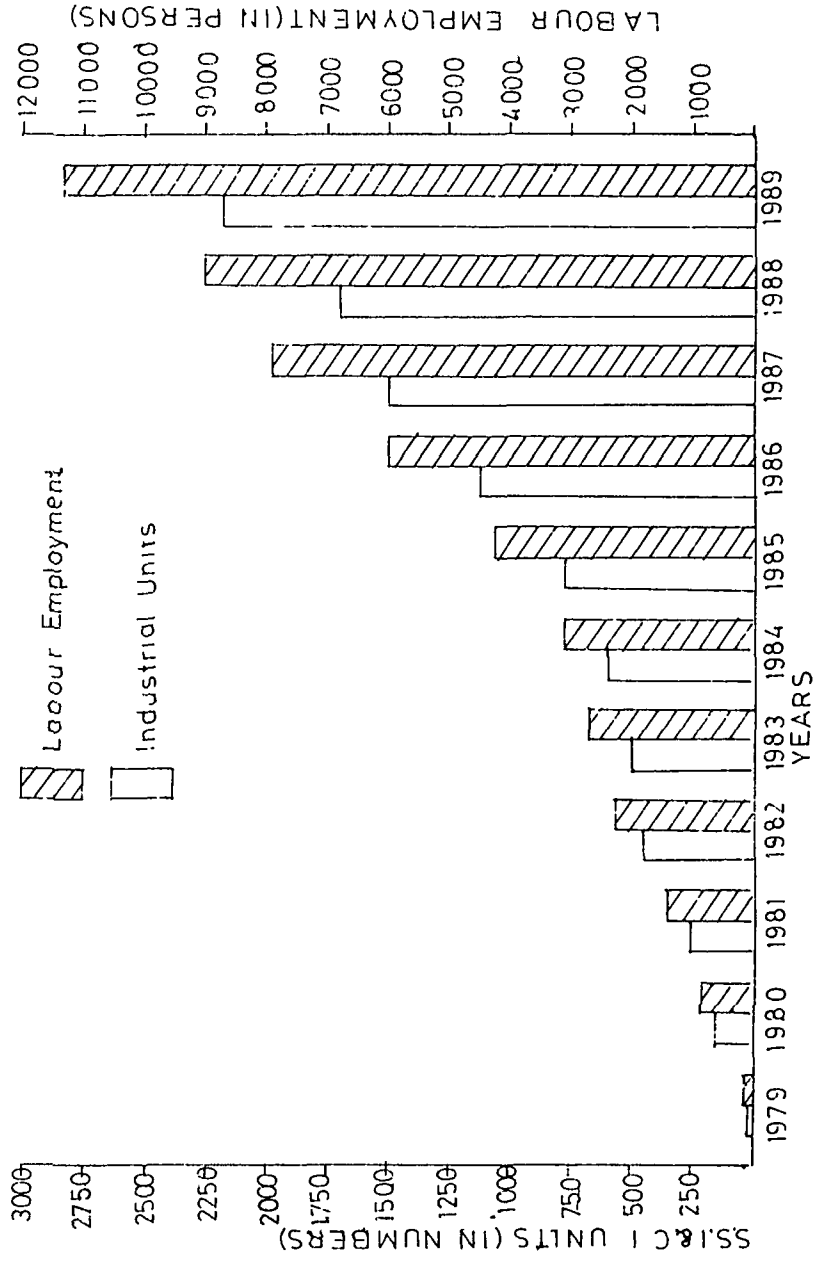


FIG 4.1

Scale and Cottage Industrial units and persons engaged in the sector are bound to increase physically.

But it is still surprising to learn that the year-wise units registered and entry of labour force in the sector is highly fluctuating through out the 12 years under consideration. It can be seen that only in the last quarter of 1979, registration of SSI and Cottage Industries have been introduced. But when registration from the government side was introduced, and facilities like industrial loans, grants-in-aid, subsidies, and raw materials, etc., were given on the basis of registration, the people seemed to be rushing to get registration from the Registering Authority during 1980. And in the year 1980, Lunglei District also introduced the registration of SSI and Cottage Industries. Therefore, the year 1980 recorded the highest rate (826.67%) in year-wise registered and 735.51 percent growth rate in employment. The year 1989 also recorded a high growth rate over the previous year, (i.e. 1988) at the level of 134.16 percent registered units and 124.76 percent growth in employment. The high growth rate in both the components in 1989 can be attributed to the programme launched by the Industries Department, Government of Mizoram such as:

- 1) Industrial convention (first in Mizoram) convened during July 1987 where more than 1600 participants attended.
- 2) Mizoram industrial fair "1988" (8th to 13th December 1988), held at Aizawl.

3) The Pronouncement of Industrial Policy of Government of Mizoram and Its Incentive schemes by March 1989.

4) Introduction of 'The Mizoram Preferential Stores Purchase Rules 1986' by March 1989.

These technical and practical programme launched at the state level were supposed to be convincing enough so as to motivate more people to come forward and establish their own industrial ventures. Besides, the state Government has also provided certain other facilities to industrial entrepreneurs. Thus, it happened that by the end of 1990, the total magnitude of registered SSI and Cottage Industries already became 2608 (Lairinga 1991, pp- 14-17).

All these events clearly indicate that the entrepreneurs in the Small Scale and Cottage Industries in Mizoram are very much at the mercy of the State Government. They are solely depending on the Government's aids and facilities provided by the same and as such they became habituated in seeking and waiting for helping hands from the administrative machineries. Therefore, the Industrial growth and development in Mizoram still seems to be accelerated by the State Government alone. If people find hopes in the attitudes, functions and standing policies of the State Government, they come forward to establish their own units. If the hope is not fulfilled in time, they find themselves nowhere. Thus, the entrepreneurs seek hopes, helps and facilities to each new ministry and the government's new programme. Actually, the growth in industrial units registered and employment in Small Scale and Cottage

Industries and the 'coming in' of the new ministry with its new project and programme are very much interrelated and reflecting each other throughout the 30 years of consideration. This fact can also be supported by studying the sectoral shift in labour force in the state.

B Sectoral Shift of Labour Force (1961-1991) :

It is an obvious phenomena that with the growth of population and economic development in a nation, the migration of labour force from primary sector to the other sectors of economy always takes place. This sectoral shift of labour force is significant and fast in areas or regions whereas in underdeveloped areas, it seems insignificant. Therefore, the sectoral shift of labour force is a clear indicator of the transformation of economic landscape.

Thus, for the study of the nature and trends of industrial development in Mizoram, the sectoral shift has been studied and examined by considering the last 3 decades (period 1961-91).

A careful study of the table 4.2 help to highlight the facts that among the three sectors of economy : primary, secondary, and tertiary, the secondary sector has recorded the highest proportionate change during the period. In fact, it increased at a very high rate to the tune of 47.73 percent growth rate during 1961-91. Of course, the total strength of the sector in each census year have been small volume compared

Table 4.2 : Sectoral Shift of Labour Force in Mizoram (1961-1991)

Sl.No.	Variables	1961	1971	1981	1991	Annual growth rate (in %)
1.	Total Population	266063	332390	493757	689756	5.31
2.	Decadal growth rate (in %)	35.61	24.93	40.55	39.70	
3.	Total work force (in persons)	125685 (47.23)	151619 (45.61)	206064 (41.73)	290317 (42.09)	4.37
4.	Total Non-workers (in persons)	140378 (52.76)	180771 (54.39)	287693 (58.27)	399439 (57.91)	6.15
5.	Primary Workers (in persons)	109551 (87.16)	127621 (84.14)	152186 (73.85)	190945 (65.77)	2.47
6.	Secondary Workers (in persons)	535 (0.43)	770 (0.51)	4563* (2.21)	8195 (2.82)	47.73
7.	Tertiary workers (in persons)	15599 (12.41)	23228 (15.32)	49315* (23.93)	91177 (31.41)	16.15

N.B. Figures in brackets indicate percentages.

* Projected figure

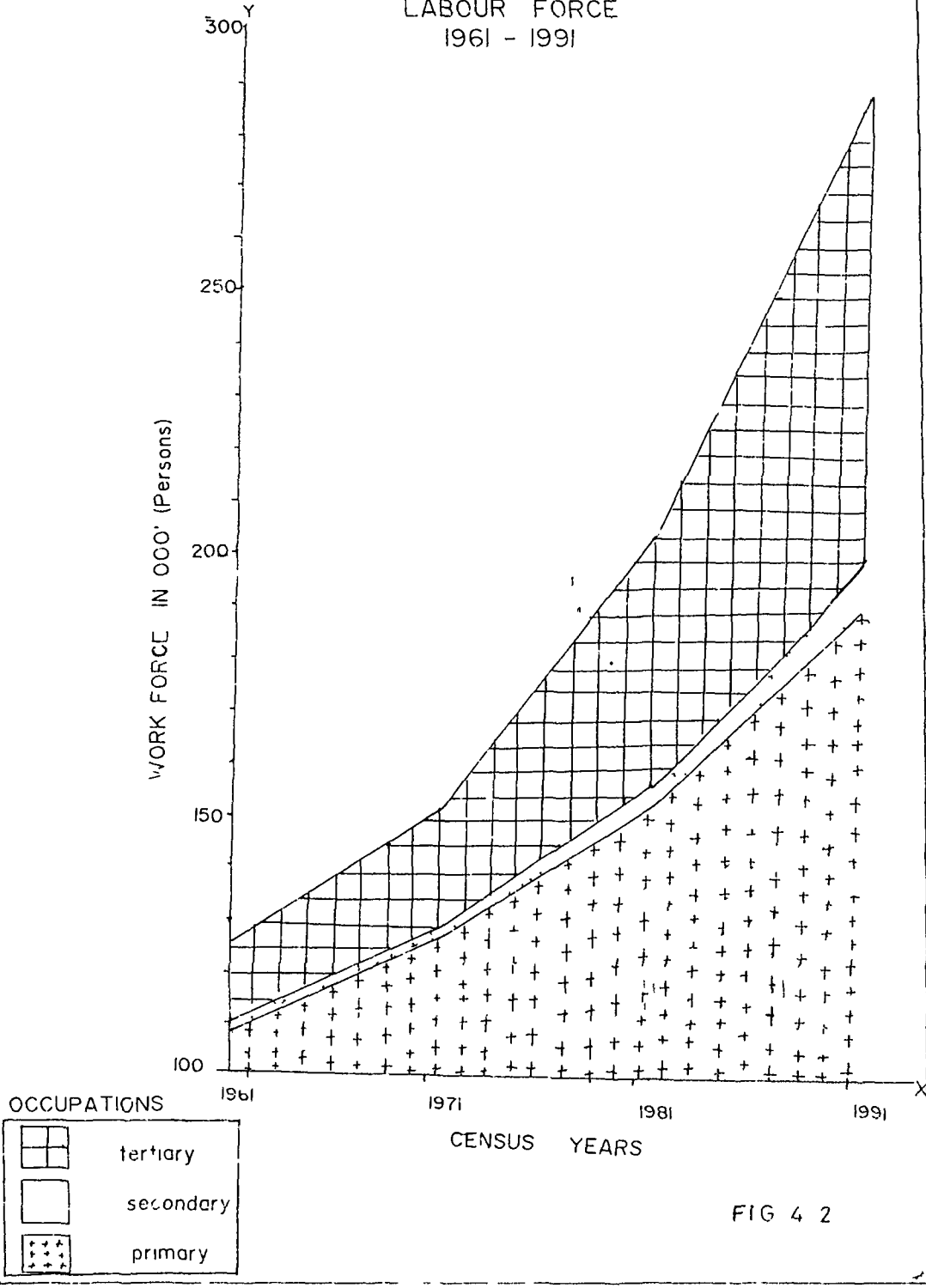
Source : Census figures.

to the other two sectors, but as far as growth rate is concerned the secondary sector recorded highest growth rate. In fact the sector shared only 9.43 percent of the total labour force in the state by 1961 whereas the primary and tertiary sectors shared 87.16 percent and 12.41 percent respectively in the same year. But, the secondary sector has been growing steadily whereas the primary sector shows gradual decrease in percentage share indicating a positive economic growth. But, the fact that the secondary sector, though recorded highest growth rate during the period claimed only 2.83 percent of labour force in 1991 whereas primary and tertiary sectors claimed 65.77 percent and 31.41 percent respectively in the 1991 which means that the economy of Mizoram as a whole is still agriculturally dominated and in dynamic form (Fig. 4.2).

With the help of Fig 4.7 and from the light of the above discussion, it can be observed that the percentage shared by the primary sector to the total workforce in each census years goes on decreasing though its total magnitude of workforce is increasing. By 1961 census, the sector shared 87.16 percent of labour force in the state. The actual percentage share by primary sector as per the 1971, 1981 and 1991 censuses were 84.17, 73.85 and 65.77 percent respectively indicating annual growth rate of only 2.47 percent in total magnitude of workforce.

The tertiary sector has also been showing an increasing trend but not with high rate. This sector has shown an annual

SECTORAL SHIFT IN
LABOUR FORCE
1961 - 1991



OCCUPATIONS




	tertiary
	secondary
	primary

FIG 4 2

growth rate to the tune of 16.15 percent. It is a cardinal phenomena that with an increase in total population by its natural growth or migration, there is simultaneous increase in the dependents and the workforce coming in the labour market to be absorbed in various categories of secondary and tertiary sectors (Table 4.2). A detailed study of the secondary sector is needed to find out the causes of the weakness of it.

C. Employment, Investment and Production Structure of SSI and Cottage Industries :

The total magnitude of industrial employment as per the 1991 census was still as low as 2.82 percent of the total labour force in the entire state. The informations as regards to categorywise employment, investment and annual production, are based on the Directory of Small Scale and Cottage Industries in Mizoram. The table 4.3 shows the picture of the attributes.

16 21
16 21

Table 4.3 : Category - wise Distribution of Industrial Units, Employment, Production & Investment in SSI & CI, Mizoram (1990).

Sl. No.	Industrial Categories	Total Units	Total Investment (Rs. 000)	Investment per unit (Rs. 000)	Annual Production (Rs. 000)	Average Production per Unit	Total Employment	Employment Per Unit (in round figures)
1.	Food Products & Allied Industries	252	4413.20	17.51	30919.06	122.69	969	4
2.	Woods & Wooden Products.	397	11279.88	28.41	48324.34	121.72	1894	5
3.	Textile & Textile Goods.	300	4906.52	16.36	43356.80	144.52	1652	5
4.	Paper Products, Publishing & Allied	100	7041.30	70.41	15851.38	158.51	698	7
5.	Rubber & plastic works.	35	6265.41	179.01	10846.50	307.89	183	5
6.	Chemical & Chemical Products.	55	380.87	6.92	5342.15	97.13	105	3
7.	Non-metallic & material Products.	55	9865.37	179.37	28830.20	524.19	747	13
8.	Basic metal & & allied Industries.	21	6237.20	297.01	14632.25	696.77	241	11
9.	Metal Products & parts.	57	755.55	13.26	6103.95	107.09	200	3
10.	Leather goods & repairing	21	121.87	5.80	283.85	37.53	51	2
11.	Service-based industries.	841	19576.14	23.28	78794.16	93.69	4268	5
12.	Miscellaneous industries.	71	7288.54	104.06	22825.34	321.48	406	7
Total		2205	77663.30		305876.05		11574	

Source : Industry Directory, 1990.

(A) Industries, Establishments and Employment : Table 4.3 reveals that Service based industries constituted the highest proportionate share (i.e., 38.14%) of the total industrial establishments in the entire state. Other prominent categories, in terms of their shares are Wood and Wooden Products (18.00%), textiles and textile goods (13.61%) and Food Products and allied Industries (11.43%). These four main categories constituted 81.18 percent of the total industrial establishments in the state whereas all the other 8 categories constituted only 18.82 percent of the total magnitude of industrial units in the state.

11
11

Looking to the employment character, it is recorded that by March 1990, the total strength of industrial labour in the state was 11574 persons showing the average employment per unit as 5 persons. Out of total Industrial labour employment, as much as 9796 (i.e. 84.64 %) persons were from Anzawl District whereas only 1122 (i.e. 9.69%) and 656 (i.e. 5.67%) persons were from Lunglei District and Chhitturpui District respectively. The number of persons employed per unit was recorded to be highest in the category of Non-metallic and Material products which constitute (1) Ice plant, (2) Stone Crusher/Stone works, (3) Brick making, (4) Cold drinks and (5) Chalk making. The employment per unit in the category was recorded 13 persons. This may be because of the fact that the Stone works (Quarrying) and the Brick making are very much labour oriented units requiring huge amount of manual labourers (Table 4.1).

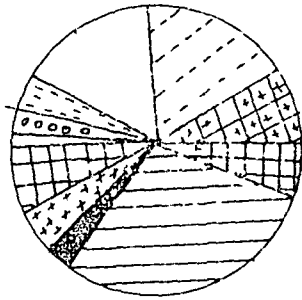
The least employment per unit was recorded in the case of Leather Goods and Repairing as leather work are carried on only with shoe repairing and making at the cottage level. Till now, no proper shoe making factory or industry is found in the state.

The Service-based Industries having the largest number of units is found to be employing as much as 6268 (i.e. 36.00%) persons in the whole state with 5 persons per unit on an average. Other categories like Woods and Wooden Products, Textiles and textile goods, and the Food products and allied industries recorded employment figures as 1879 persons (16.36%), 1652 (14.47%) and 696 person (6.00 %) respectively. The other remaining 8 categories employ 3064 persons (i.e. 26.47%). Thus, the four categories alone employ as much as 8510 persons (i.e. 70.53%) of the industrial labour force in the state. It means that with the growth in the physical industrial units, there is a corresponding growth in the employment structure. This fact further reveals that the units are not big enough to absorb more labour force at a time or a particular unit is always very small or tiny that it cannot employ more people. The details about this fact of labour absorption would be studied in the next Chapter. Therefore, if industrial development in the state is to be used as a strategy to fight the unemployment problems, the establishment of bigger units, Large and Medium scale establishments, are needed to come up either at the private or Corporation level or State Government level.

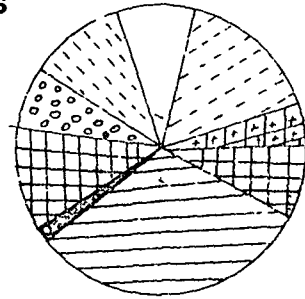
(b) Investment and Production Relationship : The careful study of the investment and production relationship reveals that the Capital Intensive units like basic metal and Allied Industries, Non metallic and Material products and Rubber & Plastic Industries are having higher investment in terms of plant and machineries. But some categories like Chemical and Chemical products, Leather goods and repairing, textile goods, etc., exhibit a small investment in plant and machineries. Though it is understood that higher investment will return higher production and vice-versa, the rate or average return per unit of investment is also equally important for consideration. Thus, while considering the return per unit of investment, the Chemical and Chemical Products of the candle making has shown the best return i.e., 1:14 ratio. The textiles and textile goods have the investment and production ratio as 1:9; Metal Products and Parts as 1:8, Food Products and Allied industries as 1:7, Leather goods and repairing as 1:6, Woods and Wooden Products as 1:4; Service based industries as 1:4. All other categories are having below 1:3 investment production ratio (Table 4.3).

The percentage share of each category in terms of units, employment, investment in plant and machinery and production are shown in Fig. 4.3. These four figures, showing the different attributes of SSI and Cottage Industries in Mizoram help us to identify, in more detail about the respective percentage shares of each category in terms of the above four components of attributes. The Service based industries seem to

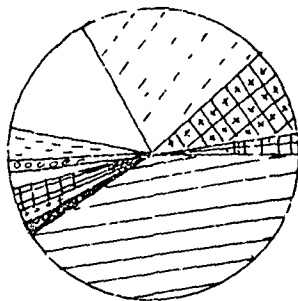
INDUSTRIAL ATTRIBUTES



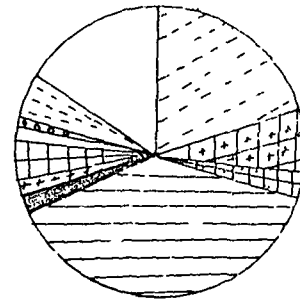
PRODUCTION



INVESTMENTS



INDUSTRIAL UNITS



EMPLOYMENT

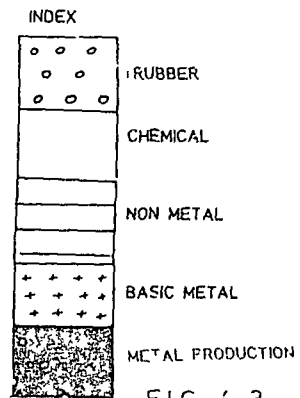
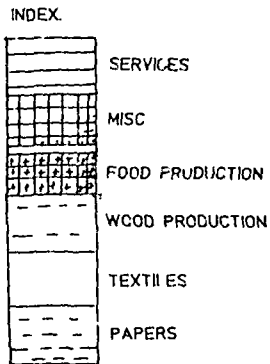


FIG 4 3

be getting the lion's share in each and every figure indicating that the industrial development in the entire state is yet very low and simple.

In order to speed up the industrial development in a sustained manner, the state has to develop Agro-based, Forest-based, Textile-based industries. These industrial categories are having vast scope for future development because raw materials are always locally available.

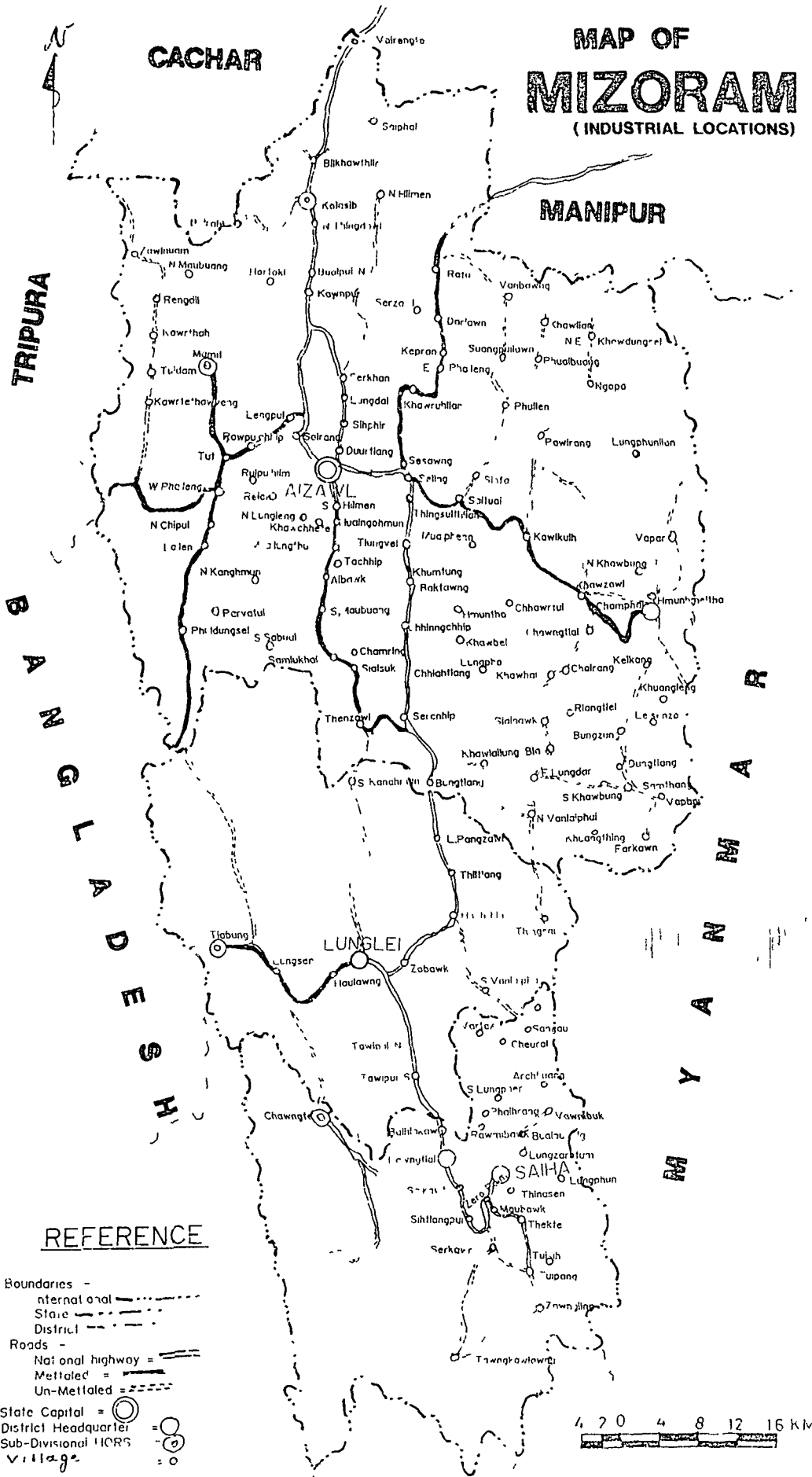
LOCATIONAL-ANALYSIS

A. District-wise Strength :

As per the information given in the Directory of Small Scale and Cottage Industries in Mizoram, 1970, the strength of the registered Small Scale and Cottage Industries was as much as 2205 units in the entire state. These registered units are scattered within 143 Centre/Villages including all towns (Fig. 4.4). Out of these 143 centres, as much as 103 (72.03%) centres are located in Aizawl District whereas as low as 13 (9.09%) and 27 (18.88%) centres are located in Lunglei and Chhimiulpui Districts respectively. Again, out of the 143 industrial locations, there are only 28 centres having more than 5 industrial units which incorporate as much as 80.42 percent of the state's industrial units. It means that only 19.58 percent of the industrial centres constitute 80.42 percent of the total industrial units in the state. The districtwise break-up of the total magnitudes of industrial units and industrial labour

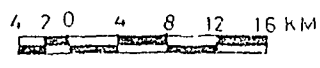
MAP OF MIZORAM

(INDUSTRIAL LOCATIONS)



REFERENCE

- 1 Boundaries -
 - Internal - - - - -
 - State - - - - -
 - District - - - - -
- 2 Roads -
 - National highway = ==
 - Metalled = ———
 - Un-Metalled = - - - - -
- 3 State Capital = (○)
- 4 District Headquarter = (○)
- 5 Sub-Divisional HQR'S = (○)
- 6 Village = (○)

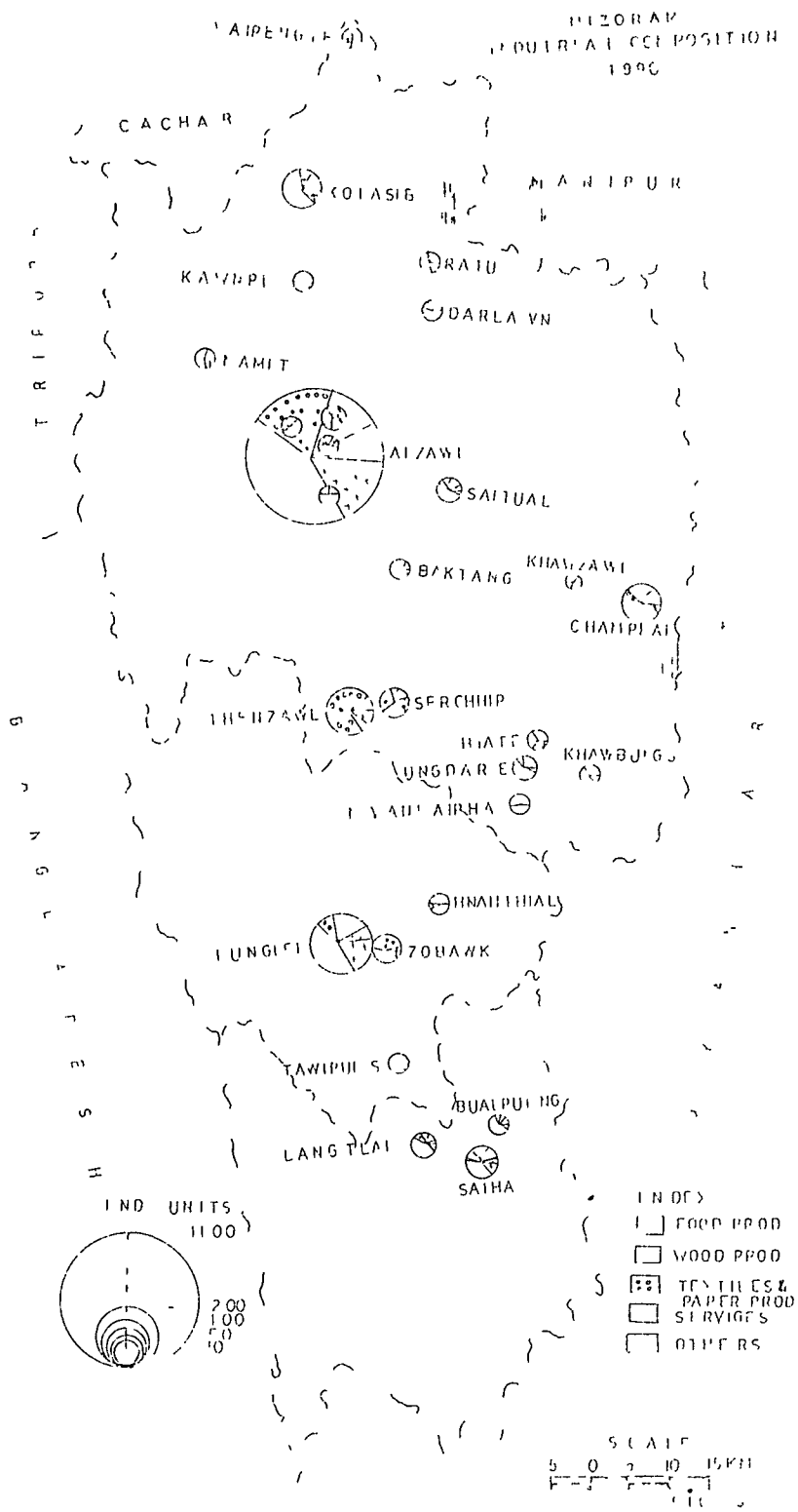


shows that out of these 78 selected industrial locations, as much as 21 centres (i.e., 27%) are located in Aizawl District. Only 3 centres are located in Lunglei District whereas 4 centres are located in Chhimitupui District (Fig. 4.5 for detail).

The Industry Directory has recorded as much as 56 different trades in the entire state, including miscellaneous group for the name of trades of each industrial category (Appendix D). Out of these total different trades, 30 trades (i.e., 53.57%) are found only in Aizawl District. The different trades operating only in Aizawl District are: (1) Cloth making, (2) Oil Mill, (3) Gar making, (4) Fruit preservation, (5) Spices, (6) Paddy dehusking, (7) Saw Mills, (8) Embroidery, (9) Hood making, (10) Woollen Garments, (11) Cotton Mills/Cotton Ginning, (12) Plastic Industry, (13) Ice factory, (14) Brick field, (15) Cold Drinks, (16) Chalk making, (17) Iron & Steel Industry, (18) Steel Fabrication, (19) Aluminum works, (20) Automobile body building, (21) Two wheelers/Scooter repairing and servicing, (22) Refrigerator repairing & servicing, (23) Cycle and Petromax repairing and servicing, (24) Diesel Injection pump repairing and servicing, (25) Type-Writer repairing and servicing, (26) Dental Clinic, (27) Dry cleaner, (28) Opticals, (29) Jewellery and (30) Dyeing.

Therefore, the Aizawl District alone has as much as 1785 (80.95%) out of the total industrial establishments of the

INDIA
INDUSTRIAL COMPOSITION
1990



state. Lunglei District has 273 units and Chhimitpur District has only 147 units indicating as much as 17.38 percent and 6.67 percent respectively (Table 4.1).

B. Spatial Distribution of SSI Units :

By taking into account, the whole picture of Mizoram with regards to the spatial distribution of the industrial units, it seems that there is remarkable regional imbalance. Out of the total registered SSI and Cottage Industrial units, Aizawl District alone accounts for 80.95 percent of total industrial strength of the state whereas within the district Aizawl town alone has as much as 1134 units (i.e. 51.43%). Lunglei town has 208 units whereas the Saha town contribute only 37 units.

Within the Aizawl District itself, Aizawl town alone contributes as much as 63.53 percent of total industrial units of the district. Other important centres are Thenzawl with 116 units, Champhai with 86 units, Lolasib with 67 units. In Lunglei District, Lunglei town alone has 208 units which is 76.19 percent of the total units in the District. Next to Lunglei town is Zobawl with 25 units whereas other locations are negligible. The same pattern of distribution of the industrial establishment can be seen in Chhimitpur district also. The District Headquarters, Saha town alone has 57 units which is 38.77 percent of the District total. Lawngtlai, the second town has 32 units whereas the next, Bualpur (NG) has only 10 units.

For finding out more details about the distributional patterns of industrial establishments, 28 main centres are selected. These 28 centres include 1965 industrial units which is 89.12 percent of the state's total strength of industrial establishments. The areal pattern of distribution of these 1965 units within the selected 28 locations is shown in Fig. 4.5. Distributional pattern shows a concentration of industrial locations alongwith the main National Highway. The distribution of industrial units of major four categories like Wood-based, Textile-based, Food based, and Service based industries which constitute 1574 units, more than 80 percent of the units of the 28 locations shows that the Food products and allied industries are distributed with less concentration on one centre because they are demand based industries. Consequently the distributions of population and Food products industrial units have the similar patterns. While Service-based and Textile-based industrial units are concentrated towards one centre (i.e., Hazrat) of the region (Fig. 4.6).

Of course, a major share of Service based industrial units (485 out of total 783) and of Textile and Textiles goods industrial units (152 out of total 290) are concentrated only on Hazrat town of the major interacting centre of the state (Table 4.4). Thus, it can be said that the distributional patterns of industrial establishments are influenced by the demand of the state's population. Since population is distributed unevenly, the distribution of industrial establishments follows the same patterns.

MAJOR INDUSTRIAL LOCATIONS OF MIZORAM

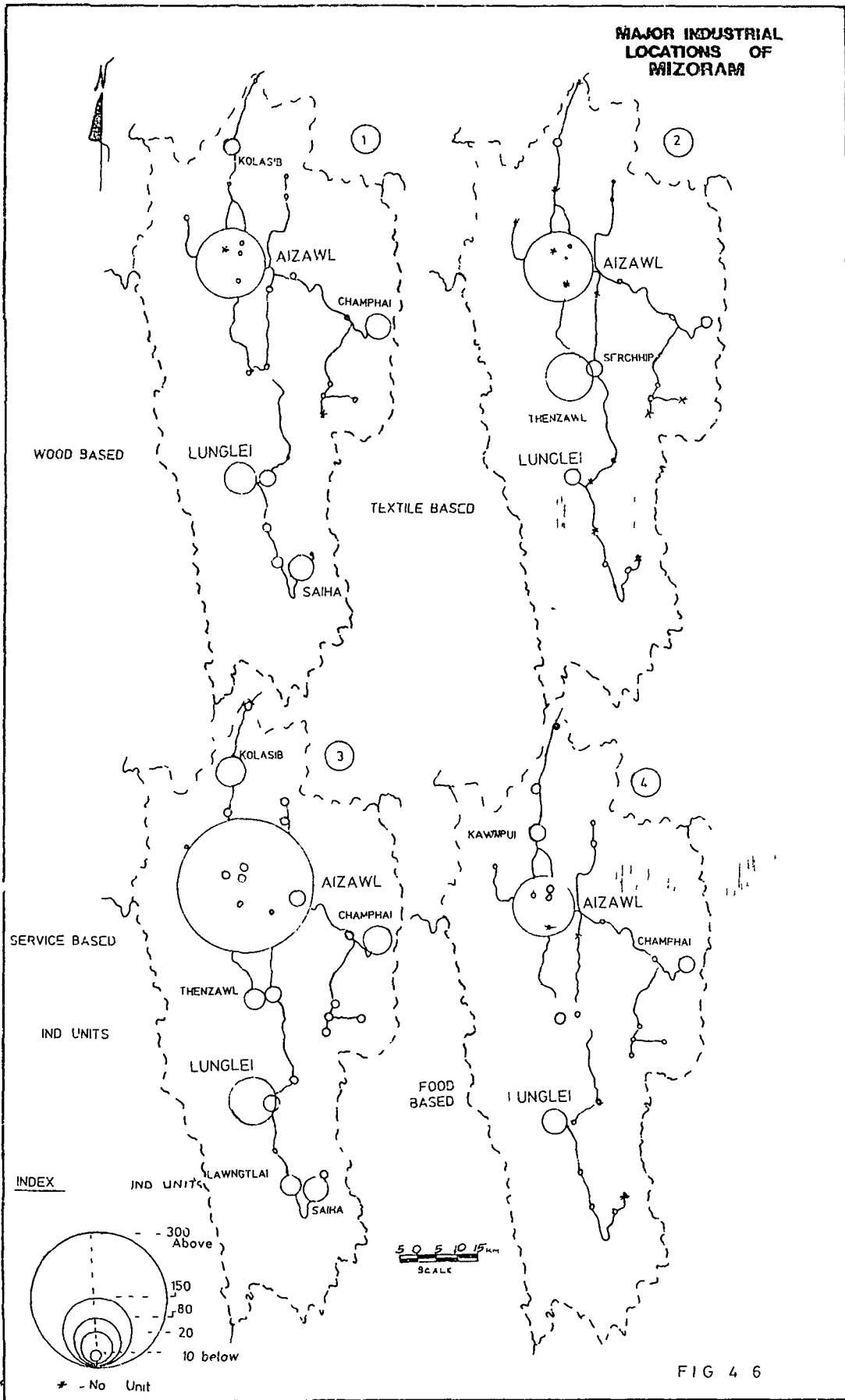


FIG 4 6

Table 4.4 : Industrial Composition in Mizoram 1990
Based on 28 Selected Localities

Name of Localities	Total Magnitude of Industrial Units												Total
	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	
Aizawl	92	149	152	71	26	37	38	21	17	16	485	30	1134
Lunglei	12	40	9	12	2	8	2	-	13	2	74	14	208
Thenzawl	3	4	93	-	-	-	2	-	1	-	13	-	116
Champhai	7	78	7	4	-	1	1	-	1	-	32	2	86
Kolasib	5	8	6	2	3	1	4	-	2	1	30	-	62
Saitta	1	18	1	5	-	5	-	-	1	-	21	5	57
Seichhip	3	6	9	1	1	-	-	-	2	-	13	-	35
Lawnqtlai	1	7	2	1	-	1	-	-	-	-	17	3	32
Zobawk	1	10	-	-	-	-	-	-	-	1	10	3	25
Saitual	2	6	1	-	-	-	-	-	1	-	12	-	22
Lawnpu	8	2	-	-	-	1	-	-	-	-	5	1	17
Silphai	4	7	2	1	-	1	-	-	-	-	6	-	16
Darlawn	3	3	1	-	-	-	1	-	-	-	6	-	13
Thawzawl	2	4	2	-	-	-	-	-	-	-	4	-	12
Durtlang	1	2	1	-	-	-	-	-	1	-	6	1	12
Biate	4	3	1	-	-	-	-	-	1	-	2	-	12
Vairenate	3	3	-	1	2	-	-	-	-	-	2	-	11
Deflawnq	-	6	-	-	-	-	-	-	4	-	1	-	11
Dualpu NG	-	3	-	-	-	-	-	-	-	-	6	1	10
Lawnpu S	1	8	-	-	-	-	-	-	-	-	1	-	10
Thawbung	4	3	-	-	-	-	-	-	1	-	2	-	10
Ratu	3	4	2	-	-	-	-	-	1	-	-	-	10
L-Lunqdar	3	1	1	-	-	-	-	-	-	-	3	-	9
Mamit	2	3	-	-	-	-	1	-	-	1	2	1	9
Sairang	2	-	-	-	-	-	-	-	-	-	4	1	7
N-Vanlaiphat	4	-	-	-	-	-	-	-	-	-	3	-	7
S-Hjimen	-	1	-	-	-	-	4	-	-	-	1	-	6
Hnahthial	3	1	-	-	-	-	1	-	4	-	2	-	6
Total	176	325	290	98	35	55	53	21	46	21	703	62	1965

Source : Industry Directory, 1990..

Abbreviations : C1 = Food Products and Allied industries

C2 = Woods and Wooden Products

C3 = Textiles and Textile Goods

C4 = Paper Products, Publishing and Allied

C5 = Rubber and Plastic Industries

C6 = Chemicals and Chemical Products

C7 = Non-Metallic and Material Products

C8 = Basic Metal and Material Products

C9 = Metal Products and Parts

C10 = Leather Goods and Repairing

C11 = Service-Based Industries

C12 = Miscellaneous Industries

C. Composition and Structure :

The total different trades of industrial activities found in Mizoram are classified into 12 categories (including miscellaneous group) on the basis of similarities in nature of products and raw materials used. It may be noted that the general classification given by the Ministry of Industries, Government of India, has been followed in the present piece of research work so that the results of the study can be compared with the other similar studies.

Table 4.5 : The Major Trade - wise Magnitudes of Industrial Establishments in Mizoram

(as on 31-3-90)		
Sl.No.	Name of Trades	No. of Units
1.	Tailoring	463
2.	Furniture & Carpentry works.	367
3.	Handloom Industry	225
4.	Knitting Industry	126
5.	Rice Mill/Rice Huller	108
6.	Bakery	99
7.	Automobile repairing & Servicing	79
8.	Printing press	76
9.	Candle making	55
Total		1648

Source: Industry Directory, 1990.

Out of total 52 trades which have been classified into 11 industrial categories (Appendix I), the major nine trades constitute as much as 74 percent of the total 331 & 61 units of the State.

It can be observed from the Table 4.5 that Tailoring (a Service-based trade), Furniture and Carpentry works (a Wood and

Wooden product trade), Handloom (a textile based trade) and Rice Huller and Bakery (the food based trade) are the major trades of the state that are incorporating a major part of industrial establishments. Thus, Service-based, Food Products, Textile-based and Wooden Product based industries dominate the industrial structure of Mizoram. The same fact can also be observed in the distributive aspects as given in Table 4.4. The Table shows that industries constituted 783 units, i.e., 39.85 percent of the total units in the 28 selected centres. Even at the level of the entire state, this category has 35.51 percent of the total magnitude. Besides it, there are other three major categories, namely, (i) Woods and Wooden products with 325 units, (ii) Textile and Textile Goods with 290 units, and (iii) Food products and allied industries with 176 units. In fact, the above four categories constitute more than 80 percent of the units on 28 selected centres.

D. Industrial Diversification :

As it is mentioned earlier, 56 different trades operating in the entire Mizoram accounts for total 2205 units. Out of the total industrial units, 89.12 percent (1965 units) is concentrated on 28 centres of industrial agglomerations. Thus, the industrial diversification can be analysed on the basis of considering these 28 centres as main locations of industrial establishments.

Since the present study is concerned only with the SSI and Cottage Industrial units, which can be expected to be operating

even at the village levels, one may expect the least diversification among the industries. But the table 4-4 reveals that there is significant diversities among the industries in terms of magnitudes as well as with regards to their spatial distribution.

At the outset, the overall distribution of industrial units among the 28 centres is tremendously diversified. Out of the 1965 units within these locations, Aizawl town alone is having as much as 1124 units which is 57.21 percent. Therefore, there is remarkable concentration of industrial units in certain locations within its areal distribution. Next to Aizawl town comes the second town of the state, Janglet which is having only 208 units or only 10.59 percent of the total. The third centre, Thenzawl is having 116 units. Besides the about three centres, there are other important towns having more than 50 industrial units like, Champbar with 86 units, Polasib with 62 units and Saiha with 57 units. Therefore, the above 6 important towns have as much as 84.63 percent of the total units. Therefore, more strength of units of various industrial establishments at a particular location has higher degree of concentration in the area and vice-versa.

On the other hand, industrial diversification refers to the varieties of industrial units within the industrial setup of a particular location. Among the 28 centres, Aizawl town alone is having each and every trade whereas the manufacture of Basic Metal and Allied industries (i.e. Steel Fabrication and

Iron & Steel works industries) are not operating in any other location. Besides the Service based industries, the two categories like Food Products and Allied Activities and Wood and Wooden products are more or less homogeneously distributed among the centres. Other categories are heterogeneously distributed as shown in the Fig. 4-5. In fact certain centres, namely, Bhahtlial, Hlimer N-Vantaphai, Sarrang, Mamit, Kati, Thawbung, Lawipui S, Bualpui (NG), Tal Lawnq, Thawzawl, Daljawn, Lawnpui, are having only the trades related to four or less industrial categories.

Even as regards to the share of each category to the total units in a particular centre, there is no homogeneity in all the centre. The table 4.6 gives the details of diversification for each and every centre. The value of diversification index is recorded highest for Aizawl town and second most for Lunglei, that is also the second largest town of the state, Kolashib comes on third place (88.66 %) though its population is proportionately lesser. In fact, Aizawl is the centre having all kinds of industrial (SST & CI) trades with a balanced manner. This fact can be seen from the Table 4-8. Lunglei is also having almost equal share of ten trades, therefore, it is also diversified. On the other hand, Thonzawl, N. Vantaphai and S. Hlimer are having very low index value of diversification because they are small in size and having only a few industrial categories with specialised trades. Though these trades are very small in sizes. In case of Thonzawl the

diversification in the town (84.46 %) because of growth of a unified Textile and Textile goods industries.

Table 4.6 : Industrial Diversification Within the Selected Centres

Sl.No.	Selected Location	Population	Diversification
1.	Aizawl	155240	89.87
2.	Lunglei	24609	88.86
3.	Ihenzawl	4502	84.46
4.	Champhai	20809	87.67
5.	Folasib	13482	88.66
6.	Saita	13669	86.42
7.	Senchhip	1,688	88.10
8.	Lawnqtlai	9514	86.50
9.	Zohawl	NA	84.12
10.	Saitad	8402	85.68
11.	Lawnpu	5290	86.19
12.	Silphit	5060	87.67
13.	Darlawn	3677	86.13
14.	Ihawzawl	7104	85.87
15.	Durtlang	3609	86.13
16.	Biate	2025	88.13
17.	Vairengte	5607	88.02
18.	Iaktawnq	2489	84.99
19.	Bualpai NO	1536	84.85
20.	Tawpu S	1082	84.21
21.	Ihawbung	1623	86.36
22.	Ratu	2342	86.36
23.	E-Lungdar	2470	87.37
24.	Mamit	3546	87.71
25.	Sairang	3523	87.07
26.	N.Vanlaphai	2804	84.63
27.	S.Mlmen	NA	84.85
28.	Hnahthai	1548	84.30

Source : Industry Directory, 1990.

E. Interdependence among Industries :

The question of interdependence and linkages of industries is related to "agglomeration economies" because it reduces various types of production costs. The degree of interdependence within an industrial set up can be examined by studying the industrial linkages, namely, forward and backward

and identifying the industrial complexes in its regional frame, (Isard 1939). Thus, the industrial interdependence is closely related to the regional development. This concept of regional development has been conceived in the form of 'growth pole hypothesis' and growth centre approach of development by many geographers (Perroux 1950, pp. 89-104).

$$P^1 \quad P^2$$

Furthermore, this concept of regional development is applicable in the conditions of developed countries where more than 60 percent of workforce is engaged in secondary and tertiary activities and they have well developed spatial system of development. But, the areas of backward economies where industrial development has its initial stage, the 'industrial inter-dependence' hypothesis may not be valid because the first phase of industrial development is solely based on solving the industrial problems of unemployment, utilization of local resources and their proper processing with less investment. These problems can be seen in the industrial set up within the study area.

In the locational analysis of industrial development in Mizoram, it is important to note that the capital town, Aizawl has more than 51 percent strength of all industries of the entire state. It is well-linked with the other centres and the industries of various types are interdependent within this particular centre. Thus, to test the validity of inter-dependence hypothesis, Aizawl town is chosen for detail study.

Aizawl is the Capital town of Mizoram State as well as the largest among the towns in the State. In the 1991 census, its population was 155740 persons i.e., 22.50 percent of the whole state. So far as Industrial activities are concerned, Aizawl town itself can represent the whole state. Industries permanently registered as on 31-3-1990, there were 2705 units in the entire state whereas Aizawl alone consisted of 1134 units i.e. 51.43 percent of the whole state. Therefore, it can easily be presumed that even in Industrial activities, the dependence or interdependence among the units themselves, the case in Aizawl will reveal the case in other parts of the state. Actually, the other two district Headquarters, Lunglei and Saiha had only 208 & 57 units respectively. Therefore, the description of industrial linkages in Aizawl town is felt to be enough to explain the prevailing industrial interdependence in the state.

Industrial linkages are often perceived as channels through which the growth impulses are stimulated and transmitted, not only with a growth centre but also in regions other than the centre. Industrial linkages are tools of regional development involving the development of backward and rural areas. According to Street (1949, p. 117),

"In fostering such (highly productive) systems of complementary industries, it may be hoped that the strength and variety of backward and forward linkages involved would soon initiated a self-supporting growth process".

Thus, questions like (a) whether the interdependence of industries is an important locational factor for industries or not, and (b) whether the industrial linkages¹¹ play a significant role in regional development through their backward and forward linkages with the rural hinterland or not, became important to be asked or answered. The industrial linkages are examined through the sectoral and regional flows of inputs and outputs. The question is whether there is a systematic feeding and feedback linkages between the existing units in a centre or not.

F. Industrial Structure of Aizawl Town - A Special Case :

As per the Directory of Small Scale Industries, Mizoram, there were 1134 Small Scale and Cottage Industrial Units within Aizawl Town. There was no factory as such to be registered under Indian Factories Act. The total of 1134 units was consisted by 52 different trades and miscellaneous group with 28 units.

Taking into individual trades with number of units, the important ones with their total units are shown in Table 4.7.

Table 4.7 reveals that 60.50 percent of industrial units in the town is constituted by the above seven trades. The rest 379 units are from other 45 different trades and miscellaneous group. The largest component, service based industries consisted of 485 units (i.e., 44.77 %) and this category engages 40.44% of the total industrial labour force in the town. The important ones in this category are tailoring,

Table 4.7 : Total SSI Units in Aizawl Town (leading Trades)

Trade	Total Units
1. Tailoring	292
2. Furniture and Carpentry	138
3. Handloom	137
4. Printing Press	58
5. Bakery	57
6. Knitting & Tailoring	57
7. Automobile Workshops	56
Total :	755

Source : Industry Directory, 1990.

Knitting and Tailoring, Automobile repairing and servicing, watch repairing and servicing and Beauty Parlours, where all these five different trades consisted of 400 units i.e., 32.57 percent within the Aizawl town itself.

Next to the Service based industries the Wood and Wooden Products and textile groups became important. The textile group consisting of Embroidery, Hood making, Woolen Garments, Handloom and Cotton mills & Cotton ginning is consisting of 152 units where handloom industry alone has 137 units. This group employs 15.54 percent of industrial workers in the town. The third group, Wood and Wooden Products, consisting of Furniture and Carpentry works, Cane and Bamboo and Saw Mills consist of 149 units. Here also, Furniture and Carpentry works consist of 138 units. This group of category employs 12.03 percent industrial workers in the town.

The detail of industrial groups with their number of units and employment (in person) may be seen from the table 4.8.

Table 4.8 : Industrial Structure of Aizawl Town

Sl. No.	Industrial Category	Total Units		SSI Unit	Labour Employment (%)
		Nos	%		
1.	Food Products and allied Industries.	92	8.11	584	7.81
2.	Wood & Wooden Products	149	13.14	845	12.04
3.	Textile & textile Goods	157	13.40	1095	15.60
4.	Paper Products, publishing and allied	71	6.26	521	7.42
5.	Rubber & Plastic	26	2.29	136	1.74
6.	Chemical & Chemical products.	37	3.26	133	1.89
7.	Non-metallic and material products.	40	3.53	258	3.67
8.	Basic Metals and allied Industries.	21	1.85	241	3.43
9.	Metal Products and Parts	17	1.50	120	1.82
10.	Leather Goods and Repairs	16	1.41	41	0.58
11.	Service based industries	485	42.77	2839	40.44
12.	Miscellaneous *	28	2.48	236	3.36
Total		1134	100.00	7021	100.00

Source : Industry Directory, 1990.

Note : * The Miscellaneous group consists of Automobile Body Building, Limber, Flower pot, Animal feed, X-Ray Clinic, Honey Processing, Hair Dressing & Cutting, etc.

F. Interdependence between Industries Located in Aizawl Town :

One striking feature of Industries in Aizawl town is the dominance by the service based industries. Most of the service-

based industries are repairing and servicing units, who do not need to buy raw materials. Even units like Tailoring, Milling Beauty Parlours, Photo Studio etc. seldom depend upon the raw materials. Actually, their raw materials are their customers. Accordingly, there is no need of output flow from them. Even if raw materials like cloths, spare parts, etc., are needed, they get from the local shops.

Indeed, there is no industrial linkages or interdependence among the units at the existing level to the worth mentioning. The fact is that there is no factory or an ancillary unit in the town which can play either the role of customer to the Small Scale units nor to supply its semi-finished products to the same as their raw materials.

Since the existing units are very small in terms of investment in plant and machinery, employment etc., the raw materials requirement as well as production is still low. Moreover, since there is no proper factory which can employ more people at a time or at a particular season of the year, there is no seasonal employment or seasonable unemployment in Aizawl Town. Rather, the units are busy enough within their respective atmosphere. Thus, practically, there is no proper linkages between the industrial units either forwards or backwards. If at all needed be, mention may be made of units like Chow making, Bakery, etc., which supply their products to Tea Shops and restaurants, in Aizawl town itself.

The researcher, carried the questionnaires and contacted the proprietors of units surveyed, filled up the questions as answers given by the proprietors, Managers, etc., of each unit. The researcher found, during his visits to the units, that not even a single unit in Arcawl Town is keeping proper and standard Account of its enterprise. The researcher, undoubtedly found that the proper management of the industrial units is lacking both from the government and individual levels.

Though there is "Microam Industries Association (MIA)" a voluntary organization, acting as an umbrella to the SSI units, it is observed that the leaders of the Association are not fully fighting for the welfare of the units, rather they are taking advantage of their status for their own units. Besides the MIA, almost all the different trades have their own Association, Tyre Retreaders Association, Furniture workshop owner Association, Bakery owner Association, etc. These associations will see their respective welfare. According to the prevailing Prices of commodities, raw materials, etc. they will increase the prices of their products at their sweet will.

All these haphazards and unorganized characters may be the result of improper management from the government level. The manufacturing units or the entrepreneurs need not pay sales tax to the government. The government or the financial institutions who financed the units never took after their Accounts. Besides, the units have to fight individually or as an association for the markets for their products. In such a case

or situation there cannot be industrial linkages among the units. Therefore, it is concluded that no proper and organized form of forward and backward linkages among the industrial units located at Arzawl town was seen.

The study simply reveals that the industries in the town are basically small scale units. Their inputs are obtained from the local shops or sales agents. Their output directly go to markets or consumers of local areas. No unit is found to feed an ancillary unit in the town.

Since Handloom and Handicraft Development Corporation is functioning as a separate wing, the handloom units are so to say, having an agency where they can dispose certain amount of their products.

The interdependence among the industries in Arzawl town does not seem to be very significant. Moreover, Arzawl town itself does not appear to be significantly giving forward linkage to the units outside Arzawl. Rather, certain industrial raw materials, like Timber, Cane and Bamboo, etc. come from other parts of the State whereas Handloom raw materials, paper materials, plywoods, sun-dry, spare parts, etc., come from other parts of the country. Thus, industrial linkages, interdependence and specific line of industrial development among the SSI units in Arzawl town itself is yet to be created.

ELASTICITIES OF INDUSTRIAL PRODUCTION

Certain factors like market, raw materials, transport network, man power etc. have their respective roles in determining the elasticity of industrial output of the system as a whole, which would deal in detail by taking into account the primary data of various industrial category in the separate Chapter-V. Here, in this section, the efficiency and elasticity of the various industrial categories of Huzoram are examined with the help of certain statistical methods by using only secondary data. It is believed that the result of these statistical informations will help in optimum utilization of Government's resources or helps to the industrial entrepreneurs. In other words, the correct and precise statistical information will minimize the wrong utilization of the available resources and rather help in the correct use of resources in the right manners.

There are numerous studies on the elasticity aspects of production and the concerned literature is available with the economists. In fact, elasticity of production with respect to production factors is closely related to the concept of marginal productivity of production factors. The mathematical concept of marginal product and elasticity have already been discussed in the methodological section in Chapter II. However, the operational part of the same approach is incorporated here.

Marginal productivity, which is based on the differential algebra, provides a change in production with respect to the change in production factors. Therefore, this concept is very much relevant here for elaboration of the changing tendencies of various industrial production with respect to their production factors. Thus, elasticity of various industrial categories has been calculated and compared for the examination of the distributive nature of industrial set up in Mizoram.

(a) Cause-Effect Relationship :

For the interpretation of the marginal productivity and elasticities of the various industrial productions, the related variables of the industrial structure and their distributive nature are analyzed with the help of calculating Mean, Standard deviation (SD), Coefficient of Variations and Correlation coefficient. Finally, the correlation matrix for nine variables related to industrial characteristics has been arrived at (Table 4.9). The results of the correlation matrix are generalized in the following manner.

There is a clear cut duality in the correlation matrix prepared by taking into account the nine variables of industrial activities in Mizoram. The Table 4.9, concludes that :

Table 4.9 : Correlation Matrix for 9 Variables Related to Industrial Characteristics in Mizoram (1990)

Variables	V1	V2	V3	V4	V5	V6	V7	V8	V9
V1	1.000	0.991**	0.990**	0.989**	0.992**	-0.131	0.227	0.991**	0.017
V2		1.000	0.999**	0.999**	0.984**	-0.152	0.265	0.986**	0.051
V3			1.000	0.999**	0.982**	-0.154	0.264	0.984**	0.053
V4				1.000	0.981**	-0.137	0.264	0.982**	0.057
V5					1.000	-0.117	0.279**	0.999**	0.023
V6						1.000	-0.058	-0.199**	-0.099
V7							1.000	0.278**	0.045
V8								1.000	0.031
V9									1.000

N.B. : ** Significant at .01 level.

* Significant at .05 level.

Source : The table has been prepared from the data collected from Industry Directory, 1990.

Abbreviations:

- V1 = Total industrial units.
- V2 = Total households.
- V3 = Total population.
- V4 = Total main workers.
- V5 = Total industrial workers.
- V6 = Percent share of main workers to the total population.
- V7 = Percent share of industrial workers to the total main workers.
- V8 = Total male industrial workers.
- V9 = Percent of male industrial workers to the total main workers.

- (a) Increasing population size within the context of industrial sites increases the magnitude of industrial activities. There is an increase in total number of industrial establishments with the increase in the households. Therefore, these attributes of demographic structures of the area are highly related to the strength of the industrial establishments.
- (b) The Table also reveals that the centres with higher population size have higher strength of working class population with the industrial population, though the sector has a very less percentage share of working population. Further, the male industrial workers are positively related to all these categories. It means that male industrial workers have a large involvement in industrial employment and related activities everywhere in Mizoram.
- (c) The percentage share of main workers to the total population and industrial workers to total main workers do not show a regular features of distributional patterns. Therefore, these attributes have insignificant, and even negative relationship with the other variables of the matrix though the total magnitudes of main workers and industrial workers are significantly related to the other attributes of demographic structure in the state. It means that there are some irregularities in the distribution of proportionate shares of the working classes. This may be because of topographic hindrances and weak transport links of the industrial centres especially at lower level.

Calculating the Mean, standard deviation, correlation coefficients of production, capital input (i.e., investment component), and labour input (i.e., employment) of the industrial structure for the various industrial categories (Table 4-10). It is found that:

- 1) The manufacturing of Metallic and Material products are prominent in Mizoram in relation to its average output i.e. Rs. 726.67 thousands per location and in the same category, the highest capital investment and labour employment are utilized. The reverse conditions of the distribution of production, capital and labour can be seen with the case of manufacturing of Leather goods and Repairing industries.

Table 4.10: Mean, Standard Deviation & Coefficient of Variation and Correlation Coefficients of Various Industrial Categories in Mizoram (1989-90) Based on 28 Locations.

Industrial Categories	Items	(Production & Capital input in Rs. '000)			
		Mean	SD	CV (%)	Correlation
(1)	(2)	(3)	(4)	(5)	(6)
1. Food Products & allied Industries N=25	1) Production	86.90	107.441	123.64	-
	2) Capital inputs	16.51	10.599	64.20	0.2814
	3) Labour inputs (Persons)	3.28	0.960	29.27	0.0725
2. Manufacture of woods and Wooden Products. N=26	1) Production	87.46	60.25	72.91	-
	2) Capital inputs	18.08	16.82	92.92	0.4243
	3) Labour inputs	4.88	3.94	80.74	0.0344
3. Manufacture of Textile and Textile Goods. N=16.	1) Production	56.28	55.06	97.83	-
	2) Capital inputs	8.56	6.88	80.37	0.7019
	3) Labour inputs	4.06	1.60	39.41	0.6335
4. Manufacture of paper products, publishing and allied. N=9	1) Production	99.89	80.53	80.62	-
	2) Capital inputs	36.05	25.03	71.65	0.8249
	3) Labour inputs	5.33	3.43	64.35	0.0728
5. Manufacture of rubber, Plastic & petroleum products. N=6	1) Production	228.93	110.87	48.43	-
	2) Capital inputs	170.00	105.56	62.09	0.3831
	3) Labour inputs	4.83	1.34	27.74	0.7515
6. Manufacture of Chemicals & Chemicals Products. N=8	1) Production	52.11	46.34	88.93	-
	2) Capital inputs	6.45	10.57	163.10	0.6060
	3) Labour inputs (persons)	3.63	0.86	23.69	0.4463

contd...

contd. Table 4.10

Industrial Categories	Sub Categories (Rs. 000)	Mean	SD	CV (%)	Concentration
7. Manufacture of metallic & metallic products N=8.	1) Production	726.67	358.90	49.42	-
	2) Capital inputs	219.48	129.21	58.81	0.1392
	3) Labour (Persons)	14.13	10.98	77.57	-0.0519
8. Manufacture of & basic metal (allied industries N=1	1) Production	-	-	-	-
	2) Capital inputs	-	-	-	-
	3) Labour (Persons)	-	-	-	-
9. Manufacture of metal products & parts. N=13	1) Production	59.33	52.39	88.14	-
	2) Capital inputs	6.29	6.33	101.16	0.7446
	3) Labour inputs. (Persons)	3.54	1.28	36.16	0.7401
10. Manufacture of leather goods & repairing. N=5	1) Production	22.61	10.57	46.75	-
	2) Capital inputs	2.29	2.31	100.61	0.7762
	3) Labour (persons)	2.20	0.75	34.09	0.5253
11. Service based industries. N=27.	1) Production	59.91	71.61	119.53	-
	2) Capital inputs	12.68	15.77	124.37	0.2569
	3) Labour (persons)	3.37	1.73	51.98	0.3891
12. Miscellaneous Industries N=12.	1) Production	141.20	176.97	125.00	-
	2) Capital inputs	26.67	59.23	199.63	0.5337
	3) Labour (Persons) inputs.	5.17	3.24	62.60	0.1394

Note : N= Number of Locations.
CV (%) = $[100 \cdot (SD) / \text{mean}]$.

Source : The table has been prepared from the data collected from Industry Directory, 1979.

- 2) The areal variations of production, capital investment & labour employment of industrial structure which are secured by calculating coefficient of variations (CV in %) indicates that the production of Food Products and Allied activities has the maximum coefficient of variations (i.e. 123.64%) in the state. It may be because of food being an essential item and its cooking process is required everywhere. Even at the higher order locations, the production is very high and in the smaller order centres it is low, as per the requirements of the population. But the fact is not found to be correct for capital input. For the highest areal variation in the distribution of capital input is found in the case of Miscellaneous category. But the coefficient of variation of labour employment is found highest (80.7%) in case of manufacturing of Woods and Wooden Products because of the concentration of wooden activities specially in the larger settlements.
- 3) The correlation coefficient between production and production factors must be positive with all the cases because in order to increase production there should be requirement of more capital and labour for accelerating production processes.

In case of Mizoram, this relationship is not significant in most of the cases except in Paper Products, Publishing and Allied; Manufacturing of Metallic and Material Products and the Leather Goods and Repairing categories, where capital is significantly and positively related to the production. In the Textiles and Textile Goods category, the relationship between production and labour input is also found positive, (i.e. $r = 0.6395$). But in most of the cases, the inter-relationship is very much weak, even negative in relation to labour and production in some cases like the Paper Products, Publishing and Allied activities where $r = 0.0729$; manufacture of Metallic and Material Products in which case $r = -0.0518$. It may be because of the ruggedness of topography, more utilization of capital goods instead of manual labour or due to their capital intensive nature. Thus, more elaborations are required for the

industrial production system in Mizoram by calculating marginal productivity of the production factors.

(b) Marginal Productivity and Elasticities of Production Factors :

The marginal productivity and elasticity of production factors are given in the table 4-11.

So far as marginal products to the production factors are concerned, the picture is different and moreover, some points are very much interesting to highlight. They are as follows:-

- 1) It is surprising here to note that the coefficients of marginal productivity (i.e., rate of change in production with respect to change in input) are higher than 1 (one) in most of the cases. It means that the industrial activities have tremendous potentials to be utilized as strategies for further industrial development of the state. The categories like the manufacturing of textiles and textiles goods; Paper Products, Publishing and Allied, manufacturing of Metallic and Material products and manufacture of Leather Goods and Repairing have shown significant change in production with respect to change in capital inputs. Therefore, capital input is very much required in these industrial activities.
- (2) In some cases, the labour input is also significant, for example, the manufacturing of Rubber and Plastic industries where one unit of labour input can produce 64.3 units of output. On the other hand, the significance of labour input is found to be negative in certain categories. For example, the manufacture of Metallic and Material Products has the negative rate of change where $b = -16.815$. ($b =$ rate of change in production with respect to change in labour).

Table 4.11 : Marginal Productivities of Various Industrial Category in Mizoram (1989-90) as Lower Scale

Industrial Categories	Marginal Productivity (b)	t Values	R2 (%)
1. Food Products & allied Industries. N=25.	A)Capital Inputs (Rs.000) 2.798 B)Labour Inputs (Persons) 4.840	1.340 0.210	8.100 -
2. Manufacture of woods & wooden products. N=26.	A)Capital Inputs(Rs.000) 1.527* B)Labour Inputs(persons) -0.246	2.242* -8.443	18.029
3. Manufacture of Textile & Textile goods. N=16.	A)Capital Input (Rs.000) 4.022 B)Labour Input (persons) 10.591	2.050 1.235	54.730
4. Manufacture of paper products, Publishing & Allied. N=9.	A)Capital Inputs(Rs.000) 3.016** B)Labour Inputs (Persons) -9.608*	5.353 -2.265	82.777
5. Manufacture of Rubbers & Products. N=6	A)Capital Inputs (Rs.000) 3.544** B)Labour Inputs (Persons) 64.311**	7.628 2.762	58.066
6. Manufacture of Chemicals & Products. N=8	A)Capitals Inputs (Rs.000) 2.367* B)Labour Inputs (Persons) 3.928	1.184 0.242	37.460
7. Manufacture of Metallic and Non-Metallic Products. N=8	A)Capital Inputs (Rs.000) 2.779** B)Labour Inputs (Persons)-16.815*	4.352 -1.449	79.171
8. Manufacture of Basic metal & allied Industries. N=1.	A)Capital Inputs (Rs.000) - B)Labour Inputs (Persons) -	- -	-

contd...

contd. Table 4.11

Industrial Categories	Marginal Productivity (b)	t Values	R ² (%)
9. Manufacture of metal products and parts. N=13.	A)Capital Inputs (Rs.000) 3.934* B)Labour Inputs (Persons) 20.905*	2.952 2.936	76.069
10. Manufacture of Leather goods & repairing. N=5	(A)Capital Inputs (Rs.000) 3.859** (B)Labour Inputs (Persons) 1.989	6.712 1.031	96.922
11. Service based industries N=27.	A)Capital Inputs (Rs.000) 0.714 B)Labour Inputs (persons) 19.705	0.811 1.772	17.404
12. Miscellaneous Industries. N=12.	A)Capital Inputs (Rs.000) 1.102 B)Labour Inputs (Persons) 8.573	1.674 0.734	32.519

* Significant at .05 level.

** Significant at .01 level.

Source : The table has been prepared from the data collected from Industry Directory, 1990.

N.B. : (1) The Calculation are based on the data of selected 28 centres.
(2) Marginal Productivity values are calculated by applying two factor model of linear regression as :

$$Y = a + b_1X_1 + b_2X_2,$$

Therefore, marginal productivity $dY/dX_1 = b_1$ for labour and $dY/dX_2 = b_2$ for Capital input.

- 3) The Service based industries are labour dominated where marginal productivity of labour is higher ($b = 19.205$) but the marginal productivity of capital is very low, even insignificant, that is $b = 0.714$ only.
- 4) The table 4.11 also reveals that the degree of determinant in the distribution of these industrial categories are insignificant except in the case of Paper Products, publishing and Allied, and the manufacture of Leather Goods and repairing. It indicates that the areal distribution of these industrial establishments are not significant as shown by the table.

The elasticity of the industrial categories in the selected centres is shown in the Table 4.12 at the logarithmic scale.

So far as the elasticities of the various industrial categories denoting the proportionate change of industrial production with respect to the proportionate change of the production factors are concerned, table 4.12 reveals that:

- 1) The manufacturing of textiles and textile Goods has the higher elasticity (i.e., $e = 1.1706$) with respect to labour input. Similarly, the Rubber and Plastic industries have a very high coefficient of elasticity with respect to labour input, (i.e., $e = 1.96939$). It means these two categories have the high potential for the future development by intensifying labour input.
- 2) If logarithmic transformation is applied for inferring the production function results, the coefficient of determinants are significantly becoming higher for all the cases except the manufacturing of Woods and Wooden Products and Service-based categories. It means that the logarithm transformation is applicable for providing the real picture of the distribution of the production attributes. The detailed study of the distribution would be done separately in the next chapter.

Table 4.12 : Elasticity of Various Industrial Categories in Sample Locations (Mizoram) 1989-90.

1. Industrial Categories	Input Cost (Rs. in 000)	Elasticity Coefficient		R ² (%)
		A)	B)	
1. Food Products & allied Industries N=25.	A) Capital Input	-.65518	3.9147	51.99
	B) Labour Input	-.53478	-.8496	
2. Manufacture of woods Wood and wooden products. N=26.	A) Capital Input	-.46042	2.7018	30.10
	B) Labour Input	-.19430	-.5854	
3. Manufacture of textile and Textile Goods N=16	A) Capital Input	-.60081	4.4327	76.64
	B) Labour Input	1.1756	3.2003	
4. Manufacture of paper products Publishing & Allied. N=9	A) Capital Input	1.07652	7.5392	91.01
	B) Labour Input	1.51731	4.9231	
5. Manufacture of Rubber & Plastic N=6	A) Capital Input	9.56649	-.2544	86.04
	B) Labour Input	1.96939	2.9901	
6. Manufacture of chemicals & chemical products.	A) Capital Input	-.71142	2.4296	67.96
	B) Labour Input	1.00991	-.4368	
7. Manufacture of metallic and material products. N=8	A) Capital Input	-.37295	1.9541	45.78
	B) Labour Input	-.0512	2.1240	
8. Manufacture of basic metal & allied industries. N=1	A) Capital Input	-	-	-
	B) Labour Input	-	-	
9. Manufacture of metal products & parts. N=13	A) Capital Input	1.61080	8.1602	61.11
	B) Labour Input	1.1570	-.94946	

contd...

contd. Table 4.12

1. Industrial Categories	Input Cost (Rs. in 000)	Input Coefficient		W (%)
10. Manufacture of leather goods & repairing. N=5	A) Capital Input	.34854	2.7374	84.33
	B) Labour Input	.28347	1.0433	
11. Service based industries N=27	A) Capital Input	.40451	2.3065	36.01
	B) Labour Input	.66609	1.1888	
12. Miscellaneous	A) Capital Input	-	-	-
	B) Labour Input	-	-	-

Source : The table has been prepared from the data collected from Industry Directory, 1990.

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CHAPTER V

Structure of Small and Cottage Industries .

Introduction
Processing and Analysis of Data
Labour Structure
Cost Structure
Production Elasticities

INTRODUCTION

In the preceding Chapter, the characteristics and the general components of the Small Scale and Cottage Industrial Structure in the study area have been interpreted by considering the secondary data relating to production, labour employment and the capital investment. The locational characteristics of the industrial setup of Mororan have also been described earlier. But for a comprehensive explanation of the problems relating to the employment, wages, productivity and profitability in the SSI and Cottage Industries of Mororan, a detailed field survey and scientific study of these facts are needed.

Therefore, the present Chapter focuses attention towards the production aspects and the processes which are being accelerating the SSI and Cottage Industries of the entire state. This task is taken up here for giving the answers to some questions which are very much relevant and important for decision-making processes as well as for integrated planning for the overall development of the SSI and cottage industries of the state.

METHODS ADOPTED AND PROCESSING OF DATA

In fact, there are 2205 registered Small Scale and Cottage Industrial units in the entire state as on 31.3.1990 belonging to 56 different trades. To conduct a survey for these 2205

units which are scattered in 143 locational centres even at village level is a difficult task for a researcher. Therefore, 750 sample units have been chosen from the entire universe for the present study. The selection of the sample units and the basis of selection have been mentioned in the methodology section of Chapter II. However, the data processed and the methods which are specially adopted in this Chapter are given in the following lines :

1. In fact, for the detail structural analysis of the industrial characteristics of any area, production function is a logical approach which establishes the relationship between the production of a firm and its production factors. The elasticity and profitability may also be studied by applying this approach. Therefore, the production function has been applied for calculating the productivities, profitabilities and elasticities of the various industrial categories of the study area.
2. So far as production model is concerned, Douglas & Cobb (1928) is famous and well known production function for the industrial economies of developing countries. Thus, the productivity and profitability of various types of industries may also be inferred by applying this production function. The mathematical form of the model is given below:

$$Y = aL^{b_1}C^{b_2}$$

Where Y refers to the annual average output of a firm, L refers to the Labour employed, C refers to the Capital invested for the production, a is constant and b₁ & b₂ are the coefficients of the production function which refers to the elasticities of the production systems with respect to various production factors.

The detail study of the cost structure is done by taking into account capital investment in two ways : Variable costs and Fixed costs. The main components of the cost structure are given in the Table 5-3. On the other hand, labour is also an important input for production in a firm. The detail labour

structure is analysed here by considering three main aspects of the labour input : (a) employment structure on the proprietor's own family and hired labour, (b) its efficiency on the basis of sex or male and female labour inputs, (c) the differences in the rate of labour wages in all the SSI and Cottage Industrial categories. Some salient features of labour employment and capital investment have also been shown by preparing some diagrams, which would give us a clear-cut understanding of the ground realities about the SSI and Cottage Industries in the study area in these regards (Fig. 5.1a, 1b & 1c).

So far as the data processing is concerned, this task is done in various stages : first, the collected data from the 250 sample units of 52 different trades are arranged in the Master Table as per the requirements for the present work. Then, detail informations of the various attributes have been generated for analysis and descriptions. Finally, the tables related to labour structure, cost structure and production structure of various industrial categories are prepared and interpreted (Table 5-1).

INTERPRETATION AND ANALYSIS

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This part of the discussion incorporates three important aspects of the industrial setup of Mizoram, viz. (A) the structural features of labour employment, (B) the cost and production structures of the SSI and Cottage Industrial Units, and (C) the optimal conditions and the salient features of

production functions. These heads are discussed in detail in the following paragraphs.

A Structural Features of Labour Input :

Labour is one of the most important factors of production. In fact without human labour, no production process can take place. Raw materials have to be assembled, machines have to be operated, the products have to be packed and above all, the whole business of a firm has to be well maintained and managed. Therefore, labour is a very important input whereas the quality of the labour has not failed to play its role in the entire processes. Thus, the structural features of labour input in various industrial categories of the study area are dealt separately in this section with regards to (i) Labour Employment, (ii) Labour wages and (iii) Labour costs (Table 5.1).

(1) Labour Employment : The category-wise industrial Labour Employment of SSI and Cottage Industrial units is examined both at the family and outside family levels. The figures of average Labour Employment, both male and female of family labour and outside family or hired labour, show that the average Labour Employment in the entire state is nearly 46 persons per ten industrial units of SSI and Cottage industries (Table 6.1). Comparing this figure of average labour employment with the

Table 5.1 : Average Annual Labour Structure per Unit (1993).

Industrial Categories	Labour Attributes	Family Labour			Hired Labour			Grand Total
		Male	Female	Total	Male	Female	Total	
Food Products & Allied Industries	E	0.83	0.28	1.11 (64.53)	0.58	0.03	0.61 (35.47)	1.72
	W	11320	9840	10580	31114	4800	17957	1768
	C	9433	2733	12166 (39.95)	18150	137	18283 (60.05)	30450
N = 36								
Wood & Wooden Products	E	1.60	0.05	1.65 (38.11)	2.60	-	2.60 (61.89)	4.33
	W	10710	4900	7755	15709	-	15709	13733
	C	17136	240	17376 (29.25)	42021	-	42021 (70.75)	59397
N = 40								
Textile & Textile Goods	E	0.20	1.31	1.51 (31.66)	0.97	2.29	3.26 (68.34)	4.77
	W	12342	7878	10110	6070	8445	7257	7968
	C	2468	10354	12822 (33.72)	5897	19302	25199 (66.28)	38082
N = 35								
Paper Products Publishing & Allied	E	1.6	0.7	2.3 (42.59)	1.0	2.1	3.1 (57.41)	5.40
	W	10650	8742	9696	16920	9857	13389	11255
	C	17040	6120	23160 (38.10)	16920	20700	37620 (61.90)	60780
N = 10								
Rubber & Plastics	E	1.2	-	1.20 (28.57)	3.00	-	3.00 (71.43)	4.20
	W	6000	-	6000	16120	-	16120	13228
	C	7200	-	7200 (12.96)	48360	-	48360 (87.04)	55560
N = 5								
Chemicals & Chemical Products	E	1.50	1.4	2.9 (90.63)	0.1	0.2	0.2 (9.37)	3.20
	W	5824	4800	5312	7200	7200	7200	5505
	C	8736	6720	15456 (87.74)	720	1440	2160 (12.26)	17616
N = 10								
Non-Metallic & Material Products	E	1.29	0.14	1.43 (26.34)	4.00	-	4.00 (73.66)	5.43
	W	8800	6000	7400	7821	-	7821	8005
	C	11314	857	12171 (28.01)	31285	-	31285 (71.99)	43457
N = 7								
Basic Metal & Allied	E	1.25	0.25	1.50 (21.43)	5.50	-	5.50 (78.57)	7.00
	W	14640	7200	10920	22309	-	22309	20400
	C	18300	1800	20100 (14.08)	122700	-	122700 (85.92)	142800
N = 4								
Metal & Material Products	E	0.80	-	0.80 (22.22)	2.80	-	2.80 (77.78)	3.60
	W	4500	-	4500	11228	-	11228	9733
	C	3600	-	3600 (10.27)	31440	-	31440 (87.53)	35040
N = 5								
Leather Goods & Repairing	E	1.50	1.00	2.50 (35.71)	4.50	-	4.50 (64.29)	7.00
	W	8000	5000	7000	9333	-	9333	8571
	C	12000	6000	18000 (30.00)	42000	-	42000 (70.00)	60000
N = 2								
Service-Based Industries	E	0.61	0.77	1.38 (39.77)	1.42	0.67	2.09 (60.73)	3.47
	W	9620	7719	8669	13098	11981	12539	11072
	C	5912	5450	11862 (30.89)	10556	7987	26543 (69.11)	38406
N = 96								
Mizoram	E	1.12	0.65	1.66	2.41	1.06	2.29	4.55
	W	9309	6997	7994	14265	8436	12905	11559
	C	10285	4530	13992	34368	9912	38870	52866
N = 250								

N.B. - N refers to the number of observations included in present analysis.

E - Average Labour Employed per unit.

W - Wage per Person, and

C - Average Labour Cost per industrial unit.

* - Figures calculated by Weighted mean.

Source : Self Surveyed, March 1993.

employment of various categories of industries, it is found that the industrial units related to Basic Metals and Allied Industries and the Leather goods and repairing have extremely high magnitude of labour employment (that is an average of 70 persons per ten industrial units). This is because of the nature of the works in the concerned industries or trades. The Iron & Steel works and Steel Fabrication under the Basic metal and Allied industries require both skilled and unskilled labour force (i.e., technicians as well as helpers) resulting into higher rate of employment per unit. Similarly, Shoe making under the Leather Goods and repairing category is very much a labour-oriented as the process of shoe making has different stages where skilled and well-trained people are required.

So far as the other industrial categories of average Labour Employment is concerned, besides the two categories mentioned above, there are also other three categories having employment higher than the mean Labour Employment of the State. They are : Paper Products, Publishing and Allied with average labour employment of 5.4, Non-metal and Material products with 5.43 and Textile and Textile Goods with average Labour Employment of 4.77 per industrial unit. The high Labour Employment in the case of Paper products, Publishing and Allied industries is because more number of workers are required in the setup of Printing Press industry. Textile-based industries like Handloom Industry, Knitting and Cotton Mills are also highly labour consuming. Furthermore, the high average labour employed in the case of Non-Metallic and Material Product

Industries is because of the very high manual labour requirements in the Stone works/Stone crusher or Quarrying and Brick making industries.

On the other hand, low and very low labour employment can be observed in the case of Food Products and Allied industrial category where the average labour employment is only 1.7 persons per ten industrial units (which is exactly 1.72 persons per unit, Table 5.1). This is may be because of the fact that the industries in the industrial units under this category are usually very tiny and are run at the cottage levels. Industrial units like Rice Mill, Paddy Dehusking, Oil making, Chow making, etc. are always carried at the household level. Among the industries under the category, Raitry has been found to be most labour oriented whereas no large scale production in the trade has been done. As a result, the average labour employment in this category as a whole became the least.

Under the category of Chemicals and Chemical based, only Candle making units are found operating. The candle making units are having average labour employment of only 3.2 persons per unit which is next only to the Food Products and Allied industries. The low labour employment potentiality in this trade is because the units are run only at the cottage level with family members in most of the cases. In fact, candle making is carried only on part time and employment in it is casual manner.

So far as social base of labour employment in the industrial setup of Mizoram is concerned, the labour has been studied by classifying it into two : family labour and hired labour. It has been revealed from the Fig. 5.6a that the total magnitude of hired labour is larger than the family labour in most of the cases. The highest magnitude of average labour employment outside the family labour is being used in the case of Basic Metal and Allied industries which are consuming nearly more than three-fourth share (79.6%) as hired labour to its total workforce. This high percentage of hired labour in this category is because of the high skilled labour requirement both in the Iron & Steel and Steel Fabrication works. The Metal Products and Parts with Ironsmithy and aluminium works also have very high percentage share of hired labour to the tune of 77.78 percent whereas the Rubber and Plastics Tire Tyre retreading and Plastics Industries have hired labour employment of 71.43 percent. These high percentages of hired labour employment in these industries are the results of high skilled labour requirement.

On the other hand, some industries are family labour based, namely, Chemical based industries where more than 90% share of work force is employed from family labour. In fact, under this category, only candle making $\frac{11}{10}$ found operating and since the units are run at the Cottage level, the labour requirement is met within the families in most of the cases. Besides, as much as 64.58 percent of the family labour employment is found in the case of Food Products and Allied

Industries. Even in this Category, the units are always run at the Cottage level and the labour requirement is not much, which is clearly indicated by the weighted mean figures of labour employment of the entire state that is only 1.72 (Table 5.1).

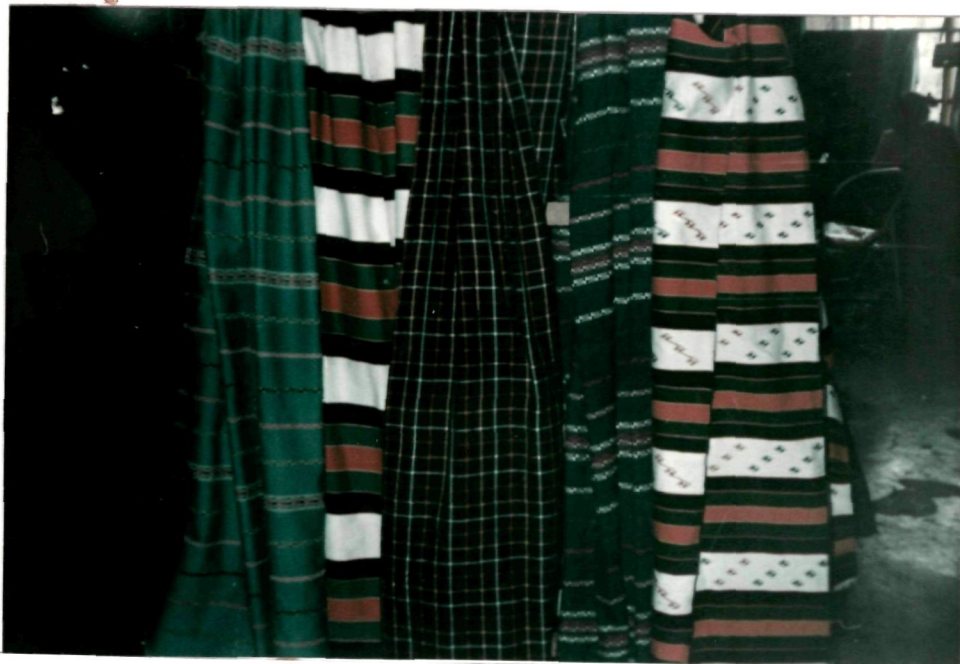
In fact, excepting the two categories : (i) Food Products and Allied industries, and (ii) Chemicals and Chemical Products, the rest nine categories exhibit larger hired labour component. This clearly tells the fact that :

- (a) Though the industrial units are small in most of the cases, they still prove themselves to be good strategy of unemployment problems solution.
- (b) The industrial establishments are always depend on the skilled labour outside the family of the promoters.

There is another important base of labour employment differentials in the area, that is sex ratio. By classifying total industrial labourers into Male and Female both at the Family Labour and Hired Labour, it is found that the female participation is very less and even negligible in some cases. The female industrial labour employment is zero in both the cases of Metal Products and Parts, and Rubber and Plastic Industrial Categories; this is mainly because of the nature of the works in such industries. Tyre retreading, Blacksmithy, Tinsmithy and Aluminum works repel themselves with female labourers. So far as female hired labour is concerned, they are found only in five categories out of eleven Industrial Categories in the entire State (Table 5.1). Hired female labour

composition is found to be significant in Textile-based industries. The high participation rate (57.41%) of woman in the case of Paper-based industries may be because of availability of women labour at cheaper wage rate that leads the Printing Presses to employ more of women both skilled and unskilled.

The category of hired woman labour constitutes 49.34 per cent in Textile and Textile-based industries. In fact, this is the only category where woman labour contribution is higher than man both in the family level and hired labour. This is very much encouraging and promising for this particular sex of the society. This high woman's participation under this industrial section or category is because of the fact that, traditionally, Mizo boys and men never involve themselves in weaving, stitching, knitting and even in spinning. All the traditional Loinlooms were run by women till date and repairing of the torn clothes are also done only by women members of the family. Accordingly, the industries under Textile-based like Handloom, Loinloom, Cotton Mills, Embroidery and Woollen Garments are run only by women in most of the units. The male labour employed (in the category), constituting 4.19 per cent of family labour and 20.34 per cent of hired labour are mainly of the male labour in Hood making and non-Mizo (Burmese) weavers in the Handloom industries. Handloom products and Handloom weaver are shown in the table 5.1 & 5.2.



5.1a : Handloom Products, Traditionally the Mizo Women have Secret Skill in Weaving.



5.1b : Iptechei (A Traditional Mizo bag)
An eye catching Skillfully Designed.



5.2b : A Mizo Girl with her Traditional Dress.
(Multiple Colourfully Designed Clothes).



5.2a : A Mizo Girl with her Popular Fly-shuttle Loom.

On the other hand, hired woman labour does not enter in the cases of Woods and Wooden products, Rubber and Plastic industries, Non-metallic and material parts, Basic Metal and Allied Industries, Metal Products and Material parts, and Leather Goods and repairing industries. In fact, the woman employees from the family in these categories are also behaving only as helpers and not active workers in most of the cases.

Therefore taking the participation of male and female industrial workers at the State level, the female family employees constitute only 42.63 per cent within family employees whereas among hired labourers, woman hired Labour constitute 30.00 per cent indicating that woman industrial labour constitute 35.11 per cent. On the other hand, male family member industrial workers at the State level constitutes 23.19 per cent whereas male hired labour constitutes 41.70 per cent. Thus, the male industrial workers as a whole constitute 64.89 per cent of industrial labour in the State. Surprisingly enough, the hired male industrial labour constitute more than 41 per cent of the whole industrial labour in the State (Table 5.2). This is mainly because in most of the cases, the skilled labour is constituted by the imported male industrial labourers from the other parts of the country. In fact, many non-Mizo skilled labourers are employed in tyre retreading, Plastic/Polythene making, Automobile and two wheeler repairing and servicing units, Tinsmithy, Aluminum works, Stone crusher and brickfield, Ice-cream factories, Tailoring, Hotel & Restaurants, and in repairing and servicing works. This clearly

shows the inefficiency and the low skill (or low level of technological knowledge among the local entrepreneurs. Less interest and care have not been taken to develop technical efficiencies among the local people for industrial development.

(2) Wage Rates : In the preceding section, the level and magnitude of industrial labour employment have been discussed. In the following lines the salient features of labour wage rate (i.e., wage per person) in the industrial activities subject to the tax as well as societal status of the employed labour would be discussed.

An overall average wage rate per worker in the state is Rs. 11,559/- per annum. It means monthly wage rate is nearly one thousand Rupees per worker employed in industrial activities in Mizoram. It is certainly very low and may be because of traditional nature of the SSI and Cottage Industrial units and the low level of technology as well as low scale of production. Certain industries where modern technology and machines are required have higher rates of wages. For example, the wages per person in Iron & Steel works and Steel Fabrication have been recorded Rs. 20,400/- per annum which is almost double to the average wage rate of the state. Similarly, industries requiring higher technology like Tyre retreading and Plastics have weighted mean wage rate of Rs. 13,228/- per annum; Furniture/ Carpentry works, Saw Mills have weighted mean wage of Rs. 13,733/-; Printing Press and Stationery have Rs. 11,250/- per annum.

Table 5-2 : Structure of Family and Hired Industrial Employment 1993.

(Figures in persons)

Industrial Categories	Family Labour		Hired Labour		Mizoramias, whole of								
	Male	Female	Male	Female	Male	Female	G. Total						
	Total %	Total %	Total %	Total %	Total %	Total %							
1. Food Products and Allied Industries	30	75.00	10	25.00	21	95.45	1	4.55	51	82.26	11	17.74	62
2. Wood & Wooden Products	64	90.14	7	9.86	102	100.00	-	-	166	95.95	7	4.05	173
3. Textile & Textile Goods	7	13.21	46	86.79	34	29.82	90	70.18	41	24.55	126	75.45	167
4. Paper Products, Publishing & Allied	16	69.57	7	30.43	10	32.26	21	67.74	26	48.15	28	51.85	54
5. Rubber & Plastic	6	100.00	-	-	15	100.00	-	-	21	100.00	-	-	21
6. Chemicals & Chemical Products	15	51.72	14	48.28	1	33.33	2	66.67	16	50.00	16	50.00	32
7. Non-Metal & Material Products	9	90.00	1	10.00	28	100.00	-	-	37	97.37	1	2.63	38
8. Basic Metal & Allied Industries	5	83.33	1	16.67	22	100.00	-	-	27	96.43	1	3.57	28
9. Metal & Material Parts	4	100.00	-	-	14	100.00	-	-	18	100.00	-	-	18
10. Leather Goods & Repairing	3	60.00	2	40.00	9	100.00	-	-	12	85.71	2	14.29	14
11. Service Based Industries	59	44.36	74	55.64	136	68.00	64	32.00	195	58.56	138	41.44	333
Grand total	218	57.37	162	42.63	392	70.00	160	30.00	610	64.89	330	25.11	940

Source : Self Surveyed, March 1993.

The lowest weighted mean wage is found in the case of Food products and Allied industries with only Rs. 1,268/- per annum. Next to this sector is the Chemical based or Candle making industry with weighted mean wage of Rs. 5,505/- per annum. The low wages per person in these industries are because of the fact that the units are always Cottage level with minimum technology requirement and as such are run by family members on part-time in most of the cases.

While comparing the wages per person between hired labour and family labour, it is found that the wage rate is much higher for hired labour in all the categories excepting textile-based industries. The wage rate of hired labour is higher than double of Family Labour wage in the case of Basic Metal and Allied Industries. This is mainly because of the Industries like Steel Fabrication and Iron & Steel works required skilled labour and even unskilled which compel the entrepreneurs to employ such large labour force outside the family. The high rate of hired labour in the case of Food products and Allied industries is due to the requirement of skilled labour in Oil Mill, Refinery, Spices and Fruit preservation units (Fig. 5.1b).

The Textile-based industries exhibit the reverse character. That is the wage per person is very much lower in the case of hired labour. This is because, in industries like Handloom, Knitting and Cotton Mills, the wages are not on fixed basis but on production basis. Therefore, the hired labour in

such industries have to generate their own wages as per efficiencies and scale of production. In such cases, if enough contract or work is not available for all the time, and if the performance or production of an employee is poor or less, the wages per person is easily affected resulting into low wage rate in the entire process.

Accordingly, even if we look to the wages per person in the male and female sections, women hired labour are getting higher wages in textile based industries. The wages between male and female are exactly equal in candle making industries. The wage differentials between man and woman in other categories have been found highly unequal where wage of male labour is always remarkably higher in Metal-based, Rubber and Leather, whereas wage rates are almost equal in the service based industrial sectors. In this industrial section/category wage rate differences are not much marked both at the levels of family labour and hired labour (Table 5.1 & Fig. 5.1b).

(3) Average Labour Cost : It is the product of wage rate per person and total labour employment of a particular firm. It is also labour input index in terms of rupees and comparable to other inputs like capital in the production system. According to the results of the primary sample survey, the average labour cost of the Basic Metal and Allied Industries in which Steel Fabrication trades are significant is recorded highest (i.e., Rs. 142,800/- per unit annually) which is nearly three times higher than that of the state average (i.e., only Rs. 52,066/-

per unit annually)- it may be because of higher wage rate and skilled labour requirements (Table 5.1).

On the other hand, the more traditional type and tiny units like textile-based, candle making exhibit a very less expenditure on labour cost. The average labour cost is minimum (i.e., Rs. 7,967 per annum) in textile-based industries. In fact as has been mentioned earlier, the labour cost in industries like Handloom, Printing, Cotton Mills, etc. are paid indirectly because employment in them are not fixed and regularity of employment and wage rates for male as well as female labour are very low.

The average labour cost are found very high in industrial categories like Rubber & Plastic Industries, Wood based industries, Paper based and Leather goods where the Rubber and Plastics industries exhibit the highest average labour cost. Though hired women labour are not found as much as in six categories (Table 5.1), still the ratio of woman hired labour is much higher in certain categories like (i) textiles and Textile goods, (ii) Chemical based and specially candle making, and (iii) Paper products, publishing and Allied. These industries, falling under the above three categories like Handloom industries, Candle making, Printing Press, Printing, Embroidery and Woollen Garments have good scope for upliftment of women unemployed both in the rural and urban areas. This is because women have traditional skills in weaving, Embroidery,

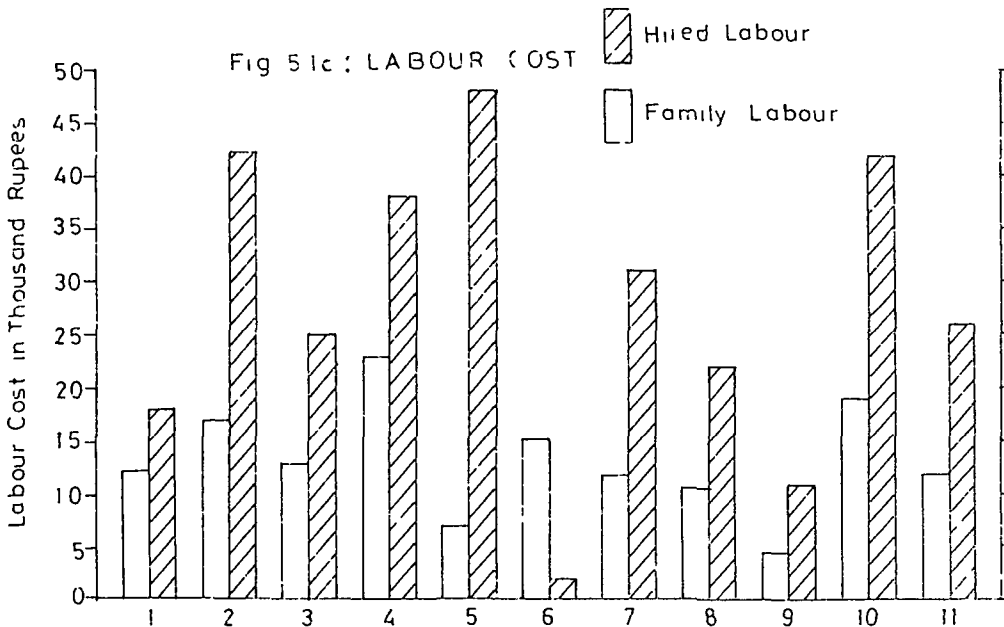
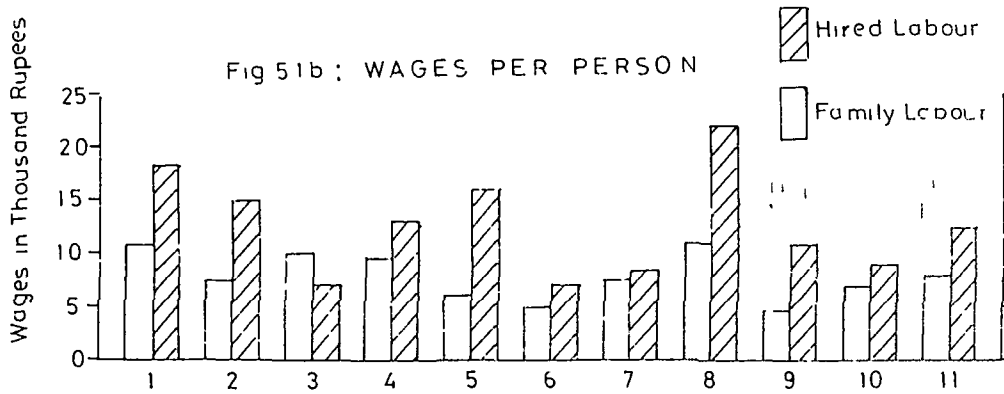
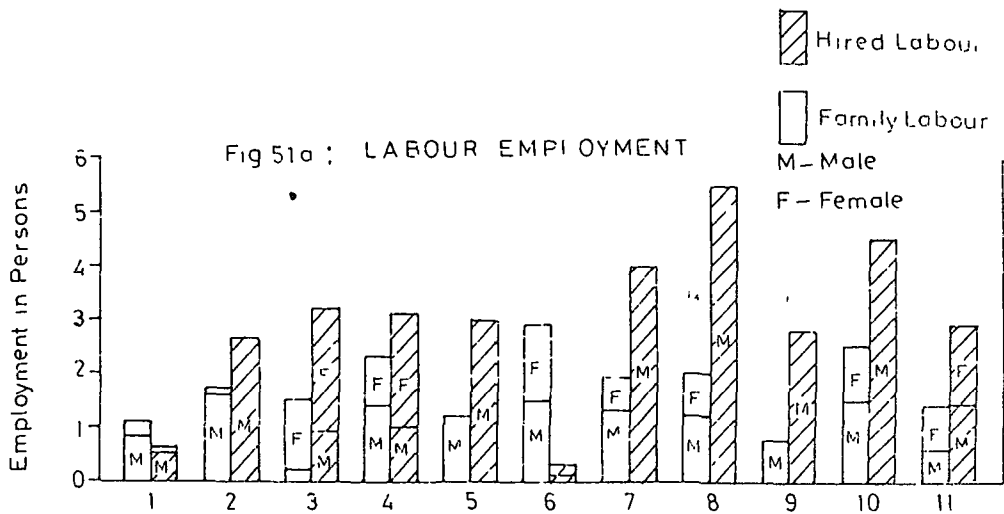
fruiting and also the cheaper wage rate of women made them attractive to employers in printing presses.

Looking into the overall condition of average labour cost by its sex composition, it is observed that the average labour cost for male workers per unit is higher than female whereas average labour cost are remarkably higher in hired labour than in family labour excepting in the candle making. The average labour cost for family labour is the least in Metal products and Material parts. In this category, though Blacksmithy is carried on at household level, Tinmithy and Aluminum work are carried on larger scale with hired labour resulting into the least average labour cost of family labour (Fig. 5-1c).

Therefore, the Table 5-1 and Figures 5-1a, 5-1b & 5-1c reveal that most of the industrial entrepreneurs have to depend upon hired labour, either skilled or unskilled and the participation of the family members in most of the cases is negligible indicating the family's independence on the establishments. It means, those families who have industrial establishments also have other sources of income because the workforce within such families never concentrate within their industrial establishments in most of the cases. This fact is revealed by the industrial labour composition (Table 5-1).

B. Structural Features of Capital Investment and Production :

The structural features of labour employment have been discussed in detail in the preceding section. In this part of



- | | | |
|------------------|---------------------|----------------------|
| 1- Food Based | 4- Paper Based | 8- Basic Metal Based |
| 2- Wood Based | 5- Rubber & Plastic | 9- Metal Parts |
| 3- Textile Based | 6- Chemical Based | 10- Leather Based |
| | 7- Non-Metal Based | 11- Service Based |

the Chapter, the capital investments, total costs and output of various industries would be analysed. The total cost of the production system is studied by classifying it into two main components: fixed costs and variable costs. The fixed costs include the annual building/land rent and the annual costs of machines, tools or equipments, while under the umbrella of variable costs, the costs of raw materials, transport, maintenance, repairing, power supply and interest on capital per annum are clubbed together.

Further, since the aim here is to find out the annual profit of each SSI and Cottage Industrial categories, the total labour cost is also included within the variable cost of production factors. Therefore, the total cost of production, total output and the total gross profit of the categories are derived for the detailed and comparative study. The category wise informations with regards to annual cost of production, output and gross profit per unit are shown in table 5.3.

From the Table 5.3, it is found that the traditional industries which are run at the household and cottage levels are using lesser amount of fixed capital investment. The fixed cost per unit is found to be the least (i.e. Rs. 1405) in Chemicals and Chemical based industries. Actually, under this particular category, Candle Making is the only trade found in the entire state. This particular trade, Candle Making, requires simple machines and tools whereas most of such units

are carried only at household level. Therefore, fixed capital requirement in such units ultimately became "the least".

The textile-based industries like Handloom Industry, Knitting, Embroidery, Woollen Garments and Hood making also do not require to install bigger machines and tools. As a result, the per unit fixed cost among the industrial establishment under this category is as low as Rs. 2420.00 per annum. Similarly, Rice Mill, Paddy Dehusking, Bakery, Gur Making, Chow Making, Oil Mill, Spices and Fruit Preservation, under the category of Food Products and Allied Industries, use simple and light machines and equipments. Moreover, these industrial establishments are mainly carried on at household level with low scale of production. Therefore, the annual fixed cost in these units is as low as Rs. 2073.00 per unit.

On the other hand, there are industrial categories where annual fixed cost per unit is remarkably high. The categories like (1) Non-metallic and material products, (2) Paper products, Publishing and Allied, (3) Rubber and Plastics, (4) Leather Goods and Repairing, (5) Basic Metal and Allied industries, and (6) Service based Industries are having annual fixed cost per unit higher than Rs. 10,000.00 in all the cases. In fact, these industrial establishments require modern techniques and machines. Thus, industrial establishments like Printing Press, Tyre Retreading, Ice factory, Steel Fabrication, Automobile Workshops, Stone Crushers, etc. have to install and employ bigger machines. Besides, larger space and

better buildings are required by them. Accordingly, the annual fixed costs per unit in such industrial categories are always higher than those of traditional and household industries. The annual fixed cost per unit is highest under the Non-metallic and Material products. This is mainly because of the Stone works and Stone Crushers which employ bigger machines and motor vehicles in the production processes resulting into high fixed costs (Table 5.3).

The annual variable cost per unit is enormously high under the Basic Metal and Allied Industrial category. This is because of the high raw material cost coupled with high skilled labour and transport charges. In fact, the raw materials like iron materials, gas, welding materials, etc. used in the Iron & Steel and Steel Fabrication Industries are all highly priced. Moreover, these materials are obtained from outside the state whereas Silchar, 185 km. away from Aizawl is the nearest place from where these materials can be obtained. At the same time, the skilled labourers employed in these industrial units are imported labour force from other parts of the country in most of the cases. Therefore, due to high raw material cost, high transport cost and skilled labour cost, the variable cost under this particular category became as high as Rs 7,68,000 per unit whereas the next highest variable cost per unit is as much as Rs 1,43,974 in Non-metallic and Material products (Table 5.3).

Table 5.3 : Annual Cost and Production in Various Household Categories (March 1993).

(Fig. in Rs.)

Sl. No.	Industrial Categories	Costs		Structure		Total Investment	Total Output	Gross Profit	Profit per Rs 100 of Investment*
		Fixed Cost	Variable Cost (Excluding Labour Cost)	Labour Cost					
1.	Food Products and Allied Industries	3073	64948	30400	98471	135736	37265	37.84	
2.	Wood & Wooden Products	3788	52365	59397	115550	182822	67272	58.22	
3.	Textile & Textile Goods	2430	51677	38023	92130	135971	43841	47.59	
4.	Paper Products, Publishing & Allied	11718	70738	60780	143236	232421	89185	62.26	
5.	Rubber & Plastic	12912	71298	55560	139760	363360	223600	159.99	
6.	Chemicals & Chemical Products	1405	45244	17616	64265	78738	14674	22.52	
7.	Non-Metal & Material Products	16471	143974	43457	203902	293467	89565	43.93	
8.	Basic Metal & Allied Industries	12218	765088	142800	923106	946155	23049	2.49	
9.	Metal & Material Parts	5434	27720	35040	68194	97880	97880	43.54	
10.	Leather Goods & Repairing	13670	72330	60000	146000	240840	94840	64.96	
11.	Service Based Industries	10647	19070	38406	68123	115929	115929	70.18	
Grand Total		7135	55807	42889	105831	159304	53473	50.53	

*-Profit per Rs. 100 of Investment = (100×Gross Profit)/Total Investment

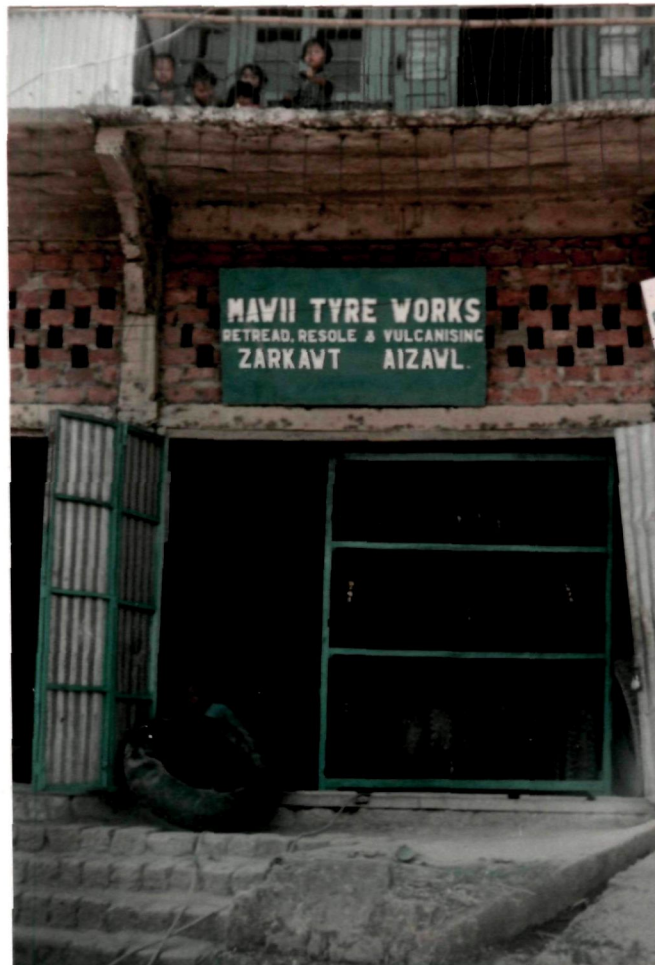
Source : Self Surveyed March 1993.

It is understood that higher capital investment in an industrial establishment will fetch higher magnitude of output. This is very much true even in the Basic Metal and allied industrial category where total investment per unit in one year is Rs. 9,23,106, the total output in rupees per unit in the same year is Rs. 9,46,155 showing the gross profit of Rs. 23,049 per unit in the accounting year (Table 5.3). But, an intelligent and promising entrepreneur should not be deceived by the notion that, higher is the amount of investment, the higher will be the return. Thus, an industrial entrepreneur has to see the rate of return per unit of investment and not the total figures. Thus, in order to give clear picture of the rate of return or output per unit of investment among the various SSI and Cottage Industrial categories of Mizoram, the last column of Table 5.3 has been generated here (for detail, see Appendix D).

From the Table 5.3, therefore, it is found that the total figures or magnitude of total investment and output per unit under the category of Basic Metal and Allied Industries are incomparably high whereas the actual rate of return per Rs. 100 of investment is only Rs. 2.49 which is a very very poor rate of profit. In fact, such small rate of return per unit of investment in the case is not worth the investment. This very low rate of return could be due to certain reasons. It may be because of high variable cost or the industries under the category like Steel Fabrication or Iron & Steel works are not suited to the local area. The Chemical-based industry, Candle

Making, is having the second lowest rate of profit per Rs. 100 of investment (i.e. Rs. 22.52) which is still very much higher than the Basic Metal and Allied Industries. On the other hand, the annual investment per unit in rupees is not so high, that is Rs. 1,39,760 in the category of Rubber and Plastics industries, the output per Rs. 100.00 of investment in this category is the highest among all the categories. Thus, it is found that the two trades (1) Tyre Retreading and (2) Plastics industries of the Rubber and Plastics category are the highest profit earning ventures in Mizoram. The profit per Rs. 100.00 of investment in this category is Rs. 159.98 whereas the second highest return per Rs. 100.00 of investment i.e. Service based category has only Rs. 70.18. In fact, the Tyre retreading trade or units have the profit per Rs. 100.00 of investment as high as Rs. 165.37 which is the highest among all the 102 different trades covered for the study, (plate 5 3).

As it has been shown in Table 3-11 and Fig. 3-10 of Chapter-III, the road conditions in Mizoram are still poor. A larger portion of the existing roads in the state are still unmetalled and weather-roads whereas vehicle population in the state as on 31.12.92 was, private 10573 and government 3250, total 13823 (Statistical Handbook 1992, p. 236). As a result of the poor road surfaces and the up and down roads due to the hilly terrain as well as the too many road curves, tyre consumption in the state is very high. Thus, motor tyres have to be retreaded frequently. As a result, Tyre retreading became very suited to the local conditions and accordingly tyre



5.3 : Tyre-Retreading, The industry where the highest rate of Profit per unit of Investment in Mizoram is Recorded.

retreading become the most profitable in terms of output per unit of investment. In fact, the capital investment as well as the labour cost in the units are high (table 5-3). The local demand for these units is very high due to the above reasons. Accordingly, the profit per Rs. 100.00 of investment in these units is more than double of the service-based industries where profit per Rs. 100.00 of investment is Rs. 70.18 (Appendix B).

The Service-based industries as a whole is having the second highest rate of profit per Rs. 100.00 of investment. There are 20 different trades under this category. Among such trades, Automobiles repairing and servicing, Electronics repairing and servicing, Painting industry and the Dental clinics are having the rate of profit per Rs. 100.00 of investment more than Rs. 100.00 where the Electronics repairing and servicing has the highest rate (i.e. Rs. 127.67) followed by Automobile repairing and servicing with Rs. 112.37. On the other hand, the rate of profit per Rs. 100.00 of investment is the lowest in Jewellery (i.e. Rs. 23.55) followed by Hotel and Restaurant with Rs. 23.77 of profit (Appendix D).

From the Table 5.3, it is clearly observed that out of the eleven SSI and Cottage Industrial categories, five categories are having the rate of profit per Rs. 100.00 of investment higher than the state average. These are : (1) Rubber and Plastics industries, (2) Service-based industries, (3) Leather Goods and Repairing, (4) Paper products, Publishing and allied, and (5) Wood and Wooden products. Among these five categories,

the last category, Wood and Wooden products industries like Furniture/Carpentry works, Saw mills and Cane & Bamboo works are the only trades solely depend upon the locally available raw materials. Further, among these three wood based industries, Cane & Bamboo works or Handicrafts is the most profitable trades with rate of profit per Rs. 100 of investment being Rs. 93.76, whereas the Saw Mills have only Rs. 10.49 of the corresponding figure (Appendix D).

It is believed that the above interpretation based on the simple calculations of the profitability of the SSI and CI set up in Mizoram will provide us with broad idea about the structural features of the industrial production processes in the state. But, there are other important aspects which would still show the clear-cut picture of the internal mechanism of the industrial production system of the study area. These aspects are based on some kind of relationships for taking decision in industrial development planning for the state in future.

An industrial undertaking whose investment in fixed assets in plant and machinery, whether held on ownership terms or Hire purchase does not exceed rupees sixty lakhs is defined as 'Small Scale Industry' at the national level (Table 2.1). So far as the present study area is concerned, the fixed cost per unit is very very low. The fixed cost per unit which is Rs. 13,670.00 in the Leather Goods and Repairing category is the highest whereas the Candle Making units have the lowest fixed

Capital investment which is as low as Rs. 1400.00 (Table 5.3). But in comparison to the low fixed capital investment in all the categories, the variable costs have been enormously high in most of the categories excepting the Service based industries. Therefore, for the detailed study of the variable costs (excluding labour cost) the Table 5.4 has been generated and analysed in this part of the Chapter.

From the Table 5.4, it is found that the share of raw materials cost became higher than 80 percent of total variable cost in all the categories excepting the Wood and Wooden products where the expenditure on raw materials is marked 79.26 percent of total variable cost. This lower share of raw material cost in this particular category is attributed to the fact that these industries obtain raw materials which are locally available and forests in Mizoram being the most abundant natural resource in the state. The industries under the category of Food and Allied industries are supposed to obtain raw materials generated by local sources or agricultural products. But, excepting the Rice Mill, Paddy Dehusking, Gur making, all other prominent trades like Bakery, Chow making and Fruit Preservation units have to obtain their raw materials like flours and other ingredients outside the state. Ultimately, the share of expenditure on raw materials under this category become as high as 90.93 percent of the total raw material costs. Similarly, the textiles and textile based industries have to incur 97.30 percent of variable costs on raw materials. This is because all the raw materials like cloths,

threads, wool, dyeing materials have to be obtained from other parts of the country. Commercial cotton cultivation, commercial agriculture farming, sheep rearing etc. are not yet carried on in the state. As a result, all the trades under the category like, Handloom industry, Hood making, Embroidery, knitting and Cotton mills have to depend on raw materials produced in other parts of the country. Therefore, since almost all the industrial establishments in the state depend upon raw materials coming from outside the state, the expenditure on this variable cost become very very high.

Though the percentage share of expenditure on electric power supply is always low in comparison to raw material, it is found from the Table 5.4 that among the different variable costs, expenditure share of electric power supply became the second highest where substantial amount of variable cost has to be spent on it. In fact, out of the eleven categories, as much as six categories have to spend their second highest share of variable cost on it. Industrial categories like Paper Products, Publishing and Allied industries, Rubber and Plastics industries, Metal Products and Material parts, Basic Metal and Allied industries and Service-based industries incur the second highest share of variable cost for power in production processes.

Table 5.4 : Annual Variable Costs Excluding Labour Cost (1993).

Industrial Categories	(Rs. per Unit)						Total Variable Cost
	Raw Material	Transportation	Electric Power	Maintenance	Repairing	Capital Interest	
1. Food Products and Allied Industries	61004 (93.92)	1158 (1.78)	885 (1.36)	1231 (1.70)	540 (0.83)	130 (0.20)	64,948
2. Wood & Wooden Products	41505 (79.26)	7000 (13.37)	1500 (2.86)	1400 (2.67)	800 (1.53)	160 (0.31)	52,365
3. Textile & Textile Goods	50280 (97.30)	305 (0.59)	270 (0.52)	370 (0.72)	390 (0.75)	62 (0.12)	51,677
4. Paper Products, Publishing & Allied	57678 (81.54)	2200 (3.11)	4800 (6.79)	3400 (4.80)	2290 (3.24)	370 (0.52)	70,738
5. Rubber & Plastic	59750 (83.61)	2400 (3.37)	5000 (7.01)	2500 (3.51)	1500 (2.10)	138 (0.20)	71,288
6. Chemicals & Chemical Products	42840 (94.69)	950 (2.10)	1000 (2.21)	180 (0.40)	240 (0.53)	36 (0.07)	45,244
7. Non-Metal & Material Products	117355 (81.51)	1940 (1.35)	5620 (3.90)	9470 (6.58)	8270 (5.74)	1319 (0.92)	143,974
8. Basic Metal & Allied Industries	737680 (96.04)	11800 (1.54)	15700 (2.04)	1100 (0.14)	1200 (0.17)	608 (0.08)	768,088
9. Metal & Material Parts	24340 (87.80)	990 (3.57)	1580 (5.70)	380 (1.37)	400 (1.44)	30 (0.12)	27,720
10. Leather Goods & Repairing	66260 (91.60)	4000 (5.53)	1200 (1.66)	600 (0.83)	200 (0.28)	70 (0.10)	72,330
11. Service Based Industries	15400 (80.76)	400 (2.10)	1200 (6.29)	840 (4.40)	1125 (5.90)	105 (0.55)	19,070

Source : Self Surveyed (March 1993).

The industrial categories like (1) Wood and Wooden products, (2) basic metals and allied industries, (3) Metal Products and Material parts, and (4) Leather Goods and Repairing spend substantial percentage of variable cost on transportation charges. Excepting the Wood and Wooden products, the rest three categories mentioned above have to obtain raw materials from other parts of the country resulting into high expenditure on transportation. But at the same time, the industries under Wood and Wooden products like Furniture and Carpentry works, Saw mills and Cane & Bamboo works are always located only in urban areas and thus they have to depend on raw materials coming from remote and far away places resulting into high transport charges.

Certain industrial categories like (1) Food products and Allied industries, (2) Paper products, Publishing and Allied, (3) Non-metallic and Material products, and (4) Service-based industries incur substantial share of variable costs on maintenance whereas the general expenditure share on repairing is worth mentioning only with categories like Service-based and Textile-based industries where frequent repairing of the machines and tools used to become necessary in many cases.

From the Table 5.4, it is also clearly observed that among the variable costs, the expenditure share of capital interest becomes the least where no category has incurred heavy expenditure on it. This may be because the units are still very small to employ higher fixed assets, where higher interest charges are

made, resulting into lower total amount of interests on capital that has to be paid annually. Thus, excepting raw materials, electric power supply plays the most important role in the smooth functioning of the SSI and Cottage Industries in the study area. Next to the power supply comes the transport facilities, so and so on.

C. Production Function and Componental Relationship in the SSI & CI Setup :

There are various componental relationships which can be studied for the future investment strategies in the SSI & CI section of the industrial setup. These relationships, namely, Capital-Labour Ratio, Capital-Output Ratio, Average as well as Marginal productivities of labour and capital in the various SSI & CI categories and elasticities of production factors, would give us the clear cut picture of the industrial set up which have been highlighted in the following pages.

(1) Capital Investment per Worker : In the preceding lines, attempts would be made on the aspects of capital investments, output and the labour employment combinations with the help of Table 5.5. It means, within the existing strength of the SSI and Cottage industrial categories, the level of capital investment per industrial labour, the level of capital investment required for per unit of output as well as by investing Rs. 1,00,000, how many industrial labour are employed in each and every category. This would help us to understand the pattern of capital and labour intensity as well as capital

requirements in all the categories. Thus, the clear idea as to the role of the three components in the entire production processes is provided by this section.

From the Table 5-5, it is found that the capital investment per industrial worker is enormously high (i.e. Rs. 1,11,472) in the Basic Metal and Allied industries category. The different industrial trades operating in Mizoram under this particular category are (1) Iron & Steel Industries and (2) Steel fabrications. Even though these two trades are officially registered separately, it is found, through the field survey and interviews to the proprietors, that the two trades are having similar functions like making of window drill, corrugate welding, dustbin making and other allied items. These industrial units require huge amount of money for investment in plant and machinery, and as a result, capital investment per worker is incomparably higher than all other categories.

The second highest rate of capital investment per industrial worker is recorded in the Food Products and Allied industries. Though the industries under this category like Rice mill, Paddy Dehusling, Gur Making and Chow Making are not high capital employing units, the investment in plant and machinery in bakery, Oil Mill and Fruit Preservation units are much higher in comparison to the others. Thus the capital investment per workers become Rs. 39,496 which is the second highest among all the categories (Table 5-5). Capital investment per industrial worker is marked the lowest (i.e. Rs. 8547) in the

category of Service-based industries. It is quite true and believable that generally, the units under the Service-based industries do not require heavy investment in plant and machinery where the human resource itself is also acting as capital in many cases. On the other hand, there are also individual trades under the category where heavy investment in plant and machinery is required like, (1) Automobile repairing and servicing, (2) Diesel injection pump repairing and servicing, (3) Opticals, (4) Hotel & Restaurant, and (5) Photo

Table 5.5 : Capital Investments and Labour Employment Intensity.

Industrial Categories	Capital Investment per Worker (in Rs.) (C/L)	Capital Investment per Unit of Output (C/O)	Labour Employment per Rs. 10000 Capital Investment (L/C)
1. Food Products & Allied Industries	39,496	0.50	3
2. Wood & Wooden Products	12,923	0.31	8
3. Textile & Textile Goods	11,340	0.40	9
4. Paper Products, Publishing & Allied	15,270	0.35	7
5. Rubber & Plastic Industries	20,047	0.23	5
6. Chemicals & Chemical Products	14,578	0.59	7
7. Non-Metallic & Material Products	29,556	0.55	3
8. Basic Metal & Allied Industries	111,472	0.82	1
9. Metal Products & Material Parts	9,209	0.34	10
10. Leather Goods & Repairing	12,286	0.36	8
11. Service Based Industries	3,537	0.26	11

Abbreviations : C = Capital Investment,
L = Labour Employment
O = Output in Rupees.

Source : Self Surveyed, March 1993.

studio, etc. But, at the same time there are also certain industrial trades under this category which are smaller in size and require less investment in plant and machinery. These are Tailoring, Knitting, Beauty Parlour, Dry Cleaner, etc. Therefore, by taking the capital investment per worker for all the 20 trades under the category, the category-wise capital investment per worker become only Rs. 8,567 which is the least (Table 5.5).

The next lowest rate of capital investment per worker is in the category of Metal products and Material parts. Under this category, we find that Blacksmithy, Ironsmithy and Aluminium works are operating in the area. Though variable cost is high in these units, the required machines and tools are simple. Therefore, capital investment per worker is recorded only Rs. 9,209 (Table 5.5).

(2) Capital Investment per Unit of Output : In the preceding section, the capital investment per worker has been described. The following lines are the description of category-wise capital investment for an output unit. That means, to produce one unit of output, what is the amount of capital investment required in the different trades. Thus, this section would show the scope of capital investment among the categories. Though the knowledge of capital or labour intensity of an industrial establishment is important, an industrial entrepreneur has to see how much capital investment is incurred for one unit of output because the ultimate aim of the firm is profit

maximisation. Accordingly, an entrepreneur has to take the decisions by considering the marginal productivity of both capital and labour.

From the Table 5.5, it is clearly seen that capital investment per unit of output is the least in the Rubber and Plastic industrial category, that is only Rs. 20 per one hundred Rupees of output. Similarly, capital investment per unit of output is very low in the Service-based industries (i.e. Rs. 26). Therefore, it is found that these two categories are having good scope for additional capital investments. In other words, a little increase in the capital investment will result into a remarkable increase in total output. Similarly, other industrial categories like (1) Wood and Wooden products, (2) Metal products and Material parts, (3) Textiles and Textile-based industries show a wide scope for increase capital investments.

On the other hand, the Basic Metal and Allied industries is the most capital intensive category; it is Rs. 82 per 100 Rupees of output. Also, the categories like Non-metallic and Material products as well as the Candle making industries have more than 50 percent share of capital investment per one hundred Rupees of output where the principal reason behind being high variable cost. Truly, the Basic Metal and Allied industries has the least profit per Rs. 100.00 of investment (Table 5.4) whereas it requires the largest amount of capital investment per 100 Rupees of output (Table 5.5).

(3) Labour Employment per Unit of Capital Investment : Labour is also equally important factor of production whereas the secondary sector of the economy is one of the best solution of unemployment problems in a country like India. Therefore, it is necessary to study the level of labour employment potentials in the different SSI and CI categories of the study area. Since labour alone can not be studied in total isolation in an industrial production function, the possibility of industrial labour entry into the various categories are studied in relation to capital investment. Thus, this part of the description will help us to see the potentials of labour employment in these categories as per capital investment. Industrial labour employment (in persons) in the various categories is thus studied by measuring its intensity per capital investment of Rupees one lakh in the trade and try to provide the information as to by investing Rupees one lakh, how many persons can be expected to employ in an individual unit.

Accordingly, from the Table 5-5, it is found that in the category of Basic Metal and Allied industries only one person is employed per Rupees one lakh of capital investment. Therefore, the labour share is very small or negligible in the production processes in this particular category.

The chance of industrial labour entry as per investment of Rupees one lakh is seen highest in the Service-based industries (i.e. 11 persons) followed by the Metal products and Material parts (i.e. 10 persons). This considerably higher chance of

labour entry in these categories is mainly due to the lesser requirement of capital investment in plant and machinery in these industries. The Textiles and Textile industries, Wood and Wooden products, and Leather Goods & Repairing have high chances of labour entry as per capital investment (Table 3.5). Thus, The industries under the above three categories, also have good scope for the industrial labour employment. On the other hand, the other categories like : (1) Food products and Allied industries, (2) Non-metallic and Material products show a weak performance of intensification of industrial labour employment with respect to capital investment (i.e. only 3 persons with Rupees one lakh of capital investment). This is because the units under these categories are small with low scale of production. In fact, these units are run at the family or household level in most of the cases as described in the earlier discussion of the same Chapter. On the other hand, the industrial trade under Non-metallic and Material product, Stone crusher or Quarrying has high potential labour entry in it with corresponding increase in capital investment. Therefore, it can be said that these industries are labour intensive whereas the Basic Metal and Allied industries are capital intensive. A more detail study of labour employment and capital investment may be made by examining the elasticity patterns of industrial establishments.

(4) Marginal Productivity and Elasticity of Labour and Capital Inputs : Any commodity production is the results of the combine functions of labour and capital inputs. Thus, an industrial

entrepreneur is always interested to evaluate the simultaneous role of these two production factors in the process of production. Further, an industrial entrepreneur has to see the ideal combination of the two where the marginal productivity of both the factors are highest in relation to the other factor because profit maximization is the final aim of all such entrepreneurs. In fact, the optimal combination of the two factors has to be achieved in order to get maximum output with minimizing input costs.

Keeping the above nature of theoretical concept in mind, the marginal productivity and elasticity of labour as well as capital inputs within the setup of SSI & CI in Mizoram have been studied and the emerging patterns of industrial (SSI & CI) structure have been analysed. For this purpose, Rubber and Plastic industrial category and Chemical-based (Candle making) are put together in one group; Non-metallic and Material products, Basic Metal and Allied industries and Metal products and Material parts in another group; and Leather Goods and Repairing category is grouped to the Service-based industries. This regrouping of some categories have been done for better results and convenience. The detail information with this regard is furnished with the help of Table 5.6. From the Table, the following informations have been inferred.

Table 5.6 : Marginal Products of Labour and Capital Inputs of Various SSI & CI Categories in Mizoram (March 1993)

Industrial Category/Group	Marginal Product (MP) and Elasticity (Pe) with Respect to		
	Labour	Capital	R ² (%)
Food Products & Allied Industries (N=36)	MP - 0.6313 Pe - 0.0331	0.9521 0.7468	9.12 78.55
Wood & Wooden Products (N = 40)	MP - 0.7723 Pe - 0.8298	0.0779 0.1869	86.68 98.00
Textile and Textile Industries (N=35)	MP - 0.0258 Pe - 0.5459	0.0225 0.0148	17.59 27.89
Paper Products, Publishing & Allied Industries (N=10)	MP - 0.0719 Pe - 0.0257	0.0977 0.9697	39.51 86.21
Rubber & Plastic Industries and Chemical & Chemical Products (N=15)	MP - 0.0923 Pe - 0.6944	0.0134 0.2154	36.88 37.13
Non-Metallic & Material Products, Basic Metal & Allied Industries and Metal Products & Material Parts (N=16)	MP - 0.1594 Pe - 0.1171	0.7754 0.9524	20.28 87.50
Leather Goods & Repairing and Service-Based Industries (N=98)	MP - 0.0942 Pe - 0.1891	0.4040 0.8773	17.24 82.99

Source : Self Surveyed, March 1993.

Abbreviations : N indicates the number of observations (selected samples)

N.B. : The values of MP are calculated by applying linear production function as

$$Y = a + b_1X_1 + b_2X_2,$$

where b_1 and b_2 refer to the marginal productivities while for the elasticity coefficients, the Cobb-Douglas function has been applied. It is as :

$$Y = a X_1^{b_1} X_2^{b_2},$$

where b_1 and b_2 refer to the elasticity coefficients.

(1) The values of marginal products with respect to labour as well as capital inputs are positive but not more than one in all the cases. It means that the production function is being operated at lower level of marginal returns. It indicates that the share of additional increase in the production is lesser than the share of additional investment in the industries. Therefore, the entrepreneurs are getting proportionately lesser profits and average productivity of each and every industrial activities is lesser than unity. Therefore, the entrepreneurs are not interested to intensify the production factors. As a result the entire industrial setup of SSI and CI in the area is stagnant though Mizoram Government is trying to eliminate these stagnant or static conditions of the SSI & CI unit- in the state. The results of marginal productivity of various industries which are based on secondary data as interpreted in Chapter-IV are remarkably different from these results. The marginal productivity values are greater than one in the case when secondary data are used. It means secondary data is not reliable. The present results are explains the real world situation.

(2) Comparing the marginal productivity of labour among the categories it is found that the industrial activities related to Wood and Wooden products as well as Food products and Allied industries have significant values of marginal products, 77.25 percent and 63.13 percent respectively. This indicates that these industries have higher returns though they are labour dominated. On the other hand, elasticity of labour is recorded

very high (0.83) for Wood and Wooden products. This is the reflection that Wood-based industries can may employ more labour in future without sacrificing the rate of production while efficiency of labour is also recorded higher (0.6944) in the Rubber and Plastic industries whereas the marginal product of labour is insignificant in these activities. But in future, labour is required in these labour dominated industrial activities.

(3) So far as marginal productivity of capital input in SSI & CI are concerned in the study area, it is obvious from the table that (i) Food products and Allied industries and (ii) the group of Non-Metallic and Material product, Basic Metal and Allied industries and Metal products and Material parts are having very high values of marginal products, that are 0.9521 and 0.7754 respectively. The elasticity coefficient for them are also recorded high. It means that these industrial categories have good future prospects for more capital investment. Furthermore, it is visualized from the table 5.6 that (i) Paper products, Publishing, (ii) Leather Goods and Repairing and (iii) Service-based industrial groups are also having very high coefficients of production elasticities with respect to capital investment that are 0.969 and 0.877 respectively, though the values of marginal products are comparatively lesser, 0.357 and 0.424 respectively for them. In the existing setup of these SSI & CI categories, though they are labour dominated, yet there is need of more investment of capital for their optimal growth in the area.

(4) Category-wise comparison of marginal products and elasticities of labour inputs with capital investment reveals that Food products and Allied industries have very high value of marginal product for both the inputs, though elasticity coefficient is higher for capital investment in the category. It shows a strong demand and supply for the local people for their products like Baking, Chow, Rice milling and Fruit Preservations. On the other hand, Wood and Wooden products are also having good future prospects for their development, but the marginal products and elasticity coefficients are very low in these industrial trades under the category. It may be because of the trades under this category are having traditional modes of production. On the other hand, Non-Metallic and Material, Basic Metal and Allied, and Metal products and Material parts are capital intensive in the area. Therefore, marginal product and elasticity coefficients are higher for capital investment than labour employment.

(5) After adding the coefficient of production elasticities of both the inputs (labour and capital) for each and every industrial category of the state, it is interesting to note that the four categories or groups such as : (i) Food Products and Allied Industries, (ii) Wood and Wooden Products, (iii) Leather Goods and Repairing with Service-based and (iv) Non-Metallic and Material Products and Allied Industrial Units have the aggregated coefficient value higher than unity. The respective aggregated coefficient values of these industrial categories are as follows : Food products and Allied Industries

- 1.0799, Non-Metallic and Material Products and Allied
1.0695, Leather Goods and Repairing with Service based -
1.0664, and Wood and Wooden Products 1.0167 (Table 5.6). This
indicates that the Law of increasing return is applicable in
these industrial trades of the state.

CONCLUDING REMARKS

It can be concluded from the preceding discussion which
has been put forward here in analytical way that the smaller
sizes of industrial units within the SSI & Cottage Industries
are Service-based, Chemical and Food-based industries. On the
other hand, Basic Metals, Non-metals and Metal product
categories have slightly larger sizes of labour employment. It
can be generalized that a small size of industrial
establishments are labour dominated in which the conditions of
very high proportion of family labour with low wage rates and
very less share of capital investment are prevailing while, on
the other hand, bigger size industrial units, though the
capital investment is more in them, are based on hired labour
force with higher wage rates. So far as the structure of
variable costs is concerned, the biggest share of variable cost
is spent on raw materials items. Therefore, the study of
resources is necessary for the local availability of raw
materials for the future industrial development in the area.
The detailed study of locally available raw materials have been
made in Chapter-III. Although, Rubber and Plastic industries,
Leather Goods and Repairing and Service-based industries are

having very high rate of profit per unit of investment, however, these industries are also having high significant values of marginal products and elasticity coefficients for capital investment with a high degree of coefficient of determinant which reflects the good future prospects of those industries. Even Food and Allied industries are also having bright prospect for the future development of SSI & CI in Mizoram. On the basis of these conclusions, some more generalizations can be suggested which would be discussed separately in the next Chapter.

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CHAPTER VI

Role of Administrative and Financial Institutions :

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INTRODUCTION

An empirical work on the development of industries in a "No Industry Area" like Mizoram is very much interesting and challenging. The very concept of No Industry Area helps us to understand about the problems and prospects of industrial development in the area. 'No Industry Area' does not necessarily mean that industrial ventures, at any level, are not operating in the entire area. Rather, there are many industrial units operating in the state but with great difficulties.

As the study area/Mizoram lies in the extreme corner of the North-Eastern India having rugged terrain and hilly features, transport and communication facilities are still very much limited, resulting into less interactions of the people with rest of the country. Thus, Mizoram remained isolated for years physically, politically, economically and even socially. There have been immense obstacles and hindrances for industrial development within itself. The people in general are financially poor, technologically unable, inefficient in management and below standard in competition at the national level. Industrial development under such ugly atmosphere is highly depend upon the concerned government. Accordingly, industries Department, Government of Mizoram, is highly responsible for the sector. Therefore, the role of government and its achievements through the administrative agencies, as well as financial agencies in the state become very very

important. Thus, attempt is made in this Chapter to highlight the evolution of industrial development in the state, the Institutional supports and the financial agencies operating in the state. Attempt is also made to highlight the achievements of these agencies and their influence on the existing industrial structure with regards to productivity and responses.

The Financial Institutions and the Training Institutions or Agencies offering training facilities of vocational nature are approached with proforma. To test the performance of the institution in giving loans to entrepreneurs, the financial institutions are asked to provide annual beneficiaries in trade-wise and the amount disbursed and recovered and the rate of recovery at individual level. To see the over all performance of an institution, five consecutive years (i.e., 1988-89 to 1992-93) informations are collected and results are generalized.

Likewise, the trainees in different trades of the various institutions are collected with scheduled charts and from the statistics thus obtained, the important trades where the total trained is always remarkable and vice-versa are obtained. Thus, the schemes, programme and facilities available from the administrative agencies and the relationship between financial and industrial units are examined. Besides, the financial officers concerned and the administrative and field officers of both administration and financial agencies are personally

contacted and discussed the ground realities in details. Now let us, therefore, elaborate the various aspects of the Chapter in the proceeding pages.

EVOLUTION OF INDUSTRY DEPARTMENTS

Government's interference towards development of Cottage industries dated back to 1939 with a humble spirit to inject a commercial bias in weaving industry initiated by the then Lushai District Superintendent. The Superintendent raised funds from his own pocket and loans from the Government. Sir Robert Reid, the Assam Governor of that time provided 'Reid House' in Aizawl to the organization and some Mizos were sent to Calcutta to undergo training in Synthetic Dyeing (District Gazetteers 1989, p. 136).

Ten years after, by 1949, one Government Weaving Training Centre was established at Lunglet. By 1950, the first Community Development Block in the district was created at Aizawl and the first official Officer in-charge of industries, Industrial Extension Officer, was posted in the Community Development Block. Therefore, with the initiative of the Industrial Extension Officer, training centres like (1) Soap making cum Production centre (1959), (2) Dyeing cum Production centre (1959), (3) Wood works cum Production Centre (1964), (4) Cane works cum Production centre (1961) all in Lunglet and (5) Handloom Weaving Training centre (1960) at Habung were created (Kalchununga 1992, pp. 15).

A project office was again opened at Aizawl in 1969 with the objective to bring cooperative and industrial bias in the rural economy. The office was equipped with a Technical Officer and Survey and Planning team. By 1970, the project office was again enlarged and industry office was headed by Assistant Director of Cottage Industries. Then the full-fledged Directorate of Industries came into existence by 1972 along with the Union Territory Government in Mizoram.

The District Industries Centre (DIC) was created at Aizawl in 1979 and the existing Rural Industries project was merged with it. Then DIC's at Lunglei and Chhulmupur Districts were created in subsequent years. To initiate industrial development on a sound footing, there has to be a strong and well established administrative machinery. Thus the industries department goes on expanding itself horizontally by creating sister and supporting organizations. Its present administrative setup is structured as:

- (a) Administrative Department at the State Secretariat level is at the peak administration.
- (b) Directorate of Industries Department with two full-fledged wings under Assistant Directors, such as :
 - (i) Handloom and Handicraft Development wing, and
 - (ii) Geology and Mining wing.
- (c) District Industries centres at each district Headquarters.
- (d) Sister Organizations functioning under Industries Department, Government of Mizoram, such as- (i) Zoram Industrial Development Corporation Ltd. (ZIDCO), (ii) Mizoram Hand & Village Industries Board (MHVIB), (iii) Mizoram Handloom and Handicrafts Development Corporation (MHIDC), (iv) Mizoram Food & Allied Industries Corporation (MIFAC), and

(v) Zoram Electronics Development Corporation Ltd. (ZENEDS).

The Industries Department, Government of Mizoram, with these sister organizations, having their respective goals and objectives, joint hands and shoulders industrial development in the state.

INDUSTRIAL DEVELOPMENT MEASURES

The Central Government at the National level is following certain developmental measures for the Small Scale and Cottage Industries. On the other hand, the State Government also follows certain developmental measures for the sector in their respective areas. Therefore, in many cases, the Small Scale and Cottage Industries enjoy concessional finance, subsidies, consularcies, etc. both from the Central and home state simultaneously. An attempt has been made here to highlight such facilities from the Central Government ^{to} ^{having} applicability in the state as well as the measures adopted by the Government of Mizoram.

(a) The important measures initiated by the Central Government for the development and promotion of SSI having applicability in Mizoram (Choudhary 1974, pp. 44-45).

1. Declaration of 'No Industry District' : As per the 'No Industry District' declaration by the Centre, the whole state falls within the purview of the Centre. Therefore, the special concessions and facilities, subsidies and other centrally schemes towards the development of SSI

sector became operative in the state. Therefore, the concessional financial assistances in the form of fixed capital or working capital at lower rate of interest, longer moratorium, longer period of recovery, etc. are enjoyed by the SSI units in the state.

2. Reservation of SSI Items : The Central Government reserved about 836 items to be solely manufactured by only the SSI sector. However, only 43 such items are being manufactured at present in Mizoram.
3. Supply of Machineryes on Hire Purchase Basis : The National Small Industries Corporation (NSIC) supplies machineryes on hire purchase basis to the SSI units of Mizoram as demanded.
4. Marketing Assistance : The SSI units in the state are also entitled to enjoy the scheme of compulsory procurement of commodities (specified) by official uses only from the SSI units or produced by SSI units.
5. Supply of Scarce Raw Materials : Scarce raw materials are supplied through the raw materials Sales Depots under DIC's to the SSI units.
6. Central Transport Subsidy : The Central Government makes Scheme of giving transport subsidies to the SSI units in areas of poor transport and communication facilities. Accordingly, Mizoram SSI units are entitled to the subsidy for carrying machines and raw materials from Siliguri in Assam to the State to the tune of 90 percent.
7. Export Promotion : Though the facility is opened in Mizoram, presently no SSI unit is having Export License.

* * *

(b) The state government, in conformity with the general central guidelines, has been adopting various promotional measures. Presently, under the provisions of the Mizoram Industrial Subsidies and Incentive Rules 1991, the government extends various incentives, subsidies, programme and schemes for the development and promotion of SSI and Cottage Industries in the state, such as

* * *

1. Subsidy on the Cost of Project profile : An industrial unit in the state is made eligible to claim subsidy on the amount spent for the preparation of project report. Such

subsidy payable to one unit is limited to (i) 70 percent in case of tiny units subject to maximum ceiling of Rs. 5,000.00, (ii) 75 percent in case of SSI and ancillary units subject to maximum ceiling of Rs. 25,000.00, and (iii) 50 percent in case of Medium and Large scale units subject to ceiling of Rs. 50,000.00.

2. Land Subsidy : The industrial units in the state are eligible to claim subsidy for the amount leased/charged/fee on the developed land allotted and on the amount spent for development of undeveloped land allotted land within the industrial estate/growth centre or any industrial area established by the state government in the rates : (i) 25 percent of the leased/charged/fee of allotted developed/undeveloped land for a period of five years, and (ii) 25 percent of the amount spent by the unit on development of undeveloped land allotted to the unit.
3. Subsidy on Factory Rent : Subsidy can be claimed by tiny and SSI units for the rent of industrial accommodation occupied by the units in an industrial estate/growth centre/areas for maximum 5 years upto 50 percent of the assessed rent with maximum ceiling of Rs. 30,000.00.
4. Subsidy on Man-Power Development : The industrial units which have started production are entitled to depute their employees for training outside the state with due approval of industries Director. Such units can avail 50 percent of actual expenditure for such training subject to a ceiling of Rs. 3,000.00 per trainee and Rs. 20,000.00 per unit per year.
5. Interest Subsidy : An industrial unit, whose loan recovery is timely and regular, is made eligible to avail subsidy on interest on the term-loan/working capital loan for a period of 5 years from the date of commissioning of the unit limited to 4 percent from excess* interest of 9.5 percent with ceiling to Rs. 3,50,000.00 in term loan and Rs. 1,20,000.00 in working capital loan a year.
6. Power Subsidy : Power subsidy for the power consumed in the industrial unit can be claimed for the first five years subject to (i) 60 percent in case of tiny, Small Scale and ancillary units, (ii) 50 percent in case of medium scale units, and (iii) 30 percent in case of large units.
7. Subsidy on Power Line : Subsidy on the total expenditure for drawing power from the power line to the industrial unit with due approval from authorized Department/Agency, can be claimed at the rate of 50 percent with ceiling of Rs. 50,000.00.
8. Subsidy on Power Generation Sets : An industrial unit can claim 50 percent of expenditure on generating set and its

installation for the industrial use subject to maximum of Rs. 3,00,000.00.

9. State Transport Subsidy on Plant and Machinery : Transport subsidy on actual expenditure for carrying plant and machineries for newly established units as well as for expansion for existing units can be claimed subject to 50 percent of actual cost of transportation either by railways or Road transport (Lalchamhana 1992, pp. 10-11).

INSTITUTIONAL SUPPORTS IN MIZORAM

As is understood, there are various organizations in the country to look after the promotional aspects of the SSI sector of the country. Some of these organizations are of National level, while others function at Regional or State levels. Some of such organizations, having immediate relevance to Mizoram are :

1. Nationalised Banks (including SBI) : Nationalised banks are Commercial banks which provide financial assistances to the SSI units. They provide working capital loans, composite loans, cash credit facility, rediscounting of bills, etc.

Presently, there are only three Nationalised banks in Mizoram, State Bank of India (SBI), United Commercial Bank (UCB Bank) and Vijaya Bank. The SBI is operating with its 23 branches whereas Vijaya Bank and UCB Bank do not have any branch. Thus, in total there are only 23 branches of these banks in the entire state. The State Bank of India with its Regional Office at Aizawl is the lead bank in the state.

2. Small Industries Development Organization (SIDO) : The SIDO is the apex body at the Central level for formulating the policy guidelines and directives for the development

and promotion of the SSI sector of the country as a whole. There is an office of SIDO in the form of Branch Small Industries Service Institute (B-SISI) in Aizawl.

3. National Small Industries Corporation (NSIC) : The NSIC Ltd. is a Government of India Undertaking with its Headquarters at New Delhi. The principal function of NSIC is supply of machineries on hire purchase basis. Besides, it takes care of prototype development and technical training for the benefit of the SSI units. The nearest Regional Office of the NSIC from Mizoram is located at Buxarhat, Assam.
4. Bureau of Indian Standard (BIS) : The BIS is the authority in the country to stipulate standards for the quality industrial products and also to issue the quality mark viz., ISI to the industrial products conforming to such quality standard. The BIS can be contacted for ISI mark through Branch BIS Aizawl.
5. Hand and Village Industries Commission (HVIC) : The Hand and Village Industries Commission is functioning with its net work offices throughout the country. The commission formulated different promotional programme for the development of the industries which include Hand and other Cottage/Village Industries and Handicrafts. The HVIC is operating in Mizoram through the Mizoram Hand and Village Industries Board (MHVIB) with its head office at Zailawt, Aizawl.
6. Industrial Development Bank of India (IDBI) : The IDBI is the apex financial institution of the country. It is to co-ordinate the working of institutions engaged in financing, promoting or developing credit and other facilities for the development of industries and for matters connected therewith etc. The IDBI has its branch in Aizawl since 1986. Presently, the IDBI is functioning in the name of SIDBI.
7. Small Industries Development Bank of India (SIDBI) : The SIDBI has been set up as a wholly owned subsidiary of IDBI in 1989 with its Headquarters at Lucknow. It was established as the principal financial institution for promotion, financing and development of the SSI units and to coordinate the functions of all the institutions engaged in similar activities.

The SIDBI branch office is opened at Aizawl and it is operating through State Financial Corporations, State Industrial Development Corporations, Commercial Banks, Co-operative Banks and the Regional Rural Banks.

8. North Eastern Industrial Consultancy Ltd. (NECON) : The NECON Ltd. is a consultancy created through the joint sponsorship of financial institutions for extending technical consultancy and other allied services to the SSI sector of Manipur, Mizoram, Nagaland and Tripura. NECON also conducts Entrepreneur Development Programme and study visits to expose the entrepreneurs in the North Eastern Region to industrial world else-where in the country. The NECON office in Mizoram is located at Aizawl.
9. National Institute of Small Industry Extension and Training (NISIEET) : The NISIEET is a Government of India Undertaking to take care of the management training aspect of existing and prospective small entrepreneurs. The NISIEET is having its regional office at Guwahati, which is the nearest regional office of NISIEET from Mizoram.
10. Poly-technology Transfer Centre (PTCs) : The PTCs are meant for transferring new technologies as developed by CSIR, IITs, and such other research agencies for their application in the industrial sector of the country. The PTC office meant for the North-Eastern region is located at Shillong.
11. Regional Testing Centre (RTC) Calcutta : The RTC Calcutta, a National net-work agency of SIDO is made operational over Mizoram. The RTC Calcutta can be utilized by SSI units in the state for testing of their raw materials and finished products for ensuring the quality products to conform specific standard at the National level.
12. Small Industries Service Institute (SISI/Br. SISI) : The SISI or Branch SISI are the National net work offices of SIDO in the field level. They offer technical, techno-economic, managerial and such other consultancy and extension services and also maintain close liaison between the Central Government and State/Union Governments.

Branch SISI is functioning at Aizawl with Assistant Director at its head. In spite of poorly staffed and inadequately equipped, the Br. SISI Aizawl is devoted to work for the industrial development of the state. Besides, providing consultancy to the existing and prospective entrepreneurs, it also keep close coordination with other industrial promotional agencies of the state for implementing policies and programme

initiated by Central and State Governments (Choudhury 1994, pp-10-25).

INDUSTRIAL DEVELOPMENT VIS-A-VIS FIVE YEAR PLANS IN MIZORAM

Industrial development activities prior to 1972, when the U.F. Government was formed, were carried on a casual manner. In fact, developmental activities in the then Mizo district were carried on the snail's pace. Therefore, even in the field of industrial development, the achievements, whatever may be made, were not worth mentioning. In other words, SSI and Cottage Industrial units in the district were not yet developed at the modern scale.

When Mizoram became Union Territory in January 1972, only the last two years of the National 5th Plan was left with plan outlay residue of Rs. 5.00 crore. Thus, the first two years of the new government with its transitional nature passed with casual manners.

In fact, the new U.F. government was still in the initial stages in various developmental aspects. It was no wonder that till the last part of 1970s, the traditional Cottage and Village Industries were the dominant units in the area. This fact is revealed by the Small Scale and Cottage Industries (urban areas) Survey, conducted by Economics and Statistics Department, Aizawl during 1979 and 1980. The Survey Report indicated that Handloom and Handicrafts were dominating till

the last part of 1970s (Bureau of Eco. & Stat., 1979-80, p. 10). This shows that the first four National Five Year Plans were not much utilized in the area.

Truly, Grant-in-Aid to the tune of Rs. 1,82,274.80 and industrial loan to the tune of Rs. 13,000.00 (under the Assam Aid to Industries Act, 1959) were released to the existing Cottage and Village Industries as well as for the establishment of such new units in the entire area during the 1st and 2nd Five Year Plans. Thus, even as late as 1978, there were only 277 households in Arzawl district, 53 households in Lunglei district and 26 households in Chhimitpur district, (658 families in entire state) were found to be using/depending on Small and Cottage Industries for their livelihood and the number of persons who directly professed on them were only 556 (Bureau of Eco. & Stat., 1979-80, p. 57).

Therefore, it can be said that a more or less active process of economic development in Mizoram started with the Fifth Five Year Plan. But still then, the young U.I. Government or ministries were never conscious enough to look into the development in the sector. This fact is revealed by the shares of Mining and Industry Department during the successive Five Year Plans (Table 3-1).

Table 6.1 : Share of Mining and Industry Department in Plan Allocations (Mizoram).

Five Year Plans	Total Outlay (Rs. in lakhs)	Total Expenditure (Rs. in lakhs)	Share of Mining & Industry Dept. (%)
5th Plan 1974-79	4857	4844.01	0.45
6th Plan 1980-85	14746	14770.16	0.61
7th Plan 1985-90	26000	26806.12	0.37
8th Plan 1990-97	76300		0.79

Source : Lianzela 1994, pp. 98-97.

The Table 6.1 shows that no handsome amount of money has ever been allotted to industrial sector. The share of Mining and Industry in sector-wise used to be the least amount. Therefore, industrial development can never be expected to take quick process. Even though Government have been trying its level best to develop the sector with its sister organizations, no significant pace has yet been made. Even the State Government seems to be neglecting the sector as is seen in the plan allocation during the 5th to 8th Five Year Plans (Table 6.1). Ultimately, till today, the state has still to create its place in the industrial map of the country.

There could, therefore, be many reasons behind the 'No Industry Area' concept in Mizoram. It has been learned that the department went on expanding itself with buildings, facilities for employees, creation of new sister organizations, survey works, etc. The industries department is still busy with new projects, survey works, constructions, etc., and not in proper implementation of programme and so on.

Besides, there could also be many reasons like geographical hindrances, lack of proper policies and infra-structures etc. In short, the government is not yet well prepared to shoulder industrial development on a sound footing. Moreover, technical human resources, both in the administration and entrepreneurs sides, are still lacking. Above all, the U.T. government never laid strong foundation towards industrial development in the region (Nanjappa 1987, pp. 6-7). It was very much true that the insurgency in the state retarded developmental activities. Besides, no strong foundation from government coupled with lack of proper policies resulted into all these ugly faces of industrial development.

Concerted efforts, therefore, have been made by the Industries Department in recent years to accelerate the growth as well as to eradicate its constraints. Ultimately, a major break through have been launched with the pronouncement of 'Mizoram Industrial Policy' by March 1989. It is hopeful at the present stage that industrial development with a sustainable manner would soon be achieved. In the policy, priority industries have been identified such as: Agro-based, forest based, Handloom and Handicrafts, Electronics and Consumer industries. The Industries Department initiates some incentive schemes for pilot projects. It provides institutional supports, market supports, Infrastructure and man-power development schemes.

play dual role of financier as well as trainer for the individual entrepreneurs. Therefore, the role of administrative agencies would be dealt here only with regards to its relevance as financier, trainer and provider of direct facilities to the entrepreneurs as per the schemes and programme of the Government.

As regards to the financial institutions, the concerned again will be the achievements of the Banks and State Financial Institutions towards industrial promotion only. There are three Nationalised Banks in Mizoram such as SBI, UCO Bank and Vijaya Bank. Besides, there are also Commercial Banks of local nature (Apex Bank, Rural Bank and MUCO Banks). All these banks have schemes to finance the entrepreneurs. Their role and performances towards industrial development in the state is examined here with their respective statistics. There are also state undertaking financial agencies like ZIDCO, MIVIR, who give industrial loans to entrepreneurs.

Besides, there are Government departments, institutions and agencies which provide training facilities to prospective entrepreneurs. The popular among them are DIC's, IIT, DRDA (TRYSEM) etc. The performances of these institutions or agencies are also examined to see their respective contributions in industrialising the state. And a comparative studies and responses by the entrepreneurs is also attempted here. Thus, the role of the Financial Agencies and training institutions and their importance in the development of SSI in

Mizoram can comparatively be studied by highlighting the detail structural features of those agencies, with regards to their respective functional aspects, profitability and productivity of the SSI units.

A. Role of Financial Institutions :

Under this title, the four main financing agencies have been studied and their contributions have been examined in the following manner.

(1) Role of District Industries Centres (DICs) :
District Industries Centres are the nodal agencies at the field level for the all-round development of the concerned district. The main purpose of establishing DICs is to introduce a single window system whereby all the assistances required by the entrepreneurs would be available from DICs under the same roof. Thus, DICs are entrusted with responsibilities ranging from guiding new and existing entrepreneurs, issuing provisional and permanent registration, providing scarce raw materials and marketing assistance to disbursement of loans and subsidies, etc.

Accordingly, all the three DICs of Mizoram are precisely functioning in the manners mentioned above. In the process of performing its various duties, the DICs work hand-in-hand with the other concerned promotional agencies like Dr. SISI and make concerted effort for the development in industrial front of their respective districts. Therefore, the DIC Aizawl, as a

nodal agency and liaison with the Central/State Government, financial institutions, corporation etc., towards industrial development, has taken up the over-all supervision of works within its jurisdiction. The following are the functions of the DIC Aizawl.

(a) Industrial Loan : Giving industrial loans to entrepreneurs is a very important function. A sum of Rs. 189,300.00 had so far been distributed during the then Assam Government, and during Union Territory of Mizoram, a sum of Rs. 46,76,067.00 was distributed as industrial loan (this scheme has been stopped since 1989 due to poor loan recovery).

(b) Seed/Margin Money : Since 1982-83, the loan assistance under DIC scheme has been utilised as Seed/Margin Money to the tiny units having investment on plant and machinery not exceeding Rs. 2.00 lakhs up to 30 percent of the total fixed capital or Rs. 60,000.00 whichever is less. A sum of Rs. 22,27,806.00 had so far been paid to 72 units.

(c) Self Employment to Educated Unemployed Youths : This scheme has been implemented since 15-8-1983. Under this scheme, 762 persons had so far been benefited.

(d) Grant-in-Aid : This scheme has been implemented since its inception. Under this scheme, tools, machines, etc. are supplied to artisans at subsidised rate. More than 4,000 artisans/proprietors have been benefited so far.

(e) Central Investment Subsidy : This central scheme of Capital Investment Subsidy at the rate of 25 percent of fixed investment have been carried out at the state level by DIC. The scheme was abolished since 1989. Many units have been assisted.

(f) State Incentive Subsidy : This scheme has been introduced in the state since 1989 under the state Industrial Policy 1989. During the last two years, (i.e., 1990-91 & 1991-92) as much as 136 units have been assisted with total sanction amount of Rs. 42,19,947.00.

(g) Registration of SSI Units : DICs also maintain register of SSI units. Both provisional and final registrations are given as per Registration Schedule.

(h) Training and Revival Programme : The DIC is providing theoretical as well as planned training to entrepreneurs in technical and management aspects of SSI with the active cooperation of organisations like NIIED, Lead Bank, Govt. SSI etc.

(i) Raw Materials cum Sales Depot : This is the departmental commercial centre functioning since its inception. It is mainly designed to provide the small entrepreneurs and artisans with source indigenous raw materials. The items include mainly G.I. Sheet, G.L. Sheet, Paraffin Wax, Fertilizing Wool, Dyed Yarn, Dye

Staff, Chemicals and Shoe making materials. Blow Moulding units are opened at Champbar and Serchhip.

(3) Government Sales Emporium : This emporium is purchasing the products of industrial units in bulk and sale them again to the public at lower rates.

(4) Semi Mechanised Dyeing Factory : In this scheme bleach yarns are purchased from outside the state in bulk and after dyeing in the factory, the dyed yarns^{are} supplied to the public at minimum price from the Depot.

(5) Rural Industrial Development Factory : This departmentally run common facility centre is established at Raahlen Veng, Arzawl in collaboration with IIM Ltd. in 1988. It is a multi-disciplinary workshop operating as a training cum common facility centre and help developing skilled workers in addition to rendering service facilities to the SSI units within the district (Kozawa 1993, pp. 2-6). The trade wise number of successful trainees under FIDC, Arzawl since 1980-89 is shown in the table 6.2.

From the table 6.2, it is learned that tailoring has the largest trained out i.e., 67.62 percent to the total trained during the period under consideration whereas next to it knitting shared only 9.43 percent. Although, training facilities are given in other trades i.e., Blacksmithy,

Table 6.P : Trade-wise Magnitude of Successful Trainees Under RDC, Aizawl (1988-89 to 1992-93).

Year	Tailoring	Printing	Auto-mobile	Black-smithy	Carpentry	Welding	Electric Wiring	Total
1988-89	32	6	-	-	-	-	-	38
1989-90	32	2	-	-	-	-	-	34
1990-91	33	4	4	1	4	3	4	53
1991-92	32	5	4	2	4	4	5	56
1992-93	36	6	4	4	4	4	5	63
Total	165	23	12	7	12	11	14	244

Source : DIC, Aizawl.

Carpentry, Automobile, Welding and Electric Wiring since 1990-91; no trade is having candidates more than 5 at a time. This shows that the seats are very limited or as they are newly introduced, they have not yet gained popularity. If we look to the yearly total trained, the figures show a growing trend. In fact, DIC Aizawl has been giving training in tailoring since 1964. Till 1992-93, 765 persons have been trained in tailoring and 112 persons have been trained in printing.

It has been learned that two important functions of the DIC viz. Central Investment Subsidy and Industrial Loan have been abolished since 1989. This may be because industrial loans are given by other agencies whereas with regards to Central Investment Subsidy, it is felt that various subsidy schemes are already available both at the Central and State level schemes.

(2) Role of the Mizoram Handicraft and Village Industries Board (MHVIB) : It was setup in 1986. The Board is responsible for the all-round development of Handicraft and Village Industries within the state. Its activities consists of (a) to run departmental projects, (b) to assist individual craftsmen and (c) to assist the State's artisan cooperative societies. The MHVIB is receiving loans and grants from IVIC Bombay as well as grants from the Mizoram State Government to carry out its duties. Capital funds are issued at the rate of 75 percent grant and 25 percent loan. Interest charged to working capital is only 5 percent. Thus, the scheme is very suited to the poor state like Mizoram.

As on 31-3-1993, the MHVIB had assisted 3214 industrial units covering as much as 256 villages including the towns. Out of 3214 assisted units, as much as 2893 units are within Aizawl District whereas 1633 units (i.e., 50.81%) are concentrated within the Aizawl Town. Only 274 units in Lunglei and 47 units in Chhimitupur Districts are assisted.

The board is also running a Multi-Disciplinary Training Centre (MDTC) at Aizawl where local people are given training. Presently, the board is having sales emporium at Aizawl and Lunglei. The Board, therefore, performs multi functions towards industrial development in the state. It gives loans and grants to artisans; it gives training facilities and buys the products of its beneficiaries through its sales emporiums and it also

performs the role of industrial entrepreneur through its own projects.

The Table 6.3 reveals that MIVB has given training facilities in various training centres outside the state. The duration of the courses vary from one week to 14 months in Chalk making and Cotton and Silk textiles respectively. A careful look at the Table reveals that the Board is not sending trainees regularly to any of the training centres; rather it has been hunting for new training centres with different trades. The Board is most successful in Bakery training at Wardha from where 19 people have been trained out in 3 batches. Thus, the Table shows that the Board is ¹⁰₁₁ becoming jack of these trades. So, it is believed that if the board sticks to maximum 10 different trades where it can send trainees regularly and in selecting the trades, the Board should also see those trades having scope in the state.

The Table 6.4 also exhibits the same picture with Table 6.3. It is seen through the Table 6.4 that MIVB is offering training irregularly in the trades. The Board offers 11 courses at the MDTC Zemabawf. Total trained in all the trades during the 1988-89 to 1992-93 sessions were 104. The duration of the courses vary from 2 weeks to 10 months. The best years 1992-93 have shown 51 trained in 6 trades. But here also, training is not continued in one particular trade. So, opening a new course after every course or year is the regular character. So, it is

believed that the board should concentrate in 2 or 3 trades and offer training regularly in them.

Table 6.5 shows the trade-wise industrial loan beneficiaries under MIVB since its inception. The Board assisted 3214 units belonging to 21 different trades. The prominent trades as per Table 6.5 are Carpentry and Blacksmithy (678 units), P.C.P.F. (473 units), Gun and Handcary (313 units); Textiles (308 units), Servicing (297 units), etc. Only one unit has been assisted in collage match. Otherwise, the overall performance as per Table 6.5 seems to be satisfactory with regards to the availability of resources, raw materials as well as demands.

10 11
12 13

The Table 6.6 and table 6.7 show the Budget system and loan recovery (yearwise) of the MIVB. Table 6.6 shows the budgets i.e., loan and grant amount from IVIC (Bombay) and grant amount from State Government for eight consecutive years. The table clearly indicates that out of the total budget, the share of grant from IVIC and Mizoram state together is always larger than loan amount from IVIC. Thus, at the least, 51.00 percent (1987-88) of its total budget is constituted by grant. This system is very encouraging and suggestive for industrial development in Mizoram.

Table 6.3 : Trainees Who Underwent Training Outside Mizoram in
Khadi & Village Industries.

(Yearwise break up)

Sl. No.	Name of the Trade	Course Period	Place	(Yearwise break up)					Total
				1986-87	1987-88	1988-89	1989-90	1990-91	
1	Cotton & Silk	14 month	Dimapur	-	11	-	-	-	11
2	Muga Silk	12 month	Kumarikata	-	2	-	-	-	2
3	Rig & Ptg	12 month	Hubli	-	-	2	-	-	2
4	Design Weaving	11 month	kumarikata	-	-	1	-	-	1
5	Handmade Paper	3 month	Birati	4	-	-	-	-	4
6	Handmade Paper	12 month	Pune	-	9	1	1	-	11
7	Comi A Piary	8 month	khetri	-	1	-	-	-	1
8	Gur Making	6 month	Barabanki	-	1	-	-	-	1
9	Gur Making	6 month	Dehradun	-	-	5	-	-	5
10	Bakery	3 month	Wardha	10	-	-	1	8	19
11	Pickle	3 month	Tri. Hyd	-	5	-	-	-	5
12	Soft Drinks	12 month	Lucknow	-	-	1	-	-	1
13	Foot Wear	12 month	Wardha	-	4	-	-	-	4
14	Flaying	4 month	Wardha	-	1	-	-	-	1
15	Cane Works	6 month	Agartala	1	-	-	-	-	1
16	Lime Making	3 month	Dehradun	1	-	3	-	-	4
17	Chalk Making	1 week	Dimapur	-	1	-	-	-	1
18	Fibre Processing	4 month	Rombay	3	-	-	-	-	3
19	Oil Pressing	2 month	Kanpur	5	-	-	-	-	5
20	Oil Pressing	2 month	kumarikata	-	2	-	-	-	2
21	Match Manufactu ring	2 month	Birati	1	-	-	-	-	1
22	Match Manufactu ring	3 month	Dehradun	-	2	-	2	-	4
23	Ind. Potters	6 month	Karnataka	-	6	-	-	-	6
24	Lathe Machine	-	Dahanu	-	-	-	2	-	2
25	Laundry Soap	6 month	Uratu	-	-	-	2	-	2
Total				25	45	13	8	8	99

NU : 1 (one) person in Bee Apiary during 1992-93 and 3 (three) persons in Phandsari Sugar during 1991-92 have undergone Training at Khetri and Dehradun respectively.

Source : MKVID, Aizawl.

Table 6.4 : Statement of Trainees Who Underwent Training at Multi-Disciplinary Training Centre, Zambawik (Aizawl).

Category	Name of Trade	1988-89	1989-90	1990-91	1991-92	1992-93	Total	Duration
A.	Cane Chairs	10	-	-	-	-	10	2 m
	Cane Works	-	6	-	-	-	6	1 m
	Cane Caps	-	-	-	3	2	5	5 m
	Cane Furniture	-	-	-	-	3	3	3 m
B.	Carpentry	-	-	-	-	5	5	10 m
	Carpentry	-	-	-	6	-	6	3 m
C.	Fibre Raspador	-	3	-	-	-	3	2 m
	Fibre Works	-	-	-	-	4	4	6 m
D.	Laundry Soap	6	-	-	-	-	6	3 m
	Laundry Soap	-	-	-	-	26	26	1 m
L.	V.O.I.	-	-	-	20	-	20	2 w
Total		16	14	-	23	51	104	-

Note : m = months, w = weeks
Source : MIVIB, Aizawl.

Table 6.5 : SSI Units Assisted by MKVIR Mizoram.

(Inadewise Figures)

Sl. No.	Name of Trade	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	tot al
1.	Carpentry & Blacksmithy	91	93	87	123	109	83	97	678
2.	P.C.F.L.	40	29	45	118	108	52	81	473
3.	Cane & Bamboo	21	22	31	40	40	10	16	180
4.	Leather Works	21	22	41	38	49	20	20	221
5.	Fibre	5	5	8	3	7	-	1	31
6.	Bee Keeping	46	33	38	24	53	9	49	252
7.	Village Oil Industry	8	10	16	15	20	10	7	86
8.	NFO Soap	5	-	3	4	6	4	-	22
9.	Gur & Khandsari	5	17	32	49	59	70	81	313
10.	Ihadi	2	6	3	3	2	3	-	20
11.	Aluminium	-	8	7	9	15	3	-	42
12.	Pottery	-	5	11	10	12	10	4	52
13.	Fruit	-	5	4	9	11	5	7	41
14.	Lime	-	-	6	11	17	10	17	63
15.	Servicing	-	-	38	53	68	70	68	297
16.	Textiles	-	-	54	79	74	64	57	308
17.	Cottage Match	-	-	1	-	-	-	-	1
18.	Biogas Plant	-	-	15	-	-	-	-	15
19.	Hand Made Paper	-	-	3	16	15	4	6	25
20.	Candles	-	-	-	15	12	-	-	17
21.	Electronics	-	-	-	-	22	27	26	77
Total		245	255	443	598	671	436	546	3214

Source : MKVIR, Aizawl.

Table 6.6 : Budget of MKVIR Year-wise.

(Rs. in Lakh)

Sl. No.	Year	Grant from IVIC and Mizoram State	Total Loan from IVIC	Total Loan % of Grant	Percentage of grant to Total Budget
1.	1985-86	5.00	Nil	5.00	100.00
2.	1986-87	30.43	15.66	46.09	66.02
3.	1987-88	40.86	36.18	76.84	59.18
4.	1988-89	64.57	61.84	126.41	51.08
5.	1989-90	112.78	68.60	181.38	62.18
6.	1990-91	110.02	98.46	208.48	52.77
7.	1991-92	151.63	83.74	235.37	64.42
8.	1992-93	152.79	95.04	247.83	61.65
Total		658.08	459.52	1127.60	59.25

Source : MKVIR, Mizoram.

Table 6.7 : MKVI Board Loan Recovery.

(as on 31-3-1993)

Sl. No.	Year	Overdue Fig. (Rs. in Lakh)	Loan Recovery Fig. (Rs. in Lakh)	Percentage of Yearly Recovery
1.	1986-87	19.58	9.92	50.39
2.	1987-88	17.69	9.04	51.11
3.	1988-89	20.03	7.16	35.74
4.	1989-90	20.73	5.56	26.82
5.	1990-91	17.22	4.26	24.73
6.	1991-92	-	0.05	-
Total		94.25	35.99	

Source : MI VIB, Arzawl.

But, if the Board is not careful enough about its functions and loan recoveries from its units, it may collapse easily (Table 6.7). The MI VIB loan repayment to the IVIC is 100 percent but loan repayment rate to the MI VIB by the assisted units is only 38.36 percent. The table 6.7 shows that the two columns of loan recovery and percentage share of yearly recovery regularly goes on decreasing year by year. This is a big threat and warning to the MI VIB.

(3) Role of Zoram Industrial Development Corporation Ltd.

(ZIDCO) : It is incorporated under the Companies Act 1956, on the 27th Feb. 1978 in the State. It is the lone industrial development corporation in the state. The corporation is jointly owned by the Government of Mizoram and the Industrial Development Bank of India (IDBI). It is notified as Financial Institution under appropriate sections of IDBI Act, 1964. Accordingly, ZIDCO is a twin-function organisation, state industrial development corporation/state financial corporation.

Its main aims and objectives are to aid, counsel, assist, finance, protect and promote the interests of the industries in the state. It is also expected to provide technical and managerial assistance to Small Scale industries in the state. It is eligible to avail refinance from IDBI against industrial loan disbursed upto Rs. 90 lakhs to an industrial unit at a concessional rate of interest.

For fulfillment of its aims and objectives and also to establish its full functional activities, ZIDCO takes up activities like (a) Entrepreneurship Development Programme (EDP), Counseling the Entrepreneurs helping in selection of potential projects, guiding in preparing detail project reports, providing financial assistances in terms of loans and providing them in technical and managerial guidance in their project implementations. ZIDCO also ^{as} ^{an} ^{institution,} participated in the Indian International Trade Fair 1987 held in New Delhi and also in 26th Overseas Import Fair "Partners for Progress" - 1988 held in Berlin, in search of wider market for Mizoram industrial products.

Since its inception, ZIDCO has assisted as many as 1170 units by way of term loan amounting to Rs. 19.48 crore. Out of the total assisted units at least a substantial percentage have come up successful and some of them have received National Awards (Choudhury S.R. 1987, pp. 12-16).

Detail informations with regards to trade-wise number of beneficiaries, loan amount, loan recovery and overall performance of ZIDCO loan beneficiaries in trade-wise was not available to the research scholar. It was somehow learned that ZIDCO had given loans to about 80 different trades. Among the trades, Bakery, Chow Making, Furniture/Carpentry, Handloom, Printing Press, Tyre Retreading, Tailoring, Automobile Workshop, Two-Wheeler Repairing Workshop, Blacksmithy, etc., are the prominent ones.

It was also observed that during 1988-89 to 1992-93, the Corporation has sanctioned loan to 332 units with total amount of Rs. 74,700,250.00. By the end of November 1993, ZIDCO had already disbursed about Rs. 27,70,61,000.00 by financing loans to more than 1600 industrial units, business enterprises and transport modes, which in turn created direct employment opportunities for about 10,000 persons in the state.

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**Table 6.8 : Financial Transactions of ZIDCO
(1988-90 to 1992-93).**

(Fig. in Rs.)

Year	No. of Units Assisted	Total Loan Sanctioned	Total Loan Recovery	Balance Sheet
1988-89	100	29870000	10310599	-15323599
1989-90	52	15855250	18491297	2636047
1990-91	68	11662000	21228102	9566102
1991-92	53	9137000	19010175	19873175
1992-93	59	8176000	21300093	13127093
Total	332	74,00,250	98743266	23640015

Source : ZIDCO, Aizawl, Mizoram.

The Table 6.8 shows the over-all performance of ZIDCO during the last five years (i.e. from 1988-89 to 1992-93). It is clear from the Table that the financial institution is gaining handsome amount every year except 1988-89. The overall performance of balance sheet of loans sanctioned and recovered is satisfactory. Moreover, it does not show the performance of the institution to SSI and Cottage industries in particular. So, the realities of relationship between the SSI and ZIDCO is hiding within it as ZIDCO now-a-days found itself helpful in Small Road Transport Operators (SRTO) Loans.

(4) Banking Facilities : There are only three Nationalised Banks in Mizoram, the State bank of India with its 23 branches and the UCB Bank and Vijaya Bank with one branch each both being located at Aizawl. The other banks that serve the state are of local nature. They are (1) Mizoram Co-operative Apex Bank Ltd. (MCAE) with 8 branches, (2) Mizoram Rural Bank with 50 branches and NUCC Bank at Aizawl.

Thus, the entire state is served by only about 84 Banks of 6 Organisations. The rural areas are served mainly by the Rural Banks followed by the SBI. The rest are concentrated only in the urban areas.

The whole state with a population of 6,89,76,000 (1991) is served by 84 banks in total, which means each bank serves 8211 persons on an average which may not be very low. But looking into the number of villages served by each Bank, there were 571

(1991) villages having each own village council showing that each Bank is shared by 7-8 villages whereas most of the Banks are concentrated in the town areas. Thus, it is well understood that Bank facilities in rural Mizoram is still very limited.

The Table 6.9 shows the Bank wise performance on the implementation of the District Plan 1992-93 (Industries).

Table 6.9 : Implementation of Credit Plan 1992-93.

(Rs. in Lakhs)

Banks	Aizawl District		Lunglei District		Chhimalupur District	
	Target	Achievement	Target	Achievement	Target	Achievement
SBI	13.17	10.46	8.52	0.54	12.05	-
MCAIB	-	0.28	3.89	0.50	2.60	0.50
MRE	4.63	6.08	2.23	0.32	1.39	-
UCO	3.00	-	-	-	-	-
Bank						
Vijaya Bank	0.90	1.20	-	-	-	-
Total	22.30	18.02	14.57	1.36	17.04	0.50

Note : 1st April - 30th Sept. 1992 (Industrial Sector)

Source : Choudhury 1994, Table 20.

The Table 6.9 shows that the over-all performance of the Banks in Mizoram towards the industrial development could be very poor. Of course, it is seen that the Rural Bank has done well and even crossed the target in Aizawl District, whereas in other districts, it faced failure. The SBI's performance was also rather poor ugly in all the three districts. The Urban Co-Operative and Vijaya Banks also showed a very poor performance

whereas their areas of operation were still confined only in Aizawl town.

The figures of the beneficiaries of Banks in trade wise magnitude are not available. So, the physical achievements or number of units financed by each bank till date could not be given here. The Mizoram urban Co-operative Bank during 1988-89 to 1992-93 financed 9 units, one each of Printing Press, Book Binding, Ice-Plant, Brick Industry, Stone Crusher, Knitting, Cane and Bamboo, Bakery and Candle Making. The total amount of loan disbursed to these 9 units was Rs. 15.38 lakhs only (Manager, MULO Bank, Aizawl as on 31.3.93), which shows a very poor performance from the point of view of industrial development in the state.

8. Role of Training Institutions :

Training institutes are also playing equally important role in the industrial development of the state because they provide skilled labour and employment opportunities which is one of the important components of Human Resource training in the line. The MIVIB and DIC's are also partially playing the role of training to the entrepreneurs, and their achievements have already been discussed in the present Chapter. But, there are certain other important institutions which are directly related to the development of workforce for the industrial structure, such as Industrial Training Institute (ITI) and DRDA under the TRYSEM programme etc. The salient features of these institutions are discussed in the following lines.

(1) Role of IIT Aizawl : Under the Directorate of Labour and Employment, Government of Mizoram, one Technical Institution linked with development of technical aspect of industrial development, Industrial Training Institute (ITI), has been established at Aizawl. The maximum intake capacity of the institute is around 200 candidates together in all the offered trades. And Industries Department of Mizoram has provision to sponsor the passed out candidates from the institution for imparting implant training. The table 6-10 shows that 9 different trades are offered by IIT Aizawl. Very irregular features of trainees as regards to number of trainees between the different trades as well as number of trainees in one trade over the years has been depicted by table 6-10. The total number of trainees never come upto 90 whereas the institution's intake capacity is 200. Thus, it is seen that trade-wise number of trainees is not regulated and the institution is yet under utilised.

(2) Role of DRDA Aizawl : The DRDA, Government of Mizoram, Department of Rural Development is providing training facilities to rural youths under IRYSIM Programme. The rural youths under poverty line, who want to establish their own industrial ventures are given training with stipend. Such successful trained out youths are given certificate accompanied by Rs. 600.00 for purchasing tool kits. Besides, such trained out people who are going to establish their own units are

Table 6.10 : Successful Industrial Trainees in ITI Aizawl
(1988-89 to 1992-93).

Sl. No.	Name of Trades	1988-89	1989-90	1990-91	1991-92	1992-93	Total
1.	Cutting & Tailoring	11	4	12	13	-	40
2.	Bakery & Confectionery	7	3	8	5	-	23
3.	Welder	1	2	4	7	-	14
4.	Electronics	5	Nil	3	9	-	17
5.	Motor Mechanic	14	3	12	16	-	45
6.	Fitter	12	2	3	7	-	24
7.	Electrician	7	6	8	6	-	27
8.	Wireman	16	13	14	7	-	50
9.	Carpentry	7	1	6	4	-	20
Total		82	34	70	74	-	260

Note : Examination for 1992-93 session could not be conducted within time due to Assam flood which resulted in untimely reach of the Question Paper to Aizawl.

Source : Principal, ITI, Aizawl.

entitled to the benefit of IFDP assistance with Rs. 5,000.00 and they are sponsored by their respective G.O.O.s (or) Bank loans. The table 6.11 shows that during the five consecutive years, as much as 3081 youths were trained under DRDA, Aizawl, and training were given in 25 different trades. Tailoring is by far ahead of others. Out of 3081 trained, as much as 1573 (46.52%) are Tailoring trained. Maximum trades are Service based whereas only Carpentry, Cane & Bamboo works, Blacksmithy and Tinsmithy are the black sheep. Typewriter repairing and Carpet Weaving seem to be less promising among the 25 trades whereas Cane & Bamboo and Painting are newly introduced by 1992-93.

Table 6-11 : Tradewise Number of Successful Trained Under TRYSEM DRDA, Aizawl (1988-89 to 1992-93).

Sl. No.	Name of Trades	1988-89	1989-90	1990-91	1991-92	1992-93	Total
1.	Tailoring	169	195	205	305	248	1122
2.	Knitting	37	23	25	68	56	209
3.	Handloom	77	72	34	74	86	303
4.	Carpentry	24	21	21	37	37	140
5.	Bakery	5	2	6	13	7	33
6.	Compositor	30	16	34	61	32	193
7.	Hair Dressing	33	28	30	119	85	295
8.	Shoe Repairing	6	6	4	17	15	48
9.	Radio Repairing	10	10	12	22	42	96
10.	Rural electrician	13	5	7	16	12	53
11.	Photography	9	6	9	15	18	57
12.	Auto-Mechanic	25	21	32	74	48	200
13.	Watch Repairing	7	5	3	14	10	47
14.	Tinsmithy	8	-	2	5	8	23
15.	Typewriter Repairing	1	-	-	1	-	2
16.	Bike Repairing	1	5	1	2	2	11
17.	Printing Operator	2	2	2	1	10	17
18.	Fabrication & Welding	3	1	-	1	1	6
19.	Amature & Battery Repairing	4	3	-	3	4	14
20.	Carpet Weaving	-	2	-	-	-	2
21.	Book Binding	-	5	1	1	-	7
22.	Hair Cutting	-	-	-	34	4	38
23.	Blacksmithy	-	-	-	3	1	4
24.	Cane & Bamboo	-	-	-	-	13	13
25.	Painting	-	-	-	-	4	4
Total		459	336	431	1394	771	3391

Source : DRDA, Aizawl.

(3) Handloom and Handicraft Wing : To promote and promote the Handloom and Handicraft industries in the state, a separate Wing for Handloom and Handicrafts was created from May 1988. The Wing is headed by Jt. Director but the over-all administrative control by Director of Industries.

The Wing offers training facilities in four centres, imparting training in improved Fly Shuttle Looms; the total

training capacity in these four centres is 60 trainees per year.

Under the Wing, there is one Handloom Research Centre at Zemabawl (Aizawl). This centre is created to search the ways to improve and re-style certain traditional designs to meet the changing market demand. The centre also acts as service centre to the weavers. Technical assistance and guidance are also given from this centre as and when required to both private and cooperative weavers. Therapeutic Demonstration Centres were organised to impart practical training in the use of improved Frame Looms in the interior villages for a period of one year. The passed out trainees are equipped with looms and accessories to start their own units.

Under the industries department, Handloom Complex was made at Thenzawl during 1985-86. The Departmental Buildings for Handloom Weaving shed was completed during 1986-87. The Complex is very successful. Out of the 800 households in the village, 144 families are directly engaged in Handloom weaving. There are 254 looms and about 300 persons are engaged in full time employment.

The Wing is also entrusted to the work of discharging managerial subsidies, grant-in-aids/subsidy to Handloom units and to organise industrial fairs/exhibitions occasionally.

For the promotion of Handlooms and Handicrafts Industries, the Mizoram Handlooms and Handicrafts Development Corporation Ltd. was incorporated on 10.12.1989 with the authorised share capital of Rs. 1 (one) crore by the Registrar of Companies, Shillong. Thus, the Handlooms and Handicrafts Development Wing is marching forward with its various schemes under the 8th Five Year Plan.

Handicrafts is one of the oldest cottage industries in the state. Efforts have been made to encourage craftsmen. There are five training cum production centres in cane and bamboo works in Aizawl, Hnahthial, Saha, Dittlang and Haulawng. The training is mainly imparted on the making of the famous Mizo Hais having very good markets within and outside the state.

Under this Handicrafts section, four knitting and tailoring training centres have been established at Aizawl, Champha, Lungler and Saha. The training centre at Aizawl (Luangmual Complex) has been enlarged and modernised. Besides, the section is also entrusted in helping the individual units with technical assistances, guidances and other necessary actions in pursuance to the government policies (Hangrauva 1989, pp. 4-8).

The corporation established sales emporium at Aizawl and a marketing outlet at Lungler. Presently, the Corporation is having Export License and registered itself to the Export Promotion Council for Handicrafts (EPCW) New Delhi. It is also

having raw material sales depot at Aizawl, thenzawl and Mizoram Emporium at Hall No. 16 Frigate Maidan, New Delhi.

(4) Role of Mizoram State Social Welfare Board (MSSWB) : Vocational training course of one year duration is offered by MSSWB with MHIP (Mizo Hmerche Insuthhawn Pawl) as its sole agent. Training is imparted to Tailoring and Embroidery trades. Under the MSSWB, as much as 1098 adult women have undergone training successfully during 1989-90 to 1991-92 (MSSWB, Aizawl).

(5) Role of Mizoram Social Welfare Department (MSWD) : Social Welfare Department, Government of Mizoram also provides training facilities in Tailoring, Knitting, Leather Crafts, and Cane & Bamboo works. During 1989-90 to 1992-93, as much as 625 candidates have undergone training under the department. Out of 625 trained, as much as 512 and 108 were trained for Tailoring and Knitting respectively whereas only 2 were in Cane & Bamboo works (Social Welfare Department, Aizawl).

(6) Role of Sericulture Department, Mizoram : The Directorate of Sericulture, Government of Mizoram is also participating in the industrial development of the state. The Department is having Training cum Production Centre at Aizawl. Silk Weaving Demonstration is being done and the performance of the Department during 1990-91 and 1991-92 has been shown in the table. The Department helps the private rears by buying their cocoons. Presently, production of silk handlets is also going on, though no large production is yet possible.

SSI AND SUPPORTING AGENCIES AT A GLANCE

From the rights of the tables (table 6.1 to 6.11) and discussions on the role of Financial and Administrative Agencies, it has been seen that both the Central Government and the State Government have been assisting the SSI and Cottage Industries through various schemes and measures. Besides, the financial corporations have also been strongly involving in financing and assisting the SSI units in the state. But, despite of the untiring efforts from Government and Financial Corporations, the state is far behind other sister states in the North East India.

Many SSI units have been benefited with Central schemes as well as State Government schemes. The governments have been spending lakhs and lakhs of rupees for industrial establishments and development. The Financial Corporations and Banks have financed many units. But the state still remained industrially backward. There could be many reasons behind all these. It may be geographical, human resource availability, infrastructure, above all are the Nepotism and Politicisation which the researcher thinks to be highly responsible.

So far as Industrial Training is concerned, the nature of training given to the entrepreneurs in most of the cases are not even Diploma standard and the course durations are never long. IITM is sending trainees outside the State varying from 1

week duration to 15 months. Excepting MVII, all other training institutes and agencies are within the state.

MVII offers training courses in about 25 different schemes; IJ Arzawl offers 9 schemes; DRDA under TRYSEM offers in 25 schemes; Social Welfare Department and Social Welfare Board together offer in 6 trades; DIC Arzawl in 7 schemes.

Since its inception in 1985-86 to 1992-93, the MVII trained 207 persons in various schemes in and outside the state. DRDA Arzawl trained 3331 youths in 25 schemes during 1988-89 to 1992-93. During the same period, IJ Arzawl trained out 260 youths whereas the MSWDC and Social Welfare Department trained 1723 in Tailoring, Printing, Cut & Bamboo, Printing and Leather Crafts. The DIC Arzawl has trained 244 persons during the same period in 7 schemes. But the DIC had started Tailoring Training Centre in Arzawl since 1964 and trained out 768 persons till 1992-93 and 112 persons in Printing till the same period.

Therefore, the total trained out persons from the agencies till 1992-93 have come to 5315 persons approximately. Trained out persons prior to 1988-89 were not taken into consideration here. That means the achievements made during the 15 years of U.T. government were not considered. But still, the number of successful candidates in various schemes during the first 6 years of state government is quite satisfactory.

Now, looking into the beneficiaries of the facilities like industrial loan, subsidiaries of various schemes, we can see the achievements of Government and Corporations in a different angle.

- (a) MIVLD have assisted 3214 SSI and cottage units as on 31.3.93.
- (b) ZIDCO has assisted 1600 (approximately) units upto 1993.
- (c) State Bank of India Mizoram assisted 2752 SSI units during 1991-92 & 1992-93 alone.
- (d) MUCO²Bank assisted 7 units as on 1991-92 accounting year.
- (e) DIC Orzawl has assisted : (i) 72 persons with seed/margin money during 1983-1993, (ii) 501 persons under SLLYU/MIKY during 1983-93, (iii) 136 persons under state incentive subsidy scheme, (iv) 4000 artisans/proprietors with machines and tools at subsidised rate till 1993, (v) Many artisans with industrial loan during 1972-1989 and distributed Rs. 46,76,067.00 under the scheme, and (vi) Many artisans with capital investment subsidy since inception to 1989.

From the above informations, it has been observed that at least 12,545 units/persons have been assisted in one way or the other to establish/expand/promote of the industrial ventures in the state. All units/persons have been benefited in the name of existing or proposed industrial unit. On the other hand till 31.3.90, there had been 2,205 registered units in the entire state. The total number of permanently registered units (production stage) by the end of 1990 was still as low as 2,609 only (H.V. Lalanga 1991, pp. 14-17).

Moreover, detail statistics of the units assisted by Apex Bank, UCO Bank, Mizoram Rural Bank and Vijaya Bank's could not

be shown here. Therefore, the units assisted by these financial agencies are not counted here.

The detail list of beneficiaries in the category-wise among the sample units is shown in the Table 6-12 which shows ground realities and the statistics shown in the Tables 6-3 to 6-11 repeat each other very much. Among the sample units, beneficiaries of loan, grant-in-aid, subsidy and hire-purchase facilities were searched and arranged according to trades (Table 6-12). The following generalisations may be drawn :

1. It appears that out of 250 sample units as much as 143 units (57.20%) do not get any assistance either from financial agencies or government agents. Of course, as much as 73 units (29.20%) have taken loan for their ventures. Beneficiaries of hire purchase and RIF facilities are only 9 (3.60%) and 4 (1.60%) respectively.
2. Three categories, Chemicals and chemical products, Basic Metal and Allied Industries and Metal Products and Parts have shown that the units stand on their own foot too.
3. The highest beneficiaries of loan facilities is found in the Non-metallic and Material Products where 57.14 percent are benefited with loan. Other high loan beneficiaries are Leather Goods and Repairing (50%), Woods and Wooden Products (45.71%) and both 60 percent each in Paper Products, Publishing & Allied and Rubber & Plastic Industries. On the other hand, when taken into trade-wise, cent percent loan beneficiary units are found in Spices Processing, Saw Mills, Cane & Bamboo works, Book Binding, Plastic Industry, Cold Drink, Electronic Industry, Refrigerator Repairing & Servicing, Optical etc. But, the total physical units of these trades are very few in number.
4. A careful look at the Table 6-12 reveals that the actual beneficiaries of grant-in-aid are only 4 units (i.e., 1.60%), 2 units in Handloom Industry and 2 units in Tailoring. Subsidy was also given only to 21 units (i.e., 8.40%). The beneficiaries units are : Bakery (1), Furniture and Carpentry (3), Embroidery (1), Wooden Garments (1), Handloom Industry (2), Tailoring (2), Beauty Parlours (1), Automobile Repairing & Servicing (2). Out of

Table 6.12 : Beneficiaries of Loan and Other Assistances
(Sample Units).

Sl. No.	Industrial Category	No. of Sample Units	Purely Own Pocket Units	No. of Loan Beneficiaries	No. of GTA Beneficiaries	No. of Subsidy Beneficiaries	No. of Hire-purchase Beneficiaries
1.	Food Products & Allied Services	36	23 (63.89)	12 (33.33)	-	1 (2.78)	-
2.	Wood & Wooden Products	40	14 (35.00)	18 (45.00)	-	3 (7.50)	5 (12.50)
3.	Textiles & Textile Goods	35	16 (45.71)	9 (25.70)	2 (5.71)	8 (22.86)	-
4.	Paper Products, Publishes & Allied	10	5 (50.00)	4 (40.00)	-	-	1 (10.00)
5.	Rubber and Plastics etc.	5	2 (40.00)	2 (40.00)	-	-	1 (20.00)
6.	Chemicals & Chemical Products	10	4 (100.00)	-	-	-	-
7.	Non Metallic & Material Products	7	2 (28.57)	4 (57.14)	-	-	1 (14.29)
8.	Basic Metal & Allied Industries	4	4 (100.00)	-	-	-	-
9.	Metal Products and Parts	5	5 (100.00)	-	-	-	-
10.	Leather Goods & Repairing	2	1 (50.00)	1 (50.00)	-	-	-
11.	Service Based Industries	96	61 (63.54)	23 (23.96)	2 (2.08)	9 (9.38)	1 (1.04)
Total in number		250	143	73	4	21	9
in percent			(57.20)	(29.20)	(1.60)	(8.40)	(3.60)

Source : Self Surveyed March, 1993.

Note : Figures in Brackets indicate percentage.

The 9 beneficiaries of Hire-Purchase facility, 3 units are from Furniture and Carpentry works, and one unit each from Printing Press, Plastic Industry, Stone Crusher/Stone Works, and Tailoring.

Looking into the above discussion, the actual beneficiaries of loan, subsidies, grant-in-aid and hire-purchase schemes, the units show a very ugly face. It is found difficult to explain realities about the ^(Officially) Statistics and ground realities. In a sense, it is obvious that all the trained out could not establish their own ventures and all the beneficiaries of loans, subsidies, GIA etc. are not necessarily establishing industrial units. Therefore, it is observed that politicisation of the schemes and programme coupled with Nepotism from the Bureaucrats muddled the whole system which is very unfortunate. Ultimately, when misutilisation of loans are prevailing, the poor loan recovery is bound to exist. Accordingly, poor loan recovery is the tall of Finance Officers in the Banks and Corporations resulting into hesitation to advance loans in future from the part of the Financial Institutions.

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CHAPTER VII

Major Findings :

Introduction
Major Findings
Suggestions

INTRODUCTION

Traditionally, the Mizos are hardworking and labourious. In the traditional society, each and every village was self-sufficient in food production with the jhum system of agriculture. So long as the area remained to be a district under the then Assam State, no remarkable achievements or developmental strategies, either at the state or Central Government levels were printed in the area and there were no coveted white-collar jobs in the state.

By January 1972, the Union Territory of Mizoram was created and then the Government of Mizoram came into existence. The new government then initiated the developmental activities and many new Government Departments were formed resulting into creation of new posts in these new departments and offices. Taking advantage of the chances, people in general rushed for the white-collar jobs, Engineering, Technical, Clerical as well as Business, Contracts and Government ^{suppliers} _{etc.}. Besides, the government has also extended its helping hands to the rural poor people through developmental strategies. Ultimately, every educated person seeks job in the Government and every prosperous entrepreneur tends to incline upon the Government. And in the mean time, the most important sector of the economy, agriculture has been abandoned because only the rural poor and uneducated people, in fact, the unproductive ^{classes} _{etc.} are left behind in the sector. Therefore, it is found ultimately that the 65.77 percent (1991) of the workforce, which is engaged in

primary sector failed to produce foodstuff for their own requirement. The result is the high importation of essential commodities into the state.

The Table 7.1 shows the imported essential commodities into the state during 1989-90 and 1990-91 respectively. This table clearly shows that Mizoram is a hungry state which needs feeding from outside. Moreover, this table shows the officially imported commodities at the state level. How much could be imported and black marketed in the state is a question hard to be answered.

The Hnam Chhantu General Headquarters, Aizawl has conducted a survey of Aizawl Bazar during March 1994 and calculated that, at the lowest possible rate, Rs. 118,29,500/- flow out of Mizoram only for vegetables every month (Hnam Chhantu Circular No. 1 of 1995). Some of such vegetables coming in and marketed at Aizawl Bazar include Potato, Onion, Tomato, Chillies, Garlic, Cabbage, Carrot, Beans, etc. All these grow well in the state itself whereas they have to be imported. In fact, truck full loads enter Mizoram and go back empty, which is the usual phenomena for the last 20 years.

Table 7.1 : Imported Essential Commodities in Mizoram State.
(1989-90 & 1990-91).

Sl. No.	Name of Commodities	Units of Measurement	1989-90	1990-91
1.	Rice	Quintal	14018	12329
2.	Oil (m. Oil etc.)	ton	25781	131584
3.	Gram (Chana, etc.)	Quintal	4244	4726
4.	Flour (Atta, Maida etc.)	-do-	2109	20790
5.	Potato	-do-	14392	48285
6.	Tea Leaf	-do-	5174	1624
7.	Pulses (dal etc.)	-do-	12098	31501
8.	Salt	-do-	6415	21396
9.	Sugar	-do-	13679	18177
10.	Onion	-do-	7901	50930
11.	Dry-fish	-do-	-	21
12.	tin-fish	-do-	-	164535
13.	Fresh-fish	-do-	-	1010
14.	Egg	Box	-	9804
15.	Milk Powder	kg.	-	104909
16.	Detelnut	Quintal	-	2814
17.	Pan Leaf	ton	-	187321

Source : Directorate of Economics and Statistics, Aizawl.

Therefore, the Mizo people now have to give an answer to this important question : 'How is Mizoram, blessed with good rainfall, bright sunshine with mild temperature, fertile mountain valleys with lush green forests, population with hard working and high literacy rate, can remain a poor and hungry state ?'

A hungry man cannot stand himself and cannot work. He cannot think of doing work and eat but eat and work. Thus, a hungry man's belly must be filled with food to make him work so is raw materials to an industrial unit. If there is food, there must be man to eat it so is a market to an industrial output or product. To feed a hungry man, sufficient food has to be supplied so is surplus products to industrial raw materials.

Amidst these poverties and stumbling blocks, towards economic growth in such a backward state, industrial development yet has to take its own way. Accordingly, within the so called 'No Industry Area' Small Scale and Cottage Industrial units are struggling to survive like the smaller plants below the equatorial rainforests. And, the present research work is done on the development of these Small Scale and Cottage Industries.

Obviously, the present work has been carried out amidst numberless difficulties and troublesome tasks. Through the processes of the research works, the nature of industrial (SSI) universe, composition, distribution, employment, production and profitabilities, problems related, etc. have been identified. The following lines are some of such important findings :

MAIN FINDINGS

1. The study area is blessed with rich forest resources whereas these resources are not properly utilised for industrial purposes. This fact is rewarded by the number of SSI & CI units, capital investment and the industrial labour employment among the Wood and Wooden products in the forest-based industries. In spite of the rich Bamboo resources, there is not even a single big industrial unit of Bamboo-processing in the state while raw bamboos are being transported to the other neighbouring states. Similarly, there is no Lumbering unit in the entire state whereas valuable varieties of trees are

abundantly grown in the forests. The only Forest-based industries, worth mentioning are Furniture and Carpentry works, Saw Mill, Cane and Bamboo works which are functioning at the local need-based.

In fact, the forest-based industries are the industrial establishments which completely depend upon the locally available resources. But, out of the total existing SSI & CI units in the state, such Forest-based units constituted only 10 percent of total establishments with 15 percent of capital investment engaging only 16 percent of the total industrial labour force. On the other hand, the total strength of SSI & CI which depend upon raw materials coming from other parts of the country, directly and indirectly, become very large. Such industrial establishments are mainly of Metal-based, Textile-based, Chemical-based, Paper-based, Rubber & Plastics, Non-Metal and Leather-based. In fact, those industrial establishments, which do not depend upon local raw materials, constituted 29 percent of the total SSI & CI establishments with 45 percent of capital investment and 34 percent of industrial labour employment in the entire state. Therefore, it is found that though the forest-resources are abundant and important for industrial products, these self-reproducing resources are not yet properly utilised for industrial purposes. The more detail information in this regard, has been given in the table 4.3.

2. The relationship between industrial development and urbanisation, which is discussed in the Chapter III reveals that the processes of urbanisation in Mizoram are directly influenced by road density and network of power supply, whereby development of SSI & CI establishments have been facilitated. In other words, the development of road network leads to urbanisation and urbanisation leads to increase industrial establishments in the study area. In fact, the relationship between the horizontal distribution of the size of urban centres and the growth of SSI & CI units in the state is highly significant ($r = 0.992$). The spatial distribution and growth of SSI units follow the process of urbanisation where urban growth is directly influenced by the development and level of road network. Therefore, it can be said, in the case of the present study area that the processes of urbanisation and industrial development are accelerating each other positively and relatively whereas the infra-structural facilities especially road network and power supply are playing vital role in the processes. In fact, all the 28 selected⁴⁰ locations for the detailed study are well connected by road communication (Fig.4.5, Fig. 3.7).

3. Though there is a fast annual growth rate in the industrial employments in Mizoram, (i.e., 47.73 percent) during 1961-1991 with a gradual increase in the share of its total workforce from 0.42 percent in 1961 to 2.82 percent⁴¹ in 1991 (Table 4.2), however, the secondary sector of the economy in Mizoram is still very weak and unproductive. In Mizoram, out of

the total 2205 SSI & CI units (1990), more than three fourth of the total industrial establishments is incorporated only by four categories such as Service-based, Food products and Allied industries, Wood and Wooden products and Textile-based where the employment share of these four categories is more than 73 percent and capital investment share being more than 51 percent (Table 4.2). Therefore, it is clearly found that the entire industrial universe is still at the elementary stage dominated by the above four categories.

4. The Small Scale and Cottage Industries in Mizoram are functioning at the local need-based in most of the cases and thus there is a remarkable tendency of industrial diversification in all the 28 selected centres. On the other hand, since the units are functioning merely at the local need-based, the number of units of a particular trade and the number of different trades that can exist in a particular centre are highly determined by the population size of the centres. Accordingly, it is found that the pattern of industrial diversification in the state is very much reflected by the sizes of the centres. In other words, the bigger sizes of the centres are more diversified with higher magnitude of industrial establishments in each trade whereas the smaller sizes will have lesser units of fewer categories. This means the bigger sized centres will be more diversified and smaller centres would be more unified which is the reverse to the national perspective due to the fact that the industrial

diversification in the study area is the result of local-based industries.

The most diversified centre in the state is Aizawl where each and every trade of all SSI & CI Categories are found operating due to the fact that Aizawl is the most populous settlement centre in the state with better chance of survival for the industrial establishments. The second largest town in the State, Lunglei, become the second most diversified centre in the State whereas no industrial trade under the category of Basic Metal and Allied Industries is found operating in the town indicating the lesser diversification when compared to Aizawl. In fact, the Aizawl town is accommodating as much as 1134 SSI & CI units of all the categories whereas the total SSI&CI establishments in Lunglei is only 208 whose main region behind is the size of population in the centres. Similarly, the smaller size of centres have lesser units with limited industrial trades due to lack of demand and the tendency in those small sized centres in unification of the industrial trades. For example, out of the total SSI & CI units in Bualpur NO, as much as 6 units belong to Service-based category. Similarly, out of total units in Bellawng, as much as 6 units belong to the category of Wood and Wooden products. It means the industrial establishments are more unified on the smaller locations and more diversified on larger locations. Thus, it is clearly identified here that the pattern of industrial diversification is very much determined by size of the centres. (Table 4.5 and 4.6).

5. When Comparing the total population of the 20 selected Centres (Table 4.6) and the total magnitude of industrial establishments in the centres (Table 4.4), it is found that the size of population of these centres leads to increase in the total magnitude of industrial units and industrial activities. This clearly indicates the tendency that there is an increase in total industrial establishment as well as industrial categories with the increase in the household where the latter plays the leading part. Thus, the attributes of demographic features of the study area are highly related to the nature of industrial growth and development (Table 4.9). Say for example, the magnitude of total workers and industrial workers are significantly and positively related to the main attributes of the industrial structure, though there are irregularities in the distributional patterns of industrial units. These irregularities produces the weak relationships and low level of productivity of the SSI & CI establishments. This may be because of topographic hindrances and poor transport network, specially at lower level locations of industrial establishments.

6. So far as the distributional pattern of industrial locations is concerned, there is a specific pattern evolving in the distribution, i.e., Primacy. It means only one centre having the maximum share of all the SSI & CI establishments in the area and the others are having very low strength proportionately though the lower level centres have uniform distribution of the industrial units. As a result, the nature

of curve of rank-size regularity is more concave than the theoretical (Fig. 7.1). Therefore, there is a need of decentralisation of industrial establishments from first ranked centre, Aizawl, to the second and third ranked centres and so on.

7. By calculating the Mean, Standard Deviation and Coefficient of areal variations of the distribution of each and every category of SSI & LI of the study area, it can be generalised that average output per unit is recorded highest (Rupees 7,26,670) in the manufacturing of Metallic and Material Products with the high capital investment and labour employment. But the coefficient of areal variation for this category is recorded only 22.42 percent, while on the other hand, the industrial units of Food Products and Allied industries, Wood and Wooden Products, Textile and Textile goods have low level of production, capital investment and labour employment with very high values of the coefficient of areal variations (Table 4.10). It means that these industrial categories with smaller sizes are distributed uniformly throughout the entire state while the establishments of Metallic and Material Products are concentrated only on few locations.

8. So far as industrial labour employment per unit among the different categories is concerned, the two categories, Basic Metal and Allied Industries and Leather Goods and Repairing have the highest employment (i.e. 7 persons per unit) whereas the lowest rate of labour employment per unit is only 1/2 in

RANK-SIZE RELATIONSHIP OF SSI&CI ESTABLISHMENTS - 1990

N.B: NAME OF SAMPLE LOCATIONS ON TABLE-44

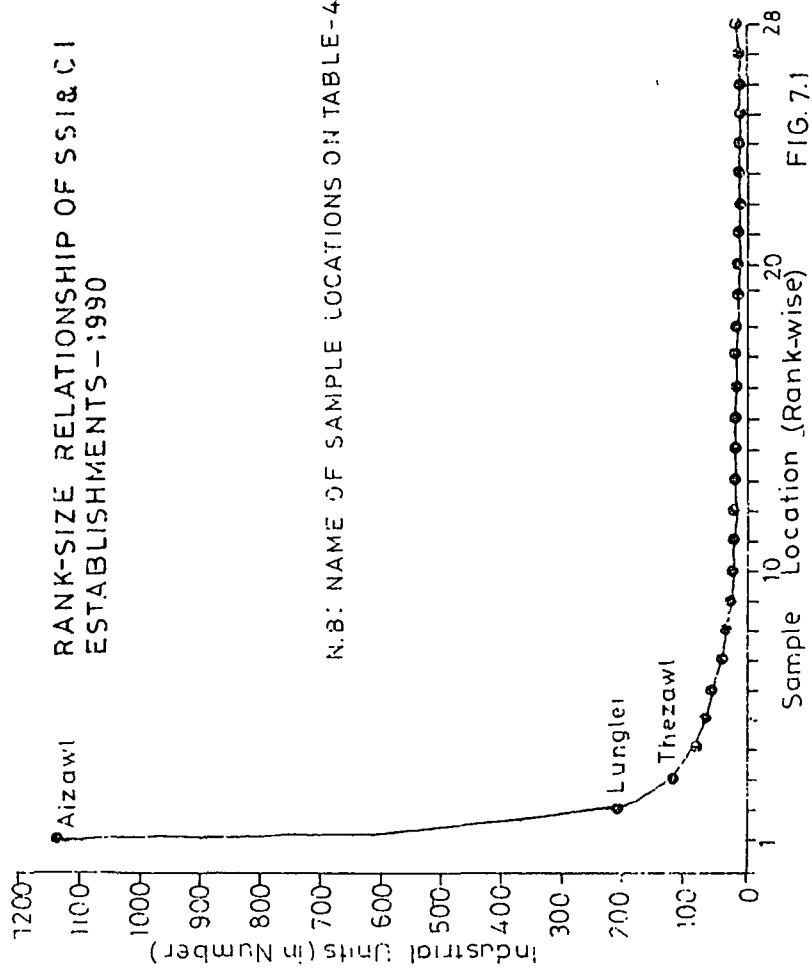


FIG. 7.1

the case of Food Products and Allied Industries. This shows that labour employment potential is very low in all the cases, indicating the small size of industrial establishments in the entire state (Table 5.1).

In fact, the industrial trades like Iron & Steel and Steel Fabrications under the category of Basic Metal and Allied industries are capital intensive by nature as the capital investment per worker is as high as Rs 1,11,470 (Table 5.5). Due to high investment and nature of the works in such industries, manual labour as well as skilled labour requirement is high resulting into larger number of industrial employment. Similarly, the Leather Goods and Repairing requires more number of labourers whereas the industrial establishments under the category of Food products and Allied industries require lesser labourers as they are operated at household level in most of the cases.

9. With the results of the primary survey data, it is found that the gross profit per unit (i.e. Rs 2,23,600 per annum) is the highest in the category of Rubber and Plastic Industries which is followed by Leather Goods and Repairing category with gross profit per unit Rs 94,840 per annum. Similarly, the profit per unit of investment is enormously high in the category of Rubber and Plastic industries (i.e. Rs 159.99) and the profit per unit of investment in the case of Leather Goods and Repairing is Rs 64.96 only. On the other hand, the Basic Metal and Allied industrial category has highest investment per

unit (i.e. Rs 9,23,106) whereas the profit per unit of investment is the lowest (i.e. Rs 2.49) (Table 5.3). The details about the different SSI & CI trades with regards to investment, output and profit per unit of investment, as well as productivity have been given in the Appendix B.

10. Though there are a good number of industrial development strategies initiated by both the Central and Mizoram state Governments being implemented in the state, these strategies seem to fail to make positive results in the study area till date. One of the basic reasons behind it is the poor allocation of money in this sector by the state government in the five Year Plans. In fact, the share of Mining and Industry Department in the plan allocation in various Five Year Plans never exceed 6 percent of the total plan allocations (Table 6.1). Accordingly, these good developmental strategies without strong financial support from the Government fail to accelerate industrial development to the mark in Mizoram. Thus, it is clearly found that the financial inadequacy for the sector in Five Year Plans result into failure from the Government to assist with strong financial support to the SSI and CI units where capital shortage is an already existing stumbling block towards industrial development in the state. Due to this fact, even when industrial entrepreneurs are assisted with finance, the beneficiaries are not benefited with sufficient amount resulting into the desperation and stoppage halfway.

11. The statistical informations collected from various sources like : (1) District Industries Centre (Aizawl), (2) Mizoram Urban Cooperative Bank (Aizawl), (3) State Bank of India, Regional Office (Aizawl), (4) Mizoram Hand and Village Industries Board, and (5) Zoram Industrial Development Corporation (Aizawl) indicate that as much as 12,546 Small Scale and Cottage Industrial establishments have so far been assisted in Mizoram (11) 1992-93 accounting years. Besides, the above institutions, other sources like (1) Mizoram Rural Bank, (2) Mizoram Apex Bank Ltd., (3) District Industries Centres (Lunglei and Saiba) are also assisting the SSI & CI units in the state whose statistical informations as to number of beneficiaries could not be obtained in time. It can be presumed therefore that, the overall beneficiaries of SSI & CI units from all possible sources or institutions could be more than the said figure. On the other hand, there are only 2508 SSI & CI registered units in the entire state by the end of 1990 (page 308). Further, the field survey for the present study had been carried out during October 1992 to March 1993. The survey data reveals that out of 250 sample units only as much as 107 (43.6 %) SSI & CI units have been benefited in one way or the other by these institutions. In fact, out of the 107 beneficiaries, 79 units are benefited with industrial loan, 4 units with Grant-in-Aid, 21 units with subsidies and 9 units with hire-purchase scheme (table 6.12). This shows the defects and existence of loopholes in the system of selection of beneficiaries in various schemes implemented by the state

government as well as the mobilisation of loan money among the beneficiaries.

11. "

12. It is found that the overall performance of the various Banks in Mizoram towards the development of SSI and Cottage Industries in the entire state is very weak. Banking facilities are highly concentrated in Aizawl District whereas Chhimitupa District is still deserted from industrial loan facilities from these Banks. Although the Mizoram Rural Bank (MRB) has done well (its achievement being higher than its target), it is having poor achievement in Lunglei District whereas it has no achievement in Chhimitupa District (Table 6.9). The poor performance of the Banks is mainly because of the poor recovery rate from the industrial loanees. In fact, due to their experiences of poor recovery, these financial institutions are hesitant to give industrial loans. Besides, availability of these financial institutions is still very limited in the village levels resulting into less exposure of the general public to these Banks.

13. It is found that the Mizoram Hand and Village Industries Board (MKVIB) is the principal financier of SSI and Cottage Industries among all the financial agencies in Mizoram. This is because of the low interest rate and the scheme of 75 percent grant-in-aid and 25 percent loan to its beneficiaries. Accordingly, the Board has financed as much as 3,214 SSI and Cottage Industrial units in the state during 1986-87 to 1992-93 in 21 different trades (Table 6.5).

Surprisingly, it is found that while the MIVIC loan repayment to the JVIC Bombay is 100 percent, the loan repayment to the MIVIC by its loan beneficiaries is only 38.36 percent. Moreover, the rate of loan recovery and the percentage share of yearly loan recovery regularly goes on decreasing year by year (table 6.7). Thus, it is found that if the Board does not take preventive measures to check this regular fall of loan recovery rate from its loanees, it will collapse in near future.

14. It is found that during 1988-89 to 1992-93, the various Training Institutions in the state have trained 5,811 young boys and girls : ITC Arzawl 260; TRYSEM (DIRDA) 3,381, RIDC Arzawl 244, MIVIC 99 outside the state and 104 in Arzawl; NSSWB 1,098; SWD 625, whereas the exact trained out number by Handloom and Handicraft Wing and the Spiciculture Department are not included. But, these trained out youths do not have positive reflection in the industrial entrepreneurship in Mizoram. In fact, field survey work for the present piece of research had been carried out during October 1992 to March 1993; Yet among the 361 and College Industrial entrepreneurs, the chance of meeting such trained out proprietor was almost absent. This is because the nature of training given to these youths have been vocational with short courses where proper knowledge and good industrial orientations could not be obtained. As a result, these trained out youths never have a challenge to establish their own ventures, but being employed. Thus, it is found that the nature of training given by these Training Institutions are not satisfactory to impart good

industrial orientations and challenge to the trainees to start one's own industrial venture.

15. So far as reliability of data is concerned, we have compared the results of production elasticities of both capital and labour of the different date which were collected from the secondary as well as primary sources by using the same technique (i.e., Cobb-Douglas production function). From the results of the comparison it is found that the deviations of the production elasticity values are very much insignificant (Table 7-2). In some cases, deviations are recorded more than 100 percent as in the case of Leather Goods and Repairing, Service-Based Industries and Wood and Wooden Products. This Table reflects that the secondary data are not reliable. Therefore, the results which are based on the primary data in Chapter V are reliable and correct corresponding to the actual ground realities.

With regards to the results of Marginal Productivity and Elasticity of labour and capital inputs based on the primary data, it is generalised that the production function in most of the SSI & CI industrial activities are operated on the diminishing law of return. But the aggregated coefficient value of elasticity of both the inputs is greater than unity in the cases of Food Products and Allied Industries, Non-Metallic and Material Products, Leather Goods and Repairing, Wood and Wooden Products and Service-Based Industries (Table 5-6). In these industrial trades, the law of increasing return is operating

though the values of marginal products are lesser than one. It means, these industries have good scope and prospects in the study area for future growth and development.

Table 7.2 : Deviations of Results of Production Elasticity of Labour & Capital with regards to Primary and Secondary Data.

Categories	Inputs	Production Elasticity based on		Deviations	
		Secondary data	Primary data	Total	%
Food Products and Allied Industries	Capital	0.6556	0.7468	0.0912	13.91
	Labour	0.5348	0.3001	0.3017	37.72
Wood and Wooden Products	Capital	0.4604	0.1869	0.2735	59.40
	Labour	0.1943	0.8298	0.6355	327.07
Textile and Textile Goods	Capital	0.6003	0.3143	0.2860	47.60
	Labour	1.1756	0.5459	0.6297	53.56
Paper Products, Publishing & Allied	Capital	1.0765	0.9697	0.1068	9.92
	Labour	1.5173	0.0207	1.4916	1.47
Rubber and Plastics Chemical based	Capital	5.1399	0.2154	4.9245	95.81
	Labour	1.4077	0.6944	0.7913	56.39
Non-Metallic material, Metal Products & Parts	Capital	0.4919	0.9524	0.4605	93.62
	Labour	0.2823	0.1171	0.1652	58.57
Leather Goods and Repairing Service based industries	Capital	0.3916	0.8773	0.4857	124.03
	Labour	0.3748	0.1891	0.1857	49.55

16. Industrially, Mizoram state is still at its cradle stage. So far the sector remained unorganised due to lack of competency and appropriate authority to take care of the overall functioning of these SSI and Cottage Industrial units in the state. Each unit had to fight for its own survival

amidst severe competitions with better and cheaper similar urban made commodities. In spite of the efforts and the assistances from government and financial agencies, even after the 70 years of Union Territory Government, the SSI and Cottage Industrial units are still characterised by low capital investment with low scale of production. Ultimately, the SSI units in the state still remained below standard and uncompetitive.

The very small and tiny units of the traditional industries like Textile or Handloom Weaving, Furniture workshops, Cane and Bamboo works, Rice mill, Paddy dehulling, Gun making are still using traditional tools in most of the cases. They are characterised by low wage rate, low capital investment and low level or scale of production where production is local need-based. The Candle making is the only trade where family labour dominate the industrial labour market. Industrial trades like Rice mill, Paddy dehulling, Gun making and Chow making under food products and Allied industries are also family labour dominance. But, the units under the category like Spices, Oil mill and Fruit Preservations are hired labour dominated. In fact the magnitude of family labour is constant in all the categories.

So far as the sex-wise participation in industrial labour force is concerned, it is fact that all the SSI & CI establishments are dominated by male labour force excepting the Textile and Textile Goods industries.

Thus, those industrial units which need to employ Modern Technology and Skill are always hired labour dominated where high labour costs are involving. This shows the inability and lack of good entrepreneurial qualities from the part of industrial entrepreneurs. Accordingly, the industrial trades/units employing modern technology and equipments are always run by hired skilled labour resulting into high expenditure on labour cost which directly and indirectly retard the smooth growth and development of such units (Fig. 7.2).

Besides, all the industrial categories are characterised by low fixed capital investment (Rs. 7000 approx. per unit) and high variable costs (Rs. 55800 approx.). Moreover, the variable costs is enormously always high in the industries whose entire raw materials have to be obtained from outside the state. This is due to the high transport charges as well as the heavy involvements of middlemen between the sources of raw materials and the units requiring those materials.

Specially, for those industrial trades using Steel Materials as raw materials, variable cost is always very high whereas Basic Metal and Allied industries is having extremely high variable costs in spite of its low rate of output. In fact, due to the high variable costs, the SSI and the Cottage Industrial units in Miroram have to incur 20-25 percent higher project cost than the similar units elsewhere in the country. The Fig. 7.2 clearly shows that even if the units are bigger in size, it is the variable cost that leads to higher capital

STRUCTURAL FEATURES OF LABOUR & CAPITAL
 INPUTS (PER UNITS) S.S.I & C.I. MIZORAM, MARCH 1993

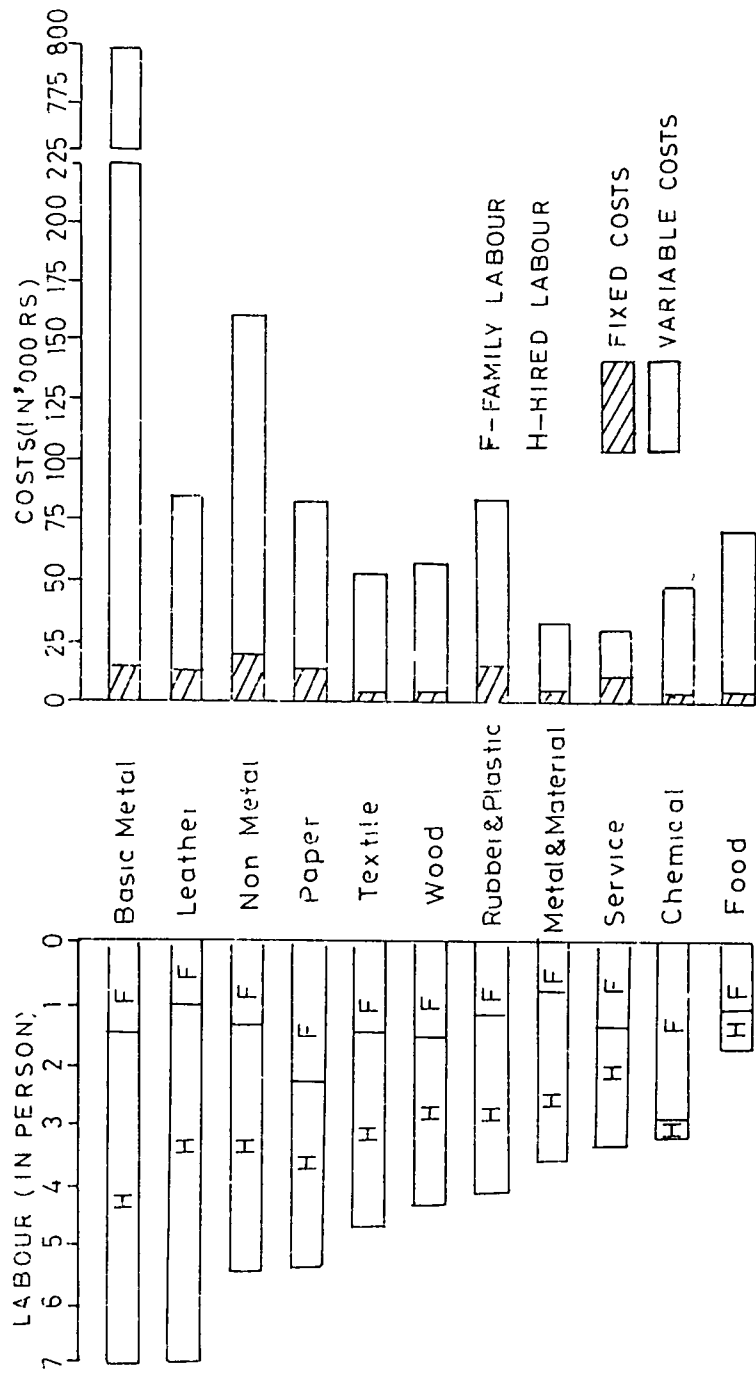


FIG. 7.2

investment and not the fixed capital investment. Instead, fixed capital investment as well as family labour involvements in all the categories exhibit a more or less constant trend when we move from bottom to top whereas variable costs and hired labour (in persons) show tremendous expansion.

Therefore it can be concluded here that, though the SSI & CI establishments are good strategies for economic development of the state as well as unemployment solution at the present stage, these industrial establishments are not yet utilised and promoted in sound footing whereas survival within themselves is highly dependent upon the concerned government.

SUGGESTIONS

The salient features of the Small Scale and Cottage Industrial set up and the main findings through the present study have been interpreted in the preceding section. It can be generalised from the light of the entire study that there is a high tendency of concentration of the industrial activities only on the urban centres. And secondly, the marginal productivity as well as average productivity are recorded to be very low in most of the SSI & CI categories. Besides, the local raw material utilisation rate is very low even in the case of those industrial establishments which fully depend upon the locally available raw materials. Therefore, it is obvious that the entire industrial set up is imposed on the geographical space indicating the poor integration between the resource

structure and the Small Scale and Collage Industrial set up in the state. Accordingly, there is a deep rooted problem with regards to the proper integration of the industrial set up with the production factors. Keeping those aspects of the present industrial atmosphere in view, the following suggestions are put forward for acceleration of the self-sustained and well-balanced industrial development of Mizoram.

1. On account of the very fast increase of Small Scale and Collage Industrial establishments only in Aizawl town, more than half of the total industrial establishments are located within the town resulting into primacy in the pattern of the areal distribution of such industrial establishments in the entire state. In fact, the concavity of the curve of distribution of industrial establishments is well marked. Therefore, it is suggested that the state Government may take steps to create more industrial establishments on the second to sixth ranked industrial centres, viz., Lunglei, Thenzawl, Champhai, Folasib and Saiba, so that the degree of concavity of industrial establishments distribution curve would be minimised and ultimately the industrial setup of the state would be decentralised.

2. As it has been observed, the road network is very weak and the intensity of roads in the state are much lower than the other parts of the country whereas other mode of transports like Railways, waterways and Airways are not available in the state. On the other hand, the development as well as the growth

of the Small Scale and Cottage Industries are highly determined by road network facilities. Similarly, availability of power supply is a cornerstone for the successful functioning of industrial establishments. Thus, for acceleration of industrial development as well as for the achievement of well-balanced industrial growth in Mizoram, priority should be given on the upgradation and creation of these infrastructural facilities. For the immediate purpose, it is suggested, therefore, that the other growth centres, other than Aizawl, should be well connected by the National Highway which imply the widening and lengthening of the National Highway No. 54. Similarly, for the generation of power supply in the state, it is suggested that Government of Mizoram should concentrate on some few power projects to meet the home requirements instead of engaging itself in many projects simultaneously, so that certain Hydro Power/Thermal projects could be commissioned in near future.

3. The scale of production as well as the productivity of the Small Scale and Cottage Industrial establishments in Mizoram are very low. At the same time, the elasticity of both labour and capital inputs are also recorded very low in many cases. For the enhancement of production and productivity of these industrial establishments, certain suggestions can be made from various angles like : (a) The requirements of raw materials, (b) The managerial aspects, and (c) Production efficiencies which are discussed in the following lines.

(a) Resources :

Industrial development scheme or planning should basically be based on the local resources where the concerned region or state has superiority over the others. This concept is very important especially for Mizoram which is in its initial stage of industrial development. Therefore, priority should be given on those industrial establishments which are based on the local resources where the state has superiority over the other parts of the country, so that industrial development can be initiated on sound footing.

So far as human resource quality is concerned, the Mizo women have traditional skill in weaving and designing and, accordingly, the handloom products of Mizoram are always better designed and well woven. Besides, the Mizos have special artistic skill in Handicrafts like Baskets, bags and ultimately humbey, where the artistic skill is still preserved. Moreover, varieties of cotton crops can be grown in Mizoram whereas Cane and Bamboos are locally available. Therefore, emphasis should be made on these industrial trades.

Similarly, Mizoram is the best grower of Passion fruit among the Indian states. Tea can be grown everywhere in the state and it is being successfully cultivated in north-eastern and eastern parts of the state. Likewise, good variety of Cash crops and Horticulture crops grow productively in the state. Thus, industrial establishments based on these locally generated resources should be given priority. It is, therefore,

suggested that for immediate action, a Tea Factory of Medium size be established within Mizoram especially in those centre where large scale tea cultivation is carried on.

(b) Management :

Any business enterprise or industrial establishment without proper management is unthinkable to survive. Since Mizoram is only in its initial stage in this regard, the general people here do not have proper background in industrial orientation while, on the other hand, 74.8 percent of the Small Scale industrial entrepreneurs are having educational background below H.S.I.C. in the entire state. As a result, industrial entrepreneurs fail to keep proper account and management failure become a serious sickness in the sector. Therefore, it is suggested that the state Government should take care of the management aspects by providing management training facilities to the industrial entrepreneurs within and outside the state.

10 40
10 10

(c) Production Efficiency :

The financial capacity as well as the educational background and level of industrial orientation of an entrepreneur are equally important for the production efficiency of an industrial unit. In Mizoram, the bulk of industrial entrepreneurs are financially weak, technologically inefficient with limited industrial orientation, therefore, improvements on the qualities of industrial labour force as well as financial assistance schemes are needed. It is

suggested for the improvement of the quality of entrepreneurship that the Government may give priority in giving industrial loans to the technically efficient persons as well as the educated unemployed youths so that the more efficient entrepreneurs will be attracted with the ultimate result into the better production efficiencies. Besides, since capital shortage is a serious problem of industrial entrepreneurs, Government may increase loan amounts whereby the selection of beneficiaries will be done as per policies and priorities.

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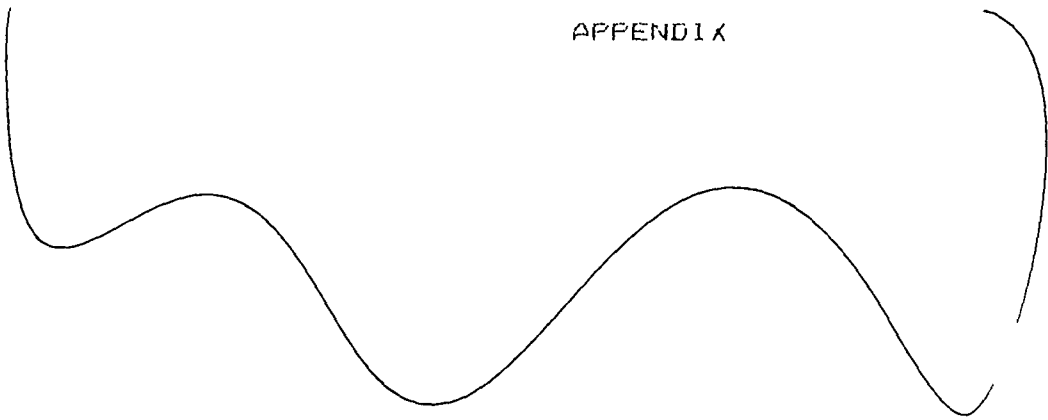
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APPENDIX



APPENDIX - A

QUESTIONNAIRE

Research Topic Industrial Development in Miroram:
A Case Study of Small and Cottage
Industries.

1. Household Schedule

- (a) Name of the Proprietor Mr./Mrs.
- (b) Name of Place, Village/
Town
District
- (c) Name of the Industry
- (d) Year of Establishment
- (e) Type of the Industry
 - (i) Agro-Based (ii) Forest-Based
 - (iii) Service-Based (iv) Mineral Based
 - (v) Chemical Based (vi) Others.

2. The Socio-Economic Status of the Proprietor and his Family Members.

(a) Family Structure :

S. No.	Name	Tribe	Relation-ship with the head of the	Age	Sex	Whether Income earned or not	Dependent	Educational Qualification

- (n) Income : The Annual Income of the Family from
 - (i) The Industry : Rs.
 - (ii) Other Source : Rs.

3. Number of Persons Employed

(i) From the Proprietor's own Family :

Sl. No.	Name	Age	Male	Female	Skilled	Unskilled	Full Time	Casual	Working Days

(ii) Outside the Proprietor's Family :

Sl. No.	Name	Age	Sex	Religion	Marital Status	Qualification	Car	Worship	Monthly Salary
								Days	(Rs.)

4. Raw-materials

- (a) The Raw Materials are
 - (i) Primary Products
 - (ii) Secondary Products
- (b) The Raw Materials are Obtained From
 - (i) Mizoram
 - (ii) Outside Mizoram
 - (iii) Outside India
- (c) Distance of the Place from where the Raw Material is Collected (in Km.)
- (d) Means of Transportation :
 - (i) Railway transport
 - (ii) Road transport
 - (iii) Water transport
 - (iv) Air transport
 - (v) Both Railway and Roadway
- (e) What is the cost of Transportation per Unit of Quantity? (in Rs.)
- (f) What is the cost of Raw Material per Unit of Quantity? (in Rs.)
- (g) What is the Annual Raw Material Requirement (in per unit of quantity) ?
- (h) The Raw Materials are Available in abundant Quantity/ Inadequate Quantity.
- (i) The cost of Raw Material is very dear/very cheap/good enough.

5. Production

- (i) The approximate cost of production per unit of item (in Rs.)
- (ii) Total Annual Production isUnits.

6. Input Cost

- (i) Monthly Salary Paid to
 - (a) Permanent and Skilled Employee Rs.

- (b) Permanent and Unskilled Employee Rs.
- (c) Casual Employee Rs.

(ii) Machines and Tools

Sl. No. Name of Tools Owned Hired Cost of Hiring (Rs)

- (iii) If the Machine is owned
 - (a) What is the Cost Rs.
 - (b) What is Maintenance Cost Rs.
 - (c) Repairing Cost Rs.

- (iv) The Machine was Purchased from
 - (a) his own pocket
 - (b) loan
 - (c) hire-purchase
 - (d) Government subsidy
 - (e) subsidized rate. Rs.

- (v) Monthly Expenditure on Power Rs.

7. The Production Process is not carried on Smoothly because of (strike off which is not correct)

1. Irregular and insufficient power
2. Lack of technological knowhow
3. High cost of inputs
4. Lack of capital
5. Financial ill-health of the proprietor
6. Less Government's assistance
7. Poor transport infrastructure
8. Limited markets
9. Heavy competition from other units in Mizoram
10. Heavy competition from outside the Mizoram
11. Lack of training facilities
12. Lack of owned site.

8. Priorities of the Problems : The industry is facing serious problems in (strike off which is not correct)

1. Power supply
2. Technological knowledge
3. Capital
4. Skilled labour
5. Manual labour
6. Raw materials
7. High competition
8. Marketing
9. Government interference
10. Others, if any

APPENDIX - B

Industrial Categories and Trades Under Each Categories (1995)

Name of Categories and Trade	No. of Sample Units	Persons Employed	Annual Average Cost (/Units)	Annual Average Output (/Unit)	Annual Average Profit (/Unit)	Average Productivity (/Unit)	Profit per Rs. 100 of Investment (/Unit)
1. Manufacture of Food Products and Allied Industries.							
a. Rice Mill/ Rice huller	13	17	15484	21850	6366	1.41	41.11
b. Bakery	12	16	202485	287740	85255	1.42	42.10
c. Chow Making	4	8	69353	96853	27500	1.39	39.65
d. Oil Mill	1	4	94606	118624	24036	1.25	25.40
e. Gur Making	2	6	31608	47573	15785	1.51	50.57
f. Fruit Preservation	2	5	79406	100906	21500	1.27	27.03
g. Soices Processing	1	5	245970	327970	32000	1.11	10.82
h. Paddy Dehusking	1	1	11728	17728	8000	1.68	48.21
2. Manufacture of Woods and Wooden Products.							
a. Furniture and Carpentry Works	37	163	103171	149253	46087	1.45	44.67
b. Saw Mill	2	6	763487	843580	80093	1.10	10.49
c. Cane and Bamboo Works	1	4	53326	103322	50000	1.94	53.76
3. Manufacture of Textile and Textile Goods.							
a. Embroidery	1	4	120856	165856	45000	1.37	37.23
b. Hood Making	1	5	102298	202298	100000	1.98	97.75
c. Woolen Garments	1	4	104247	161340	57093	1.55	54.77
d. Cotton Mills/ Cotton spinning	1	10	153251	333251	180000	2.17	117.45
e. Handloom Industry	31	144	80840	125685	30845	1.41	41.47
4. Manufacture of Paper Products, Publishing & Allied.							
a. Printing Press	7	40	151860	242560	91700	1.60	60.38
b. Book Binding	2	4	35144	59644	29180	1.70	93.03
c. Stationeries	1	10	299050	500060	200950	1.67	67.20

contd.

Name of Categories and Trade	No. of Sample Units	Persons Employed	Annual Average Cost (/Units)	Annual Average Output (/Unit)	Annual Average Profit (/Unit)	Average Productivity (/Unit)	Profit per Rs. 100 of investment (/Unit)
5. Manufacture of Rubber, Plastics, etc.							
a. Tyre Retreading	4	19	156170	414422	258252	2.65	165.37
b. Plastics Industry	2	2	74112	159117	85000	2.15	115.69
6. Manufacturing of Chemicals and Chemical.							
a. Candle Making	10	32	65138	79733	13600	1.21	20.82
7. Manufacture of Non-Metallic and Material Products.							
a. Ice Factory	2	9	98070	220475	122406	2.25	124.81
b. Stone Crusher/Stone Works	3	17	92500	158555	66055	1.71	71.41
c. Brick Making	1	8	852700	936740	84040	1.10	9.96
d. Cold Drinks	1	4	100900	200900	160900	1.94	97.11
e. Chalk Making	NA	NA	NA	NA	NA	NA	NA
8. Manufacture of Basic Metal and Allied Industries.							
a. Iron & Steel Industry	2	19	289800	315970	26170	1.07	9.03
b. Steel Fabrication	2	9	1558300	1576330	20030	1.01	1.22
9. Manufacture of Metal Products and Parts.							
a. Blacksmithy and Tinsmithy	2	15	70300	103863	33563	1.46	47.74
b. Aluminium Works	1	3	59580	73986	14606	1.24	24.18

contd...

Name of Categories and Trade	No. of Sample Units	Persons Employed	Annual Average Cost (/Unit)	Annual Average Output (/Unit)	Annual Average Profit (/Unit)	Average Productivity (/Unit)	Profit per % 100 of Investment (/Unit)
10. Manufacture of leather Goods and Repairing.							
a. Shoe Making and Repairing	2	14	46100	240940	91840	1.64	64.94
11. Service Based Industries							
a. Tailoring	46	160	43060	72628	29568	1.69	68.67
b. Knitting	13	35	31480	147242	65752	1.81	80.71
c. Beauty Parlour	3	5	22580	41380	18800	1.83	83.26
d. Automobile Repairing & Servicing	8	56	122200	265078	193478	2.17	112.37
e. Scooter/Two Wheeler Repairing & Servicing	2	7	78420	155920	77500	1.99	78.83
f. Diesel Injection Pump Repairing & Servicing	1	7	171900	271960	100060	1.58	58.21
g. Electronics Goods Repairing & Servicing	2	2	29380	66808	37508	2.28	127.67
h. Watch Repairing & Servicing	3	11	45960	65767	14807	1.43	43.10
i. Refrigerator Repairing & Servicing	1	3	72400	122468	50048	1.69	69.15
j. Cycle & Petromax Repairing & Servicing	1	2	40700	56742	16042	1.39	39.42
k. Typewriter Repairing & Servicing	1	2	22500	64000	11500	1.97	51.11
l. Photo Studio	2	4	48000	69630	21630	1.45	45.06
m. Dental clinic	1	2	25900	40320	23900	1.52	100.00
n. Dry Cleaning	1	2	35000	45100	10100	1.27	28.86
o. Hotel and restaurant	1	3	80000	110100	30100	1.38	37.63
p. Printing/Art	2	12	114600	142100	27500	1.24	23.99
q. Jewellery	1	1	29600	57622	30028	2.01	101.45
r. Dyeing	1	4	212200	262178	49978	1.24	23.55
s. Radio/tape recorder Repairing & Servicing	1	8	108600	153300	45000	1.41	41.44
t. Optical.	3	7	53100	80158	33058	1.62	62.26